Dancing the Vibe

Designerly Exploration of Group Mood in Work Settings

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Dissertation

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by

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INTRODUCTION

Figure 1.1. Teamwork among prehistoric hunter–gatherers (by Gorodenkoff on Shutterstock)

From the primal act of hunting in prehistoric times to the contemporary task of designing an online shopping platform, almost every collective goal is achieved through collaborative *team efforts* (Figure 1.1). We come together to discuss, ideate, make decisions, and build collectively. Teamwork plays a vital role in professional practices. For teams to work to work effectively, the phenomenon of group mood emerges as a subtle yet potent force, shaping the dynamics, productivity, and ultimately, the success of teams in achieving their objectives. One team may flourish in a shared sense of excitement and purpose, sustaining their momentum throughout their collaboration, resulting in outcomes that exceed their prior expectations. *Good vibes,* indeed! And yet, another team may find themselves starting their task with similar enthusiasm, only to end up feeling drained or annoyed and delivering a mediocre outcome just to get over with. Could *bad vibes* be to blame?

Groups have *moods* just as individuals do. This shared emotional atmosphere is called the *group mood*, often colloquially referred to as the group's *"vibe"*. Research in organizational psychology has demonstrated that group mood significantly influences work life (for a review, see Barsade & Knight, 2015). Negative group moods can lead to poor group performance, low-quality outcomes, and ineffective group dynamics, and can eventually even compromise wellbeing at work. Given its profound impact, the ability to regulate group mood can be very useful. In real life, however, group mood often remains an elusive phenomenon that, while it can be sometimes sensed, we struggle to understand, to describe in detail, and consequently to regulate or manage.

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What if teams[1] could actively manage their group moods to help them achieve their shared goal? This would entail stimulating group moods that are beneficial to the group activity while preventing or mitigating those that hinder goal achievement. The relevance of this competence is illustrated by the fact that, in 2014, a company posted a vacancy for a *vibe manager* whose main task would be to foster pleasant office vibes (Anand & Oberai, 2018). In 2015, Kelly Robinson, a vibe manager at the time, highlighted the importance of her role in creating a positive workplace atmosphere, in an interview at WorkTech, a conference about the future of work and the workplace (Robinson, n.d.). In 2022, Amsterdam Schiphol Airport hired an an *innovation & vibe manager* to improve employee workloads and enhance job satisfaction (Maas, 2022). Today, 10 years after the role first emerged, there are 51 job openings for 'vibe managers' in the Netherlands on online networking platform LinkedIn.[2] This underlines a growing interest in improving the affective aspects of group work and provides new opportunities for experience design, as designed products, services or interventions can potentially support groups in effective group mood management.

A key hindrance to efforts to design for group mood management is the lack of clear understanding of what group mood is, and what different group moods occur. To address this gap, this dissertation develops a nuanced understanding of group mood beyond the basic dichotomy of positive-negative dichotomy. First, we develop a descriptive overview of group moods that are experienced in small teams in a professional setting. Second, we create a series of embodied representations to communicate these group moods. Lastly, we explore the potential utility of these representations in facilitating reflections to support group mood management in workgroups. We envision that our research outcomes can support group mood management in two ways. They can (1) enable and support workgroups in their attempts to communicate and manage their group moods, and (2) inform designers who aim to influence group mood or enable teams to manage their group mood.

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1   In this thesis, we focus on small work groups consisting of three to seven members working towards a common goal, defined as "a collective goal that is endorsed by everyone" (van den Hout et al., 2018, p. 395). In organizational literature, various definitions are available to distinguish between teams and groups, as well as the types within each. However, such distinctions are less relevant to this project. Consequently, we use *team* and *group* interchangeably throughout the dissertation and adopt Katzenbach & Smith's (1993, p. 112) definition of a team as "a small number of people with complementary skills who are committed to a common purpose, set of performance goals, and approach for which they hold themselves mutually accountable".

2   The keyword 'vibe manager' produces a variety of job titles, including *office manager, floor manager, and team manager*.

1.1. BACKGROUND

Research has shown that group mood —a shared emotional atmosphere in groups— has a significant impact on organizational functioning.[3] It influences group effectiveness and performance, member interactions (e.g. cooperation, conflict, and coordination), group members' attitudes, cognitions and behavior towards the group (e.g. satisfaction, commitment, absenteeism), group creativity and decision making (e.g. idea originality, innovation, decision-making quality) (see the review by Barsade & Knight, 2015, pp. 31–36), and consequently workplace wellbeing (De Neve & Ward, 2023[4]; for a review, see Peñalver at al., 2020). On a more general level, group mood even relates to happiness at work (Fisher, 2010, p.385; García-Buades et al., 2020, p. 3). Recognizing its significance, organizations actively seek ways to cultivate 'good office vibes' at work. The interest in stimulating group moods that are beneficial to the group activity presents a promising opportunity within the field of experience design.

How can design effectively cultivate 'good office vibes'? In everyday practice, we can observe that design is commonly used in various ways to support specific group moods. Various products are deliberately used to cultivate the 'right' group mood. For example, candles in a church contribute to a spiritual ambiance, while birthday decorations help foster a joyful celebratory atmosphere. Similarly, in the workplace, various office products and spatial design elements, whether intentionally or not, influence group moods by facilitating group activities. Consider sticky notes, which help teams brainstorm and organize ideas, thus supporting a creative and open-minded group mood. Likewise, coffee corners facilitate small talk, which contributes to a friendly and sociable group mood. Similar examples are rife in everyday life, and yet there is currently no knowledge about group mood that can support a systematic or structured approach to designing products and services aimed at cultivating beneficial group moods in professional settings. Accordingly, this thesis reports our efforts to generate knowledge and develop tools that can support designers in their attempts to design for group mood management. It does so by making three main contributions, which together cultivate a more nuanced understanding of group mood:

(1) A typology with nuanced descriptions of group moods in work settings.
(2) Rich and embodied communications of this typology.
(3) Formats that facilitate reflection on the experience of group mood.

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3   Most research focuses on *group affect* as an umbrella term encompassing various affective constructs such as group mood, group emotion, and emotional climate.

4   According to De Neve and Ward (2023) one of the three dimensions of workplace wellbeing is *the affective or emotional experience of work,* which we relate to group mood experience.

Each of these three contributions addresses a specific challenge. The first addresses the current lack of any overview or descriptive theory of group moods. Organizational sciences and psychology typically use a dimensional approach, describing mood with two dimensions: valence (positive versus negative) and activation (high versus low energy) (Russell, 1980; Larsen & Diener, 1992). While this approach can be useful when studying mechanisms and cause-effect relationships, it does not provide an understanding of experiential nuances of different group moods. Group moods in work settings are more differentiated than just positive or negative alone. What does it mean, for example, to experience a high-energy negative group mood, or a low-energy positive group mood? Typologies—defined as organized systems of types—are commonly used tools to make sense of complex social phenomena (Collier et al., 2012). Previous work in experience design has shown that developing typologies can be an effective first step in supporting design practices by providing a detailed understanding of the subjective phenomenon at hand. Examples of such typologies developed by design researchers include overviews of pleasurable experiences (Jordan, 2000), positive emotions (Desmet, 2012), rich experiences (Fokkinga & Desmet, 2013), and individual mood states (Xue et al., 2020). These typologies provide designers with a fine-grained language to recognize and communicate a rich palette of affective experiences. Similarly, in this thesis, we develop a descriptive typology of group mood to elucidate nuanced experiential details of group mood.

The second contribution addresses the challenge of effectively communicating the detailed descriptions of group moods. In psychology, types of affective experience are typically communicated with word-labels (e.g., the eight categories of words in the circumplex model of affect by Russell, 1980; and the sixteen positive emotions by Ekman, 2003). In design research, images are sometimes used as a complementary medium to enrich verbal descriptions. In addition, some design researchers have explored richer ways to communicate emotion typologies, such as animated cartoon characters expressing 14 different emotions with their facial expression, body language, and voice (Desmet, 2018)[5] and videos depicting hand-object interactions representing 25 emotions (Yoon et al., 2017). However, we do not know what a suitable approach is for communicating a nuanced typology of group mood. In this thesis, we aim to develop novel embodied representations of group mood as exemplars to communicate a nuanced group mood typology.

The third contribution addresses the lack of tools for facilitating reflection on group moods. Existing research on group mood regulation primarily focuses on the mechanisms of emotion contagion, emphasizing leaders' and managers' roles in influencing group moods by transferring their own mood to team members (e.g., Sy et al., 2005). This approach often

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5   The characters are used in PrEmo, an emotion measurement instrument in the domain of user experience research (https://diopd.org/premo/).

overlooks the dynamic interactions among group members that are critical to the mood management process. Currently, there are no frameworks, knowledge, or tools available for empowering groups to manage their groups moods effectively. Reflection on group moods can be promising for empowering groups, because reflection leads to new understandings, and can thus stimulate change. In this thesis, we explore how embodied representations can serve as tools to facilitate group mood reflection and thereby support groups in managing their group moods.

The knowledge gap briefly introduced in this section is further elaborated in Chapter 2 and specified in Chapters 3 and 5 of this thesis, providing a more comprehensive understanding of the rationale and approach for each contribution.

1.2. PROJECT AIM, OBJECTIVES, AND RESEARCH QUESTIONS

This thesis aims to contribute to a granular understanding of group mood by achieving three objectives, each representing a key research question in the project: (1) to develop a descriptive overview of nuanced group moods, (2) to develop knowledge and tools to effectively communicate nuanced group moods, and (3) to develop knowledge and insights to facilitate reflection on group mood. The research was guided by the following research questions: (1) What types of group moods are experienced in small work groups? (2) How can nuanced group moods be effectively communicated? (3) How can group mood reflection be facilitated?

1.3. RESEARCH APPROACH

The term *designerly exploration* in the title of this thesis refers to the design-driven approach taken to examine group mood, a phenomenon traditionally studied in psychology and organizational sciences. In this thesis, we used design research methods to understand the lived experience of group moods, translating these experiences into embodied representations, which we consider as design artifacts. These artifacts were then tested for their effectiveness in communicating nuanced group moods, followed by their application and evaluation within the context of group work. This iterative process of understanding, creating, testing, and applying closely aligns with the core principles of the design process.

The studies presented in this thesis employ a variety of research methods (see Table 1.1 for an overview), the details and rationale for which are elaborated in the relevant chapters. Study 1 took a phenomenological approach, using experience sampling and co-inquiry

methods to identify and describe various types of group moods that are experienced in small project groups. The subsequent two studies (Studies 2 and 3) involved online questionnaires conducted to understand the qualities communicated through two sets of vibe-expressing materials. These materials were developed though a generative embodiment workshop and an artistic inquiry process. Finally, two intervention studies (Studies 4 and 5) were conducted using a card set intervention and an embodiment workshop, respectively, to explore the potential of these vibe-expressing materials in facilitating reflection on experienced group moods.

1.4. OUTLINE OF THE THESIS

The thesis is organized into three main parts, comprising seven chapters: Describing group mood (Part A), Embodying group mood (Part B), and Facilitating group mood reflection (Part C). Table 1.1 provides eight entry points for navigating the thesis: (1) part, (2) chapter, (3) research question, (4) studies and other research activities, (5) method, (6) material, (7) main outcome, and (8) supporting content.

Part A– Describing group mood

Part A focuses on developing nuanced descriptions of group mood. In Chapter 2, we investigate the granularity of group moods in professional settings through a phenomenological inquiry, resulting in a descriptive overview of eight group moods experienced in small project groups. This overview served as the foundation for subsequent research activities. Chapter 2 can therefore be considered the foundation for thesis Parts B and C.

Part B– Embodying group mood

In Part B, we explore two ways to communicate the eight group moods through embodiment. Chapter 3 presents the generative process of developing the *Vibe Image Set*, a set of illustrations that represent the group moods through various group poses inspired by *tableaux vivants*. Furthermore, this chapter examines what qualities of group moods these images communicate to viewers. Chapter 4 presents the artistic process of creating the *Vibe Video Set*, a set of dance videos that represent group moods though bodily movement. Similar to Chapter 3, it explores what these videos communicate to the viewers. Additionally, it discusses how the video and image sets in compare in terms similarity of expression and performance. These two chapters involve both generative and research steps. Generative steps are informed by a Design Goal, research steps are informed by a Research Question.

Table 1.1. Thesis overview

Chapter	Research question	Studies & Research activities (A)	Main method	Main outcome	Additional findings
Chapter 1. Introduction Background, research objectives, approach, and outline of this thesis					
PART A Describing Group Mood Developing a descriptive overview of nuanced group moods					
Chapter 2. Chill, Fiery, Slack, and Five Other Vibes: A Phenomenological Inquiry into Group Mood	**RQ:** What types of group moods are experienced in small work groups?	**Study 1.** A phenomenological study to identify and describe distinct group moods	Experience sampling / Co-inquiry	A descriptive typology of eight group moods in the format of *Eight Vibes Booklet*	- List of qualities and aspects to describe group mood - Insights into situational factors and additional properties of group mood
PART B Embodying Group Mood Developing knowledge and tools to effectively communicate nuanced group moods					
Chapter 3. Posing the Vibe: Exploring, developing and testing eight images expressing group moods	**Design goal:** to create embodied representations of eight group moods by using the human form	**A1.** A generative workshop to create vibe–expressing group poses. **A2.** A workshop to select vibe–expressing group poses. **A3.** A creative process to generate eight vibe-representing illustrations.	Body-storming Illustration	*The Vibe Image Set:* A set of illustrations that represent eight group moods	- Additional insights regarding the associations among the images and the group mood qualities they express
	RQ1. What qualities of group mood are communicated by the images of the *Vibe Image Set?* **RQ2.** To what extend do the images successfully communicate intended group moods?	**Study 2:** A questionnaire to test the qualities expressed in each image.	Likert-scale Questionnaire		
Chapter 4. Dancing the Vibe: Exploring, developing and testing eight dance videos expressing group moods	**Design goal:** to create embodied representations of eight group moods by using bodily movement	**A4.** An artistic inquiry for embodying eight group vibes through dance. **A5.** A workshop to discuss research opportunities with the videos.	Artistic Inquiry	*The Vibe Video Set:* A set of dance videos that represent eight group moods	- Additional insights regarding the associations among the videos and the group mood qualities they express
	RQ1 What qualities of group mood are communicated by the videos of the *Vibe Video Set?* **RQ2.** To what extend do the videos successfully communicate intended group moods?	**Study 3:** A questionnaire to test the qualities expressed in each video.	Likert-scale Questionnaire		- An overview of research opportunities utilizing the dance videos - Insight about how the Vibe Image Set and the Vibe Video Set compare to each other

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PART C **Facilitating Group Mood Reflection** Developing knowledge and insights into facilitating reflection on group mood to support group mood management				
Chapter 5. **Eight Vibes intervention:** Facilitating group mood management during group work	**RQ:** In what ways does using the typology influence group mood management activities of groups?	**Study 4:** An intervention study with project groups for stimulating group mood management in their meetings.	Experience sampling Semi-structured Plenary Interview	Insights into efficacy of the eight-group mood typology in facilitating group mood management - *Group Mood Management Cycle:* an initial framework of group mood management process during group work - Insights into the usability and application of the Vibe Card Set
Chapter 6. **Vibe Moves Workshop:** Facilitating group mood reflection on lived group mood experiences	**RQ1:** What is the impact of the Vibe Moves workshop on group reflection on group mood? **RQ2:** How do the participants experience the format of the workshop?	**Study 5:** A workshop study with professional work groups for reflecting on lived group mood experiences.	Group reflection Semi-structured group interviews	Insights into the efficacy and experience of the *Vibe Moves workshop* format in facilitating group mood reflection - Suggestions for improving the workshop format - Insights into the application of the vibe Moves workshop - Insights into the potential of using embodiment as a means for group mood reflection
Chapter 7. **General Discussion:** Implications of this thesis				

Part C– Facilitating group mood reflection

In Part C, we explore the application of the vibe-expressing materials developed in Part B to group work context. Utilizing the Vibe Image Set, Chapter 5 explores the potential of the eight group moods in facilitating group mood management through an intervention study with project groups. Chapter 6 focuses on reflection as an approach for supporting group mood management. It introduces the *Vibe Moves workshop*, an embodiment workshop designed to facilitate group reflection on lived experiences utilizing the Vibe Video Set. The effectiveness of the workshop is evaluated with real-life work groups.

Finally, Chapter 7 discusses the key findings and the overall contribution of this thesis, presenting the limitations and implications of the research along with directions for future work. In addition, we reflect on the use of the embodied approach, the artistic process, and our role as design researchers collaborating with artists, offering insights for those interested in pursuing similar artistic collaborations.

Figure 1.2 provides a visual overview of the project, illustrating the relationships between parts, chapters, and research outcomes, and showing how the contributions are positioned across the knowledge space.

The orange globe on the right represents practice—the 'real-world' where group members interact, group moods arise, and designers create. The space to the left represents the knowledge contribution space—a more abstract, exploratory domain where knowledge is developed, refined, and eventually brought back to inform practice. The layers, moving from right to left, depict a spectrum from applied to theoretical knowledge, with knowledge becoming more abstract and theoretical as you move further from the orange globe of practice.

At its core, this thesis is motivated by the premise that designed products and services can foster beneficial group moods and support group mood management. Achieving this, however, requires designers to gain an experience-oriented, granular understanding of nuanced group moods in work settings. Given the lack of descriptive theory on group mood, this thesis begins by developing a group mood typology, which serves as a foundational knowledge contribution.

In Part B, we bring this typology to life through eight vibe-expressing images and videos. Theoretically, these embodied representations introduce a novel approach to communicating collective affective phenomena. Practically, they serve as communication tools that can be incorporated into design or group management strategies.

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KNOWLEDGE CONTRIBUTION SPACE

CHAPTER 2
Chill, Fiery, Slack, and Five Other Vibes:
A Phenomenological Inquiry into Group Mood

Contribution:
Descriptive typology of eight group moods

CHAPTER 3
Dancing the Vibe:
Exploring, developing, and testing eight dance videos expressing group moods

CHAPTER 4
Posing the Vibe:
Exploring, developing, and testing eight images expressing group moods

Contribution:
Rich and embodied communications of eight group moods

CHAPTER 5
Eight Vibes Intervention:
Facilitating group mood management during group work

Contribution:
Formats that facilitate reflection on group mood

CHAPTER 6
Vibe Moves Workshop:
Facilitating group reflection on lived group mood experiences

Design can support group mood management

PRACTICE

PART 1
Understanding group mood

PART 2
Embodying group mood

PART 3
Fascilitating group mood reflection

Groups struggling with their groop moods

Figure 1.2. Visual overview of the project

In Part C, we integrate these representations into two formats designed to facilitate group mood reflection in work groups. By applying them in the context of group work, we gather insights for facilitating effective reflection on group mood and for understanding the group mood management process in general.

1.5. GLOSSARY

This section presents working definitions of key terms and concepts used throughout this thesis.

Mood

Mood is a low-intensity, pervasive, and diffuse affective state that can last for extended periods, often hours or even days. Unlike emotions, which are short-lived, momentary, and focused on a specific object, event, or person, mood presents as a continuous background experience that influences an individual's ongoing thoughts and behavior, often directed toward multiple objects or the world as a whole (Desmet, 2015).

Vibe

Vibe is a colloquial term used to describe the subjective perception of the emotional atmosphere, energy, or mood conveyed by an environment, individual, or social interaction. In a group context, *vibe* refers to the collective emotional tone, atmosphere, or energy that members of the group create and experience together. We use the terms *group vibe* and *group mood* interchangeably throughout the thesis.

Group affect

Originally described as *group affective tone*, *group affect* refers to "consistent or homogeneous affective reactions within a group" (George, 1990, p.108). It is an umbrella term encompassing various group-level affective constructs including *group mood, group emotion, shared emotion, emotional energy, emotional atmosphere,* and *emotional climate (*Menges & Kilduff, 2015).

Group mood

In this thesis, we define *group mood* as "a global affective atmosphere experienced by group members at a certain point in time during a group activity" (Sönmez et al., 2022a, p.96). Unlike *group emotions,* group mood is not a direct reaction to a particular stimulus — it corresponds to a group's general undercurrent in the absence of a specific trigger (Menges & Kilduff, 2015).

Team or Group

A *team* refers to "a small number of people with complementary skills who are committed to a common purpose, set of performance goals, and approach for which they hold themselves mutually accountable" (Katzenbach & Smith, 1993, p. 112). This thesis uses the terms *team* and *group* interchangeably and focuses on small work groups that consist of three to seven members.

Mood regulation

Mood regulation refers to the process by which individuals influence their mood, often aiming to prolong positive moods or alleviate negative ones. People use various strategies for mood regulation, including seeking relief from negative feelings, restoring balance between personal resources and life's demands, and building emotional resilience to better manage future mood fluctuations (Desmet, 2015).

Group Mood Regulation

Group mood regulation involves engaging in deliberate actions or intuitive responses to influence, adjust, change, or maintain the ongoing group mood in order to support the achievement of the shared goal at hand.

Group Mood Management

Group mood management refers to regulation strategies and processes used by group leaders or group members to cultivate group moods that are conducive to team effectiveness, including productivity, collaboration, and healthy group dynamics.

Typology

Typology refers to "organized systems that sort phenomena into meaningful categories or 'types' according to their properties and articulate those categories' relations to each other" (Desmet et al., 2021, p.119). This thesis presents an overview of eight group moods experienced in work settings, serving as an initial descriptive typology of group mood.

Phenomenological inquiry

Phenomenological inquiry is a qualitative research approach that seeks to understand and describe the subjective, lived experiences of individuals, focusing on how they perceive, interpret, and make sense of those experiences. Rooted in the philosophical tradition of phenomenology, it prioritizes first-person perspectives and sets aside preconceived theories or external judgments, aiming to reveal the essence of complex, multifaceted human experiences (Moustakas, 1994).

Embodiment

Embodiment refers to the process of translating abstract concepts—such as emotions, experiences, or ideas—into tangible forms. In the performing arts, embodiment involves expressing these concepts through the human body, facial expressions, and movement. In design, it extends to materializing them through objects and interactions. In this thesis, we refer to both: representing group mood through bodily expression and movement aligns with the former, while physicalizing the group mood typology through images and videos corresponds to the latter.

Embodied Representation

Embodied representation refers to the physical or bodily expression of abstract concepts (see *embodiment*). This thesis presents the *Vibe Image Set* and the *Vibe Video Set* as embodied representations of eight group moods.

Artistic inquiry

Artistic inquiry is a research approach within the broader field of art-based research that uses creative arts as a method to generate knowledge and insights across disciplines (Leavy, 2018). In this thesis, artistic inquiry refers to the exploration and embodiment of group mood through artistic bodily expressions, particularly tableau vivant and dance.

Tableau vivant

Meaning "living picture" in French, *tableau vivant* is a form of artistic performance where actors pose motionless and silently to create a scene, replicating famous paintings, sculptures, or historical events, or representing themes or abstract ideas (Ontario Ministry of Education, 2009).

Choreography

Choreography refers to the process of developing and structuring dance sequences through the design of specific steps, movements, and patterns, which are then organized into a coherent and expressive performance that conveys a particular emotion, concept, or message (Ontario Ministry of Education, 2009).

Reflection

Reflection is defined as "intellectual and affective activities in which individuals engage to explore their experiences in order to lead to new understandings and appreciations" (Boud et al. 1985, p.19).

Group Reflection

In this thesis, *group reflection* is based on the concept of *co-reflection*, defined as two or more individuals engaging in critical thinking about their experiences to reach a new shared understanding (Yukawa, 2006).

PART A

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Describing Group Mood

Part A focuses on developing nuanced descriptions of group mood. In Chapter 2, we investigate the granularity of group moods in professional settings through a phenomenological inquiry, resulting in a descriptive overview of eight group moods experienced in small project groups. This overview served as the foundation for subsequent research activities. Chapter 2 can therefore be considered the foundation for thesis Parts B and C.

CHILL, FIERY, SLACK, AND FIVE OTHER VIBES

A Phenomenological Inquiry into Group Mood

Chapter 2 comprises a published paper that has been incorporated in this thesis in full: Sönmez, A., Desmet, P.M.A., & Romero Herrera, N. (2022). Chill, Fiery, Slack, and Five Other Vibes: A Phenomenological Inquiry into Group Mood. *She Ji: The Journal of Design, Economics, and Innovation, 8*(1), 93-117.

For inclusion in this thesis, minor revisions have been made to the original paper: section, table, and figure numbering have been adjusted; the content of the appendix has been incorporated into the chapter; the list of references has been integrated into the comprehensive thesis reference list; the acknowledgments section has been included in the thesis acknowledgments; and the 'declaration of interests' section has been omitted.

ABSTRACT

Even though group mood has a significant impact on organizational functioning, there is no typology available to describe distinct group moods. We propose that designing products and services to facilitate beneficial group mood experiences requires a granular and experience-oriented understanding of the phenomenon. This article introduces an initial typology of eight group moods using a componential approach. The typology was generated via an exploratory study designed to identify aspects and qualities of group mood experienced in professional settings. We observed real-life meetings of five small workgroups. Group mood perceptions were self-reported in situ and later described collectively in a group session. By categorizing the group mood qualities in participants' descriptions, we developed eight group mood types. This typology aims to facilitate a granular understanding of the group mood phenomenon for designers (practitioners and researchers). We envision this overview of eight group moods as the first step toward developing a systematic knowledge of group mood in the field of design.

2.1. INTRODUCTION

When working in a group with a collective purpose, whether to generate creative ideas, develop a project plan, or pursue any other goal, people generally aim for fruitful interactions, pleasant collaborations, and effective outcomes. In some group meetings, the atmosphere seems just right, and everyone is on the same page. However, at other times, a feeling of discord and tension may be in the air, standing in the way of effective collaboration. We call this "feeling in the air" group mood. Often referred to as a *group vibe*[6] in colloquial English, group mood is the shared affective atmosphere present during group activity.

Group mood[7] has a significant impact on organizational functioning. Studies have shown that it influences group dynamics; the attitudes and behaviors of group members, team functioning, and performance; and creativity (for a review see Barsade and Knight, 2015). On a more general level, group mood has even been shown to relate to happiness at work (Fisher, 2010; García-Buades et al., 2020). Inspired by these research findings, organizations are increasingly seeking ways to stimulate "good office vibes," and vibe management is becoming a popular concept in organizational management. In 2014, a company in San Francisco was the first to recruit an official *talent and vibe manager* (Anand & Oberai, 2018) whose main task was to ensure pleasant office vibes. Today this company has a vibe squad — a team responsible for organizing activities to facilitate positive employee interaction, relaxation, and fun at work. This growing interest in developing capabilities to manage group mood in organizations opens new opportunities for experience design. In this context, it is interesting to consider whether design can play a meaningful role in fostering beneficial group moods in work settings.

Designed objects are used to facilitate group mood experiences during all kinds of human activities (Figure 2.1), such as candles at church, birthday decorations, or disco balls at nightclubs. Through their sociocultural connotations, functions, and sensorial properties, such objects help create the right ambience for group events. Likewise, objects used in office spaces — deliberately or unintentionally — influence group mood. For example, online task management tools[8] designed for effective collaboration can support a productive group mood. Coffee corners, designed to support social interactions, can facilitate an amiable group mood. The virtual background tools used during video conference calls can set the tone for a meeting — from clean, modern office backgrounds for a serious vibe to

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6   Throughout the dissertation, we use the terms "group vibe" and "group mood" interchangeably.

7   In previous research, group mood has mostly been studied as group affect in combination with group mood and group emotion.

8   Examples of such tools are Trello (https://trello.com/) and Asana (https://asana.com).

Figure 2.1. Example objects and spaces that facilitate group mood experience in leisure and office settings. (a) Birthday decorations; (b) candles at church; (c) an online task management tool; (d) a coffee corner; (e) a whiteboard; (f) virtual Christmas backgrounds. a–e © 2022 Shutterstock.com. f © 2022 Alev Sönmez.

Christmas images for a cozy vibe (e.g., Sheikh, 2021). Whiteboard walls are commonly used to collectively formulate ideas, thus supporting creative vibes. However, are "productive," "amiable," and "creative" the only group moods experienced in office settings? Which other group moods can be supported through design interventions?

Products, services, and interventions designed to influence group mood or enable its management can bring about new opportunities to enhance group experiences. To the best of our knowledge, there is currently no explicit design knowledge available — as methods, guidelines, and strategies — that supports a systematic approach to design for group moods. Previous work in experience design has shown that an effective first step in developing such design knowledge is to develop typologies that provide a granular understanding of the diversity of the subjective phenomenon at hand (e.g., Xue et al., 2020). Examples of such typologies developed by design researchers are overviews of pleasurable experiences (Jordan, 2000), positive emotions (Desmet, 2012), rich experiences (Fokkinga & Desmet, 2013), and individual mood states (Desmet et al., 2020). These typologies provide designers with a fine-grained language to recognize and communicate a rich repertoire of affective experiences.

At present, a structured overview of group mood types is not available. To fill that research gap, we propose that such an overview can support both a more nuanced study of group moods and the development of systematic group mood design practices. For this reason, this article introduces an initial typology of group moods. We report on an exploratory study conducted to identify and describe distinct types of group moods in work settings.

2

The main outcome is a descriptive overview of eight group mood types. By providing a nuanced vocabulary to describe group moods, this overview serves as a step in developing a granular understanding of group mood in the field of design.

The following sections briefly report on how group mood has been operationalized in past research and discuss these initiatives from a design research perspective. We then describe the exploratory study conducted to develop group mood types. After this, the results section presents an overview of eight group moods and four aspects that help to identify them. Additionally, findings on group mood dynamics — including changes in uniformity and intensity, and situational factors — are presented. Finally, we discuss the contributions and limitations of our study by drawing on the relevant literature.

2.2. CURRENT GROUP MOOD RESEARCH

In line with Gallegos's (2017) phenomenological inquiry, we define group mood as a global affective atmosphere experienced by group members at a certain point in time during a group activity. Group mood arises in the context of an ongoing collective activity in which group members interact to achieve a shared purpose; it is formed by its particular situational dynamics. Accordingly, we investigated group mood as an emergent collective phenomenon situated in the context of group dynamics.

Note that group mood falls within the broader category of group affect[9], including all "consistent or homogeneous affective reactions within a group" (George, 1990, p.108). Accordingly, group affect includes both momentary shared emotional reactions (group emotion) and more pervasive shared mood experiences (group mood). Unlike group emotions, group mood is not a direct reaction to a particular stimulus — it corresponds to a group's general undercurrent in the absence of a specific trigger (Menges & Kilduff, 2015).

In the current literature, there is no group mood typology available to inform the design discipline. To date, group mood has mainly been studied in the organizational sciences and psychology. The research in these domains typically adopts a dimensional approach with a primary focus on the general pleasure dimension, using a basic pleasant-unpleasant or positive-negative distinction. We found one study that added a second dimension (activation), and distinguished group mood with the eight general affect domains of the circumplex model of affect (Bartel & Saavedra, 2000). Moreover, following the

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9   Both in the scientific literature as well as in popular discourse, various terms are used interchangeably to refer to (components of) group affect, including group mood, group emotion, shared emotion, emotional energy, emotional atmosphere, and emotional climate (for a review see Menges and Kilduff, 2015).

individualistic approach common in group research[10], group mood is typically determined by measuring individual mood scores through self-report. The mean value is used to represent the group mood[11].

While the dimensional approach is useful for studies exploring the impact of group mood on behavior and other phenomena[12], a categorical approach is considered more suitable for experience design research because it provides relevant contextual and experiential details (Xue et al., 2020). Like emotion (Russell, 2003; Desmet, 2002), group mood is more nuanced and diverse than can be captured with the labels "good" or "bad" (Freeman, 2014). Imagine team A engaged in an afternoon-long creative session, versus team B finalizing a last-minute concept presentation for a client. While a cheerful-imaginative group mood may emerge in team A, a resolute-focused mood may prevail in team B. Although both group moods may be experienced as "positive," they are essentially different regarding how they manifest, what causes them, and their effects on the group work. This difference implies that they also represent different design opportunities and challenges. A design intervention that supports unconventional interactions may strengthen the imaginative vibe for team A. But implementing that same intervention in team B may be disruptive and stimulate a counterproductive-nervous vibe. Instead, team B may benefit from a design intervention that minimizes unnecessary distractions and supports a focused vibe. Therefore, design can benefit from a categorical and descriptive group mood typology.

Nuanced typologies of individual moods are available in design research. An example is the holistic typology of twenty mood states, which describes each mood with six aspects, four illustrative images, and an example real-life situation (Desmet et al., 2020). This typology was developed to provide a granular understanding of mood in the design field by painting a narrative picture of twenty individual mood types. While that work is a good example, we propose that such a typology of individual moods is not directly applicable to describing group moods because it does not capture group-level properties of an experience. "Teams don't behave, individuals do; but they do so in ways that create team level phenomena" (Kozlowski & Bell, 2013, p.415). The interactive, dynamic, and normative nature of a group context plays an essential role in the emergence of the group mood Gallegos (2017). Therefore, group mood may carry unique group-level characteristics Gallegos (2017) that bring new design opportunities and challenges. For example, while a guided meditation

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10   For a brief review of individual versus collective level analysis in group research, see Forsyth (2014).

11   The study by Bartel and Saavedra (2000) suggests that individual moods can converge in any of the eight mood domains in the circumflex affect model, therefore the same eight domains correspond to both individual and group moods. Note that to ensure that self-reports can be aggregated to a group level, researchers use complementary measures of within-group agreement.

12   For example, separate studies have shown that positive group moods increase creative task performance and team satisfaction (for creative task performance see Klep et al., 2011; for team satisfaction see Chi et al., 2011).

app can stimulate a productive mood for an individual, it may be less effective for creating a calm group mood. Designing a ritual that uplifts team spirit requires a collective lens that incorporates interpersonal behaviors and values.

Accordingly, we aim to develop a categorical group mood typology. The following criteria guided our inquiry:

1. The typology should describe the rich experiential qualities of distinct group mood types with multiple aspects. The multi-componential approach is considered useful for providing holistic descriptions of complex subjective phenomena in the design field[13].

2. It should describe group moods from a collectivistic lens. Therefore, we do not take typologies of individual mood states as a starting point. Instead, we intend to identify unique types by incorporating group-level properties of group mood.

2.3. PHENOMENOLOGICAL STUDY

We conducted an exploratory study to gain an understanding of types of group mood experienced in real-life group settings. The objective of the study was twofold: (1) to identify the components that help us distinguish different types of group mood, and (2) to identify and describe distinct types of group mood. The main research question was as follows: **What types of group moods are experienced in small workgroups?** We formulated the following sub-questions to guide our investigation: (a) What types of group mood can be distinguished? and (b) what aspects or qualities can be used to describe and distinguish the types in a comprehensive way?

In that study, we adopted a phenomenological approach, which takes the original descriptions of lived experiences as a primary source of complex and multimodal mood experiences (Freeman, 2014; Moustakas, 1994). This approach successfully revealed a set of rich and nuanced moods used to develop the holistic typology of twenty mood states[14]. The descriptions of twenty mood states were based on real-life mood samples collected through a two-week mood diary exercise. The phenomenological lens is also particularly suited to investigating intersubjective phenomena such as group mood. It allows individuals to construct a shared meaning by testing and extending each other's understanding (Moustakas, 1994). Accordingly, our study was designed to gather collective descriptions of real-life group mood experiences.

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13   For a multi-componential approach in emotion typology, see Yoon et al. (2016b).

14   The multistep procedure also involved a lexical approach and researcher introspection method (Xue et al., 2020).

2.3.1. Method

We used experience sampling and co-inquiry methods to collect and collectively interpret the data. Experience sampling is "a research procedure for studying what people do, feel, and think during their daily lives" (Larson & Csikszentmihalyi, 2014, p.21). It refers to capturing people's self-reported, subjective experiences within the context of daily life. The idea is to obtain reports about the experience as it occurs, thereby minimizing memory reconstruction (Larson & Csikszentmihalyi, 2014). In this study, group members self-reported their group mood during their actual meetings. Immediately after the meetings, they examined, discussed, and synthesized their individual perceptions of the group mood in a co-inquiry[15] session. We used guided introspection[16] and generative techniques[17] to facilitate participants' joint creation of group mood descriptions. Because the participants were acknowledged as co-researchers[18], they were actively engaged in generating, collecting, and interpreting the raw data.

2.3.2. Participants

The study was conducted with five small workgroups performing ongoing group projects at the Faculty of Industrial Design Engineering at Delft University of Technology. All were multidisciplinary teams with expertise in design. One of the groups was a team of academic staff who met regularly for organizational tasks. Other groups were ongoing student design teams working on semester-long group assignments.

The purposive sampling strategy[19] was used to recruit participants. To observe as many group mood experiences as possible, we created sampling criteria based on factors that positively correlate with mood convergence: interaction, membership stability, interdependence (Bartel & Saavedra, 2000), and group size (George & Brief, 1992). Accordingly, we selected groups that regularly work on an ongoing project (high membership stability) and meet physically (high interaction). At the time of the study, the participating groups had been working together for a minimum of two months (high membership stability). No group operated with assigned hierarchical roles (to prevent the leader effect[20]). We deliberately

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15   Co-inquiry is a process in which a group of people jointly define and explore an issue or a question that is important for them (Banks et al., 2014). This joint inquiry is a common ingredient for participatory design (and research) processes, such as co-design (Steen, 2013).

16   Guided introspection is a well-accepted research technique, wherein the researcher guides the participants to examine and report their experiences (Xue & Desmet, 2019).

17   Generative techniques are commonly used to enable participants to express latent details of their everyday life (Sanders & Stappers, 2012).

18   Acknowledging participants as co-researchers can benefit the research process, as it stimulates a collaborative and equal atmosphere (e.g., Xue et al., 2020).

19   The strategy suggests selecting participants based on predetermined criteria (Mack et al., 2005).

20   Studies on leader effect suggest that in groups with hierarchical structures, leaders transmit their moods to other individuals, and thereby can manipulate the group mood profoundly (e.g., Sy et al., 2005).

observed meeting sessions that involved collective interaction, such as planning, brainstorming, or analysis sessions (high interaction). There is no consensus on the optimal group size for group mood emergence. Yet, when groups consist of more than six people, they are less likely to develop mood homogeneity because of less interpersonal interaction (Kelly, 2001). Since co-creation sessions work well with five or six people groups (Sanders & Stappers, 2012), we observed groups with a minimum of three (Forsyth, 2014) and a maximum of six people. Table 2.1 gives an overview of the profile of the participant teams. The study method required participants to express the experiential aspects of their group work as genuinely as possible. Therefore, participation was a voluntary and well-informed choice. Upon completing the study, each team received a gift voucher as compensation for their time.

Table 2.1. Participant team profiles: group number, group size, participants (coded), team profile, task types observed in each study session.

Group	Group Size [n]	Participants (Initials & Group No.)	Team Profile	Session 1 Task Type	Session 2 Task Type
Group 1	4	R1, S1, M1, J1	Employee task team	Planning	Not applicable
Group 2	3	R2, M2, I2	Student project team	Analysis	Analysis
Group 3	5	AL3, AD3, P3, K3, J3	Student project team	Brainstorming	Presentation & information exchange
Group 4	6	M4, E4, G4, A4, T4, R4	Student project team	Brainstorming & decision making	Concept development
Group 5	5	E5, W5, S5, M5	Student project team	Individual feedback & user test planning	Not applicable

2.3.3. Procedure and Research Materials

The study comprised two main parts: (1) self-reporting, followed by (2) a co-inquiry session. Each team participated in the study separately, at their usual meeting locations. Three of the teams participated in the study twice — in other words, they followed the same procedure in two different meetings. In total, eight group meetings were observed, and a co-inquiry session followed each meeting. Table 2.2 gives an overview of the study procedure. Upon participants' consent, actual meeting sessions were video recorded, and co-inquiry sessions were audiotaped.

Table 2.2. An overview of the study procedure: time and duration, activities, and research materials in every step of the procedure.

Study Steps	Time & Duration	Activities	Research Materials
Preparation	Immediately before the study, 15 minutes	The researcher • explained the study procedure, • introduced the group mood definition with a real-life example, and • set up the recording devices.	Not applicable
Part 1: Self-reporting	During the actual group meeting, for 1.5 hour	• The group conducted their meeting session as usual. • The researcher took observation notes and announced the time to self-report • Participants reported their group mood perception (three times).	The vibe pyramid and self-report cards
Part 2: Co-inquiry	Right after the actual group meeting, for 1 hour	With the facilitation of the researcher, the group • discussed the individual group mood perceptions and constructed group mood descriptions collectively, • extracted key words from collective descriptions, • identified the distinct types of group mood, and • discussed the potential factors relating to experienced group mood types.	Sections of the self-report cards and a facilitation template

Sensitizing Participants to Group Mood Phenomenon

Before the study, participants were introduced to the following definition of group mood: *"a general emotional atmosphere experienced by group members in a specific time of group practice."* To sensitize the participants to the notion, they were given two example situations. One described an unpleasant atmosphere: *"Imagine you meet your colleagues for a project planning meeting. After about half an hour, you feel that the group is getting less and less enthusiastic about coming up with tangible solutions. People are approaching each other's ideas critically. You cannot really name it, but you can feel tension in the air, and this seems to capture the group's vibe."*

Part 1: Reporting Individual Group Mood Perceptions

During the actual group meeting, participants reported their group mood perception every 30 minutes: three times in total. An intervention probe — the vibe pyramid — was used to invite participants to report (Figure 2.2). Participants were instructed to briefly interrupt their meeting activities and individually fill in a self-report card every time the researcher put the pyramid on the table. The self-report card consisted of three parts (Figure 2.2). The first section asked participants to describe their individual perception of the group mood using a couple of key words. Participants were allowed to leave this section empty if they did not sense a specific group mood at that moment. The second section asked them to describe what had been happening in their situation. The third section invited them to report their individual feelings (emotional, cognitive, and physical state) right then. The first two sections served as input for the co-inquiry session (Part 2), while the third section

Figure 2.2. Research materials used for self-reporting: self-report cards (left) and the intervention probe (right). Images © 2022 Alev Sönmez.

was confidential. Table 2.3 shows a participant's self-report. The participants' cards all had a different color, which made it possible to track the reporting back to each individual. The researcher observed the meeting during the session, which helped sensitize her to the context so that she could ask relevant facilitation questions during the upcoming co-inquiry session.

Table 2.3. A sample self-report card from participant J31.

Self-Report Card Sections (Titles followed by guiding questions)	Participant's Reporting
1. The group's vibe *How do I perceive the general emotional atmosphere of the group recently?*	"Everyone is motivated, positive, and critical in a good way. Yet the energy levels are preventing inspiration somewhat."
2. The situation *What is recently happening in the group (activities, interactions, changes in the context)?*	"Recapping insights and summarizing [with a view] towards [forming] a question. Writing on the whiteboard while standing around with the team."
3. I feel … because … *How do I currently feel?* *I feel this way (most probably) because …*	"I'm quite content with the progress we are making because we have had much more inefficient sessions."

Note: Participants are referred by anonymized codes: initials + group number + session number.

Part 2: Creating Collective Group Mood Descriptions

After the actual group meeting, each team attended a co-inquiry session. The session was facilitated by the researcher who had been present during the meeting, and the participants were acknowledged as co-researchers. Before the session, the researcher collected the completed self-report cards and affixed each section inside a designated space on the facilitation template (Figure 2.3, a and b). The situation sections of the cards were first read aloud, helping participants remember the context of that phase of the meeting. Then everyone read the group vibe sections and discussed how they individually perceived the
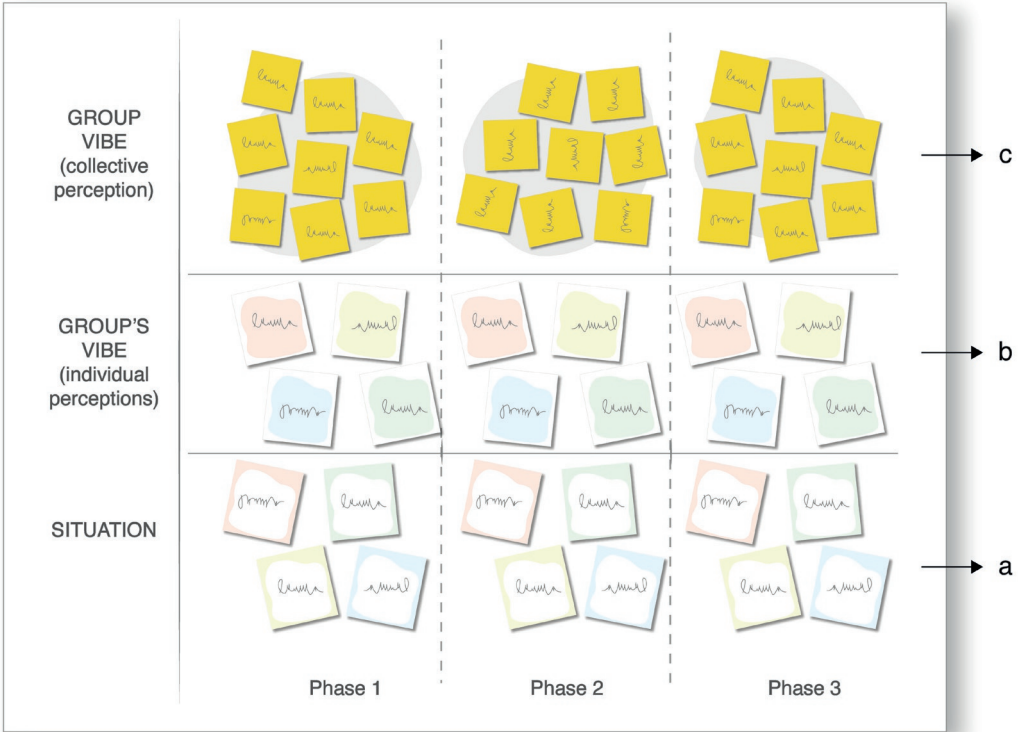
Figure 2.3. The co-inquiry template: the (a) individually reported situation, (b) individually reported group mood perceptions, and (c) collectively generated group mood descriptions on sticky notes affixed to the facilitation template. © 2022 Alev Sönmez.

group mood. The researcher guided the discussion towards identifying commonalities and distinctions in their experience by asking questions. Afterwards, group members together identified keywords to describe their group mood. The researcher wrote the collectively agreed-upon descriptive words on sticky notes (Figure 2.3, c). This process was repeated for each phase of the meeting in chronological order. After, the group reflected on their meeting overall and identified distinct group mood types within their collectively generated descriptions. The session was finalized with general remarks on the group moods identified.

2.3.4. Data Analysis

We used thematic analysis to identify and interpret patterns within the data. Thematic analysis is a common qualitative analysis method used to organize and describe qualitative data in rich detail (Braun & Clarke, 2006). Our thematization was essentially inductive — we based our themes primarily on the codes that emerged from the data without adhering to a pre-existing theory or model (Braun & Clarke, 2006). Overall, it was a reflexive, highly iterative, organic process (Braun & Clarke, 2020). Most steps were carried out by the first

author, while two peers were involved in the theme development and revision processes. This collaboration enabled the group to obtain intersubjective consensus on and verification of the findings (Miles & Huberman, 1994).

Our dataset consisted of anonymized transcripts of recordings of co-inquiry sessions (10 hours in total). The transcripts included participants' interpretations and descriptions of the group moods they had experienced, an explanation of their word choices, and discussions about which feelings truly constitute a group mood. The goal of the analysis was threefold: (1) to identify aspects and qualities of group mood, (2) to identify group mood types, and (3) to create comprehensive descriptions for each type.

Step 1: Defining Themes of Group Mood Qualities

Firstly, we deconstructed participants' group mood descriptions. We extracted quotes (data segment) that described a group mood and labelled each quote with one or more qualifier words mentioned within (semantic codes). Exceptionally, in 15% of all cases, the data segment described a feeling without mentioning a clear descriptive word. In such cases, we used existing codes and introduced six new words to label the data segment (latent codes). A total of 247 data segments were coded by 143 qualifier words. Through a series of iterations, these words were clustered into 36 subthemes, categories of similar qualifier words, which we labelled group mood qualities. We saw that these qualities describe different aspects of group mood. For example, the word hasty might describe how group members perform their duties, while calm could describe what the group members feel subjectively. Accordingly, we clustered the qualities into four themes, each representing an overarching descriptive aspect of group mood: (1) the feeling aspect, (2) the interpersonal aspect, (3) the workflow aspect, and (4) the motivational aspect. Table 2.4 is an excerpt of the complete thematization process: from quotes to a theme. The complete list of group mood qualities grouped under each of these four aspects is shown in Table 2.6.

We also encountered some factors influencing group mood during our analysis. These factors are grouped into four categories: (1) activity, (2) setting, (3) group life, and (4) individual state, and are reported as additional findings in the results section.

Table 2.4. The group mood quality "uncertain" (c) emerged from the clusters of coded (b) data segments (a), and it is grouped under the describing aspect "feeling" (d).

d. Theme: Describing Aspect [n: 4]	c. Subtheme: Group Mood Quality [n: 36]	b. Code: Qualifier Words [n: 143]	a. Data Segment: (Participant Descriptions) Text [n: 247]	Source
Feeling	1. Unclear	Unsure	"Maybe, in the beginning, we were not sure— 'Oh timeline … what should we do with the timeline?' But then it became more clear to us."	1-1
		Unclear*	"Maybe we were all just a little bit 'we don't really know what we are doing.'"	4-1
		Fuzzy	"I think it was a bit fuzzy. I do think we were all a bit fuzzy and a bit trying to make sense … Like I was almost there, but I couldn't grasp it."	3-2
		Lost	"At the beginning of this session, we are a bit getting into the rhythm and we are all a bit … a bit lost."	3-2
		Confused	"At the start, I felt we were calm, but we were a bit confused how to schedule, how to make it systematically happen for this analysis. A bit confused and struggling."	2-2
		Uncertain	"In the beginning, we all seemed a little bit worried: 'How *is* it going today?' Because. . . in the beginning, you *don't* know, you are not sure. You are uncertain."	1-1
		Doubtful	"For me, maybe I doubted a bit because I was like, 'Okay. It was just a suggestion.' I was not sure. how it would turn out. So, I was like, 'Okay, I hope it works now.'"	2-1

* Indicates a latent code.

Step 2: Identifying Group Mood Types

In this step, we created constellations of group mood qualities that identify a group mood type. Following a categorical approach, we asked ourselves, *"Which of these qualities in combination define a group mood type?"* A core criterion was the inclusion of at least one quality from each of the four aspects. At this stage, revisiting participants' group mood descriptions in the transcripts helped us create meaningful quality constellations. The results section provides details on the categorization process.

Step 3: Describing Group Mood Archetypes

In this step, we created descriptions portraying each group mood based on the feeling aspect, the interpersonal aspect, the workflow aspect, and the motivational aspect. The qualifier words in the constellations were the basis of our descriptions. We also included synonyms to bring richness and detail to the descriptions. At this stage, frequently revisiting the transcripts helped us create experience-oriented and recognizable descriptions. In addition to the text, we created illustrations of each group mood, as narrative visuals are useful for effectively communicating subjective experiences (Megehee & Woodside, 2010).

2.4. RESULTS

Our exploratory study looked into group mood experienced in real-life project groups. The objective of the study was to identify and describe distinct types of group moods in professional settings. In addition, we aimed to gain an understanding of identifying aspects and distinguishing qualities of group mood. Group members' collective descriptions of their recently experienced group moods provided us with rich ingredients for developing an initial typology. This result section first presents an overview of the eight group moods and the four aspects we used to define and describe them. After that, we report on our additional findings regarding group mood dynamics.

2.4.1. Overview of Eight Group Moods

This study identified eight group mood types: Chill Flow, Fiery, Fuzzy, Creative, Tense, Confrontational, Slack and Jolly[21]. Each group mood is a unique constellation of group mood qualities relating to four descriptive aspects. In order to apply to design research, each group mood is described with (a) a title and key words[22], (b) a colloquial expression, (c) a comical illustration representing the group mood during a moving day-themed group activity, and (d) a text describing the experience based on four aspects in a hypothetical group setting. Note that the eight group moods are described as archetypes: they represent extreme manifestations. In reality, these types can be experienced in milder forms or combinations. As an example, Figure 2.4 shows the descriptions of two group moods. The complete typology is available online in a booklet titled *Eight Group Vibes* (Sonmez et al., 2022b)[23].

Four Aspects for Identifying Group Mood Types

Participants reported that different types of group moods were associated with various qualities. The group mood was often described in the form of word combinations simultaneously referring to multiple aspects of the experience. For example, *"rushed but open-minded"* (I21) describes a fast-paced work style and a mindset of being open to new perspectives. Another example, *"determined to make it work, more serious, organized,*

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21   The initial overview included Safe Haven group mood type instead of Jolly. The manuscript's revision led to reevaluating the typology and replacing Safe Haven with Jolly. The main reason was its overlap with the interpersonal aspect captured by the Creative and Chill Flow group moods, rather than representing a distinct, multi-component group mood. Despite this modification, this thesis retains the use of Safe Haven because the materials in Chapters 3 and 4 were developed before the revised typology was published. Maintaining Safe Haven in the typology ensured the coherence and consistency of the thesis. Safe Haven was defined by the following qualities: chill, calm (feeling aspect); receptive, connected, supportive, encouraging, collaborative, friendly (interpersonal aspect); at ease (workflow aspect); process-oriented (motivational aspect).

22   These words are extracted from the descriptive text, and they correspond to the qualities identifying the group mood type. Some keywords are synonyms of these qualities.
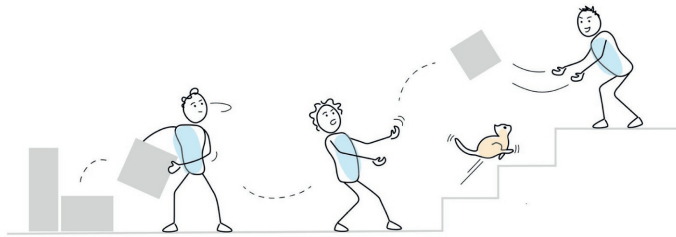
23   The booklet is available at https://doi.org/10.5281/zenodo.13332750.

FIERY

Ready to take on the world

CLEAR-MINDED, EAGER, ACTIVE, DIRECTIVE, TOGETHER, ENCOURAGING, HASTY, SMOOTH, VIGOROUS, SERIOUS

Feeling

The group members feel energetic, clear-minded and highly enthusiastic towards reaching the collective goal. With feelings of confidence in overcoming challenges, they are eager to act. They are optimistic and excited about future challenges and opportunities, and there is no room for negative thinking.

Interpersonal

The group members cooperate efficiently, and they tend to encourage each other by giving motivational speeches, recalling their past accomplishments or portraying future success. For the sake of efficiency, they may communicate in directive ways. It is crucial to act together. Their motto is 'We can do it!'

Workflow

The group members work in a serious and dedicated manner, using all the resources to the fullest. They face mishaps head-on without wasting time on hesitation or reflection. The hardships never discourage the group, rather stir up vigour.

Motivational

The group members are driven by the premise of success, glory and acknowledgement. No matter what it takes, they strive to achieve good results.

2

CREATIVE

Get the juices flowing

ENTHUSIASTIC, INSPIRED, FREE, OPEN-MINDED, RECEPTIVE, ENCOURAGING, EXPLORATIVE, LIGHT-HEARTED, PLAYFUL
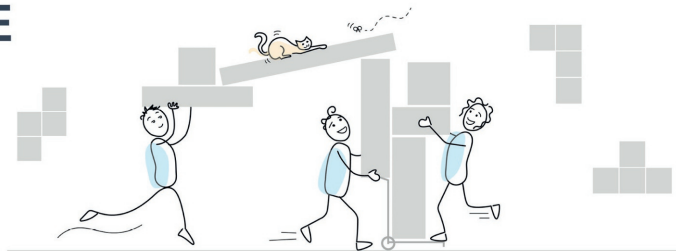
Feeling

The group members feel enthusiastic and ready to be inspired. They are physically active and mentally energised. They also feel comfortable and free to explore new ideas. Uncertainty is embraced and perceived as a liberating opportunity for discovering novel ideas. They tend to have a highly optimistic and exciting view of the future.

Interpersonal

The group members are friendly, open-minded and receptive. Everyone feels comfortable expressing their opinions transparently. They listen to each other attentively in a non-judgmental way. In a joint effort to create, they constructively build upon each other's ideas. Acting in unusual ways and proposing unrealistic ideas are tolerated and even encouraged.

Workflow

The group members work in an explorative and light-hearted manner. They are open to any new and interesting input, and their minds idle freely within the diverging alternatives. Feeling an urge to test ideas, they may perform quick experiments. There is room for humour and playfulness, which can serve as a source of inspiration.

Motivational

The group members want to go beyond the existing solutions and boundaries. The purpose here is not to find an ultimate solution, but rather to think alternatively.

4

Figure 2.4. The descriptions of "fiery" and "creative" group moods, extracted from the Eight Group Vibes booklet. © 2022 Alev Sönmez, Pieter Desmet, and Natalia Romero Herrera.

positive view on our project" (A42), refers to a serious and organized way of working and a determined and optimistic group feeling. Similarly, the description *"energetic; everyone is actively participating, positive, no bashing ideas"* (A42) refers to energy and active participation and open interpersonal interaction. Likewise, *"nice, friendly, hopeful, proactive ... still discovering, experimenting"* (I21) refers to a content feeling, an explorative working style and friendly interactions. These findings suggest that group mood is a complex, multifaceted experience that might be described on the basis of four main aspects: (1) the feeling aspect, (2) the interpersonal aspect, (3) the workflow aspect, and (4) the motivational aspect. Table 2.5 gives an overview of these four aspects, with a description and two example qualities mentioned in participant quotes. Table 2.6 shows the complete list of group mood qualities, grouped under four aspects.

Table 2.5. The four identifying aspects of group mood types with definitions, two example qualities and corresponding participant quotes.

Identifying Aspects	Example Group Mood Qualities	Example Participant Quotes
Feeling Aspect It describes how it subjectively feels to be in a group mood. This includes bodily and mental feelings.	Eager	We were eager to find an idea, eager to find something that was not there yet, at that time (4-2).
	Nervous	Since we had this thing in the afternoon [field study], we obviously felt a bit nervous (5-1).
Interpersonal Aspect It describes how group members relate to each other in a group mood. This includes how group members interact and respond to each other.	Open-minded	Everyone was super open to hearing what each other felt up to saying. Just a very relaxed and open mentality towards each other (3-2).
	Defensive	Everyone had a clear opinion and they were not always the same. People were obviously trying to defend their own opinions (3-1).
Workflow Aspect It describes how group members conduct the tasks and perceive the workflow in a group mood.	Smooth	It went rather smooth. It doesn't often happen that smooth, so easily without moving everything around in the process (3-1).
	Chaotic	I was a bit more chaotic than before, less structured and I felt easily distracted (4-2).
Motivational Aspect It describes what group members are mainly concerned about in a group mood. These are grouped under two overarching categories.	Goal-oriented	We don't want to waste time; we want to achieve something (1-1).
	Process-oriented	We want to make progress but just kind of "See where it goes," and that's fine (3-2).

Table 2. 6. The complete list of group mood qualities, grouped under four describing aspects

Describing Aspects	Group Mood Qualities (as categories of similar qualifier words)	
Feeling Aspect The qualities describe how it subjectively feels to be in a group mood. This includes bodily and mental feelings.	**The group members feel …**	
	1. Unclear	Unsure, unclear, fuzzy, lost, confused, uncertain, doubtful
	2. Clear-minded	Sharp-minded, productive, clear
	3. Frustrated	Frustrated, annoyed, irritated, negative, overwhelmed
	4. Stressed	Stressed, on edge, nervous, afraid, worried, panicked, pessimistic, tense
	5. Chill	Relaxed, chill, light, comfortable, content, safe, optimistic
	6. Reluctant	Unwilling to start or continue, demotivated, unmotivated
	7. Enthusiastic	Enthusiastic, excited, inspired, highly motivated
	8. Giggly	Giggly, jolly
	9. Eager	Eager, ready to act, determined, confident, prepared
	10. Active	Energetic, active
	11. Calm	Less active, serene, stable
	12. Drained	Down, tired, low energy, lethargic
Interpersonal Aspect The qualities describe how group members relate to each other in a group mood. This includes how group members interact and respond to each other.	**The group members respond to each other in a _____ way.**	
	13. Critical	Critical, skeptical
	14. Directive	Directive, controlling
	15. Confronting	Provocative, defensive or offensive, discouraging, judgmental
	16. Receptive	Broad-minded, accepting, positive, free, non-judgmental, open, inclusive
	17. Connected	Bonded, trusting, equal, honest, genuine, respectful
	18. Supportive	Supportive, caring, comforting, helpful, empathic, understanding
	19. Encouraging	Encouraging, uplifting, motivating
	20. Collaborative	Collaborative, interactive, cooperative, constructive
	21. Competitive	Competitive
	22. Friendly	Friendly, personal
	23. Reserved	Inwards, uncommunicative
Workflow Aspect The qualities describe how group members conduct the tasks and perceive the workflow in a group mood.	**The group members work in a _____ way.**	
	24. Cautious	Reflective, contemplative, cautious, careful
	25. At ease	At ease, light-hearted, carefree, slow
	26. Hasty	Hasty, impatient, rushed
	27. Smooth	Steady, smooth, fluent, moving forward
	28. Chaotic	Chaotic, messy
	29. Struggling	Struggling, challenging
	30. Vigorous	Dedicated, committed, proactive, intense
	31. Explorative	Explorative, experimental, open-minded, adventurous
	32. Playful	Playful, enjoyable, fun, joking
	33. Serious	Serious, focused (on the task), concentrated
	34. Distracted	Distracted
Motivational Aspect The qualities describe what group members are mainly concerned about in a group mood. These are grouped under two overarching categories.	**The group members are mainly concerned with…**	
	35. Process-oriented	Clarity, novelty, enjoyability, connection
	36. Goal-oriented	Goal achievement, task completion

The participants' descriptions show that these four aspects are interrelated, not mutually exclusive. For example, feeling nervous due to a deadline, one group worked hastily (3-1). A group with a goal-oriented mindset adopted a serious working style (e.g., 4-2). Similarly, multiple qualities of each aspect were often mentioned together to describe a group mood.

For example, two groups (1-1 and 3-1) reported an uncertain feeling accompanied by low energy. Another group (5-1) described their group mood as supportive and inclusive, both referring to the interpersonal aspect. This overlap suggests that certain group mood qualities accompany each other in a specific type of group mood. Although a single aspect can give an idea (e.g., smooth or tired group mood), a combination of aspects is necessary in order to render a holistic description of group mood. By creating meaningful combinations of qualities from each aspect, we developed eight types of group mood. As an example, Fiery and Creative are two distinct group mood types sharing four qualities: enthusiastic, active, encouraging, and collaborative. Table 2.7 shows eight group mood types and the linking qualities from each aspect.

Table 2. 7. The unique quality clusters from four aspects that identify each group mood

Group Mood Types	Group Mood Qualities			
	Feeling Aspect	Interpersonal Aspect	Workflow Aspect	Motivational Aspect
Chill Flow	(2) Clear-minded (5) Chill (11) Calm	(16) Receptive (18) Supportive (20) Collaborative	(25) At ease (27) Smooth (33) Serious	(35) Process-oriented
Fiery	(2) Clear-minded (7) Enthusiastic (9) Eager (10) Active	(14) Directive (17) Connected (19) Encouraging (20) Collaborative	(26) Hasty (27) Smooth (30) Vigorous (33) Serious	(36) Goal-oriented
Fuzzy	(1) Uncertain (11) Calm	(13) Critical (16) Receptive (20) Collaborative (23) Reserved	(24) Cautious (28) Chaotic (29) Struggling (33) Serious	(35) Process-oriented
Creative	(1) Uncertain (5) Chill (7) Enthusiastic (10) Active	(16) Receptive (19) Encouraging (20) Collaborative (22) Friendly	(25) At ease (28) Chaotic (31) Explorative (32) Playful	(35) Process-oriented
Tense	(3) Frustrated (4) Stressed (10) Active	(14) Directive (20) Collaborative	(26) Hasty (29) Struggling (30) Vigorous (33) Serious	(36) Goal-oriented
Confrontational	(1) Uncertain (3) Frustrated (9) Eager (10) Active	(13) Critical (14) Directive (15) Confronting (21) Competitive	(24) Cautious (28) Chaotic (29) Struggling (30) Vigorous (33) Serious	(35) Process-oriented
Slack	(3) Frustrated (6) Reluctant (12) Drained	(13) Critical (23) Reserved	(25) At ease (29) Struggling (34) Distracted	(36) Goal-oriented
Jolly	(5) Chill (6) Reluctant (8) Giggly (11) Calm	(16) Receptive (17) Connected (18) Supportive (19) Encouraging (22) Friendly	(25) At ease (32) Playful (34) Distracted	(35) Process-oriented

2.4.2. Preliminary Knowledge on Group Mood Dynamics

Changes in Type, Intensity, and Uniformity

Participants described group mood as a dynamic phenomenon rather than a static state. While describing group mood during the different phases of the meeting, participants frequently mentioned a change in group mood qualities. For example, in one meeting (4-1), the group mood shifted from giggly and playful to serious. This shift indicates that the qualities of group mood may be in constant flux during an activity. A dramatic change in qualities can yield a new group mood type. However, type was not the only fluctuating property. Participants also reported changes in the intensity and the homogeneity of the group mood.

Intensity refers to how strongly group mood is experienced during the meeting. None of the participants reported a no-vibe situation, but some participants reported having difficulty describing the group mood due to its low intensity. Three participants (M11, I22, K31) described their group mood as *"flat"* or *"neutral"* with no particular characteristics. Two participants (AL32, M11) mentioned that they were *"still getting into the rhythm,"* meaning that the group mood was not fully felt yet. *"Flat vibes"* were reported mainly at the beginning of group meetings or during non-interactional episodes in the context of individual tasks, for example. These results indicate that a group mood gradually emerges and that its intensity can increase or decrease during a meeting.

Uniformity refers to the extent a group mood is experienced similarly among the group members in a meeting. Most groups identified a uniform group mood, meaning all the group members described it with similar qualities. Nevertheless, divergent experiences were reported too. In one group (4-2), participants were divided in their descriptions of the group mood. Half of the group members reported experiencing an enthusiastic and energetic group mood, while the other half felt tired, distracted and reluctant to participate. The majority of another group (3-2) reported a chill and calm group mood, yet one group member described it as *"excited."* She was considered *"out of the vibe"* by the rest of the group. These differences indicate that the uniformity of group mood can fluctuate during a meeting. Multiple group moods can be experienced simultaneously in subgroups. When only a few members experience a different group mood, the majority's experience seems to define the group mood.

Situational Factors Influencing Group Mood

Participants mentioned various situational factors playing a role in their group mood dynamics. We grouped these factors into four categories: activity-related, setting-related, group life, and individual state. Table 2.8 gives an overview of these factors.

Table 2.8. The four categories of situational factors influencing group mood.

Factor Categories	Situational Factors
Activity-related factors	Task type, shared goals and expectations, sense of urgency, match between task and group size
Setting-related factors	Physical space, products, time, meeting type
Group life	Trust, shared interests, compatible personalities, matching backgrounds, good communication, team bond
Individual states	Individual mood, energy level, concentration level, engagement level

Activity-related factors: Participants usually reported fluctuations in the group mood around the time the task had changed. They also mentioned the type of task, shared goals and expectations, sense of urgency, and match between task and group size as activity-related factors. Some participants described the group moods through task qualities — one participant used the words *"convergent"* and *"divergent"* to compare the group moods in a planning task and a brainstorming task (3-1), for example. These findings suggest that certain types of group moods may be associated or even expected when it comes to certain types of activities.

Setting-related factors: It seems that products and the spatial features of a room can also contribute to certain group moods by affording or limiting certain interactions. For example, being physically distant from the whiteboard — the center of the clustering activity — caused some participants to feel *"out of the vibe"* (3-1). In another case, a presentation screen contributed to a serious group mood by commanding the group's attention (3-1). The meeting type, attendee roles, and time may determine the expected group mood, such as a confrontational group mood in a coach meeting (5-1) or a slack group mood on a Monday morning (1-1).

Group life: Many groups mentioned having a standard, frequently experienced group mood — a base vibe. The participants reported previous meeting experiences and general group dynamics to play a role in forming the base vibe. Trust among the members, common interests, compatible personalities, related professional backgrounds, and team bond were associated with positive base vibes (4-2, 2-1). Depending on other situational factors, the group mood can deviate from the base vibe during a specific meeting. For example, one group with a friendly and inclusive base vibe experienced a hasty and tense group mood when working to meet a deadline (3-2).

Individual states: Based on participants' reporting, we can infer that in a group mood, individuals feel synchronized with each other's individual states in terms of elements such as personal mood, energy, concentration, and engagement level. One group (4-2) with a fiery group mood touched upon the synchrony in their energy and engagement levels: *"Everyone*

is energetic, everyone is actively and equally participating." Accordingly, asynchrony can lead to divergent or low-intensity group moods. For instance, a participant who perceived the group mood differently than others was regarded as *"being out of the vibe"* by the rest of the group. Her disparate perception of group mood was attributed to her distinct mood state: *"She was very eager, but we were distracted"* (T42).

2.5. DISCUSSION

Group mood is a complex and pervasive interpersonal experience, one we can all sense. Nevertheless, it is challenging to describe and therefore also challenging to manage or regulate. We have proposed that the first step in designing for beneficial group mood experiences is to develop an understanding of distinct group mood types. This article introduces a preliminary typology of eight group moods: Chill Flow, Creative, Fiery, Jolly, Fuzzy, Tense, Confrontational, and Slack. The descriptions include multimodal representations in order to provide a comprehensive overview comprising text, key words, colloquial phrases and illustrations. This initial typology provides designers with an experience-oriented and granular understanding of group mood.

There are various ways to organize complex subjective phenomena (Russell, 2003). We adopted a categorical approach to operationalize group mood in the field of design. Meaningful clusters of group mood qualities gave rise to these eight group moods. Following a componential approach, we define each group mood through four aspects that emerged from our data; the feeling aspect, the interpersonal aspect, the workflow aspect, and the motivational aspect. Like individual moods and emotions, none of these aspects in isolation is sufficient to distinguish a group mood[24], but together they describe a holistic group mood experience.

Compared to dimensional models distinguishing group mood only in terms of valence or arousal, our typology provides a more nuanced and experience-oriented description. For example, the fiery and creative moods both correspond to the high-energy, positive domain in the circumplex model of affect (Larsen & Diener, 1992). They do indeed share certain qualities: a feeling of enthusiasm and activeness. However, the workflow and motivational aspects are experienced differently. In a fiery group mood, the group is goal-oriented and works seriously, vigorously, and perhaps even hastily. On the other hand, in a creative group mood, people are concerned with finding a novel idea, and they work in an explorative and playful manner. This means that it is not enough to stimulate action and enthusiasm to facilitate a creative group mood — it is also necessary to enable an explorative working style

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24   For a componential approach on emotion see Scherer (1984).

2

and a novelty-oriented mindset. For a designer, this objective provides a tangible starting point to effectively design an intervention to induce a creative group mood. Accordingly, we suggest that this typology of eight group moods can be a valuable knowledge source for the design field.

We posit this overview of eight group moods as useful for design practice and research in various ways. With the growing popularity of experience-driven design approaches, designers are required to understand, envision, and communicate nuanced human experiences (Lu & Roto, 2014). This typology provides fine-grained language to help designers discern and communicate nuanced group mood experiences.

By understanding how distinct group moods are experienced, designers might be better equipped to identify existing and potential group mood types, and thus take more conscious design decisions. A particular group mood can serve as an inspirational starting point or a complementary desired effect. In addition, this typology can potentially support designer creativity. A granular understanding of group mood can enhance designers' sense of emotional granularity, which has been found to facilitate creativity in the design process (Yoon et al., 2016b).

The typology might also be useful in design research. Although the only way to identify and understand subjective experience is to ask people, not everyone has the vocabulary to describe their experiences accurately (Barrett, 2004). In daily life, many people are unable to articulate their experiences of group mood beyond general terms such as "good" or "bad," or vaguely, as having "cool vibes" for example. One of our participants explicitly pointed out how difficult it can be to find words to describe a group mood. *"What adjectives are you looking for? Cause I don't know how to describe a vibe"* (P31). In light of that struggle, this typology could help research participants express their existing and desired group mood experiences more explicitly. Additionally, the eight group moods could facilitate a constructive dialogue about group mood-related performance issues in the context of teamwork.

Like any other typology, the eight group mood types have some limitations. We evaluate its strengths and weaknesses based on the three criteria suggested by Desmet et al. (2021) for evaluating emotion typologies[25]. The first criterion is comprehensiveness with regard to focus and inclusion. Our typology has a clear focus by distinguishing group mood from group affect and group emotion. We do not claim that our types cover the entire group mood space, however. First, our sample was limited to four design teams and a management team within our department. Additional group mood types may be discovered in other

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25   The authors note that the criteria apply to typologies in general.

professional settings with a larger sample size. Second, there may be other unpleasant group moods to be discovered. The social validation principle (Cialdini, 2001) might have caused the teams to report favorable group moods, and voluntary participation may have filtered out groups with problematic group dynamics, decreasing our chances of collecting negative group mood descriptions.

The second criterion for evaluating positive emotion typologies is distinction: the degree to which qualities are consistently clustered. Despite shared qualities, each type is a unique constellation with four aspects; therefore, we consider each distinct as a whole.

The third criterion is granularity: the level of specificity and nuance. We are confident regarding within-cluster homogeneity. Our types are equally complex because each consists of at least one quality in each aspect. Nevertheless, between-cluster heterogeneity can be improved by testing the distinctiveness of the clusters. As a result, we do not consider the eight group moods as a final typology; rather, they are an initial contribution to a growing repertoire of group moods. It is important to note that, in science, a typology is considered adequate if it clarifies a complex phenomenon in a given domain (Desmet et al., 2021). Therefore, despite its limitations, these eight group moods may very well be a valuable step toward operationalizing group mood in the field of design.

Alongside our inquiry into group mood types, several additional insights emerged. Figure 2.5 shows how these additional findings relate to the main study outcome. First, we learned that in addition to type, there are two additional properties to describe group mood dynamics: intensity and uniformity. Uniformity, in particular, can provide an entry point for designers. We postulate that in a fully uniform group mood, members are synchronized in all four aspects: the feeling aspect, the interpersonal aspect, the workflow aspect, and the motivational aspect. A design intervention facilitating synchrony or asynchrony in these aspects might be the key to setting or avoiding particular group moods. Second, we identified four initial categories of situational factors that influence group mood dynamics[26]. These categories may provide a holistic picture for designers to experiment with group-mood-influencing design interventions. The setting-related factors are especially interesting, as they point to how designed artifacts can have an effect on group mood. Our results show that ordinary office products can be enablers or barriers to certain group moods by supporting or preventing certain interactions. Therefore, investigating the role of artifacts in group mood can provide designers with practical design guidelines, such as recommendations for designing a product that will be used in the context of creative

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[26]   Our findings resonate with some variables proposed by the organizational sciences. For example, our concept of base vibe relates to *emotional history*, and our activity-related factors relate *to task interdependence* (Kelly & Barsade, 2001).
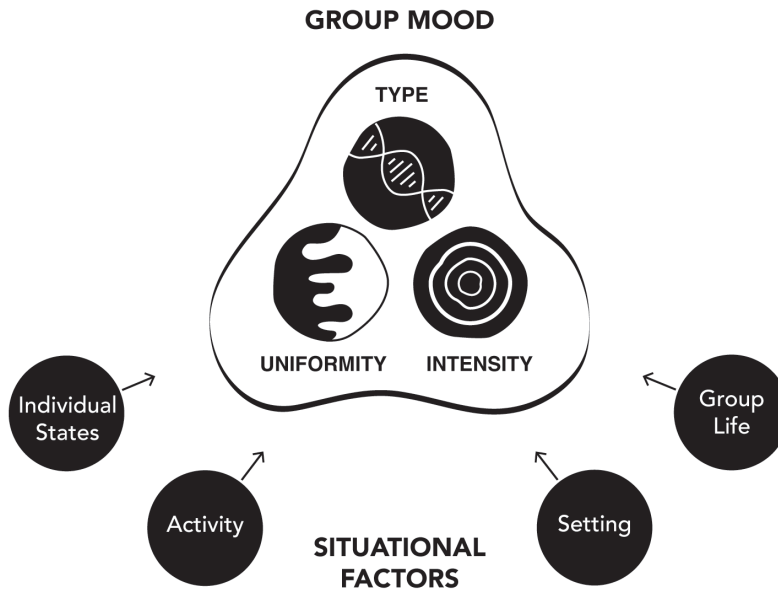
Figure 2.5. The four categories of factors form the situation in which a group mood emerges. At the center are the three properties of the group mood, one of which is the type identified by the quality clusters in this study. Image © 2022 Alev Sönmez.

group mood. Importantly, these factors should not be considered as separate variables, but rather as external forces that together form an interaction space in which a group mood emerges (Figure 2.5).

2.6. CONCLUSION

The exploratory study we report on here uncovered the multifaced, complex, and dynamic nature of group mood experienced in real-life group work settings. Our findings contribute to design knowledge in three ways: the descriptions of eight group mood types provide designers with an experience- oriented and granular understanding of group mood; the properties and situational factors of the group vibe open entry points for designers who want to change, maintain, or stimulate a group mood; and the typology expands mood-focused design knowledge and the repertoire of design-related typologies of human experience to a collective context. Thus, this overview of eight group moods is an initial step toward a growing descriptive group mood typology. We envisioned this typology as an effective first step in developing a systematic approach to design for group moods.

PART B

_____

Embodying Group Mood

In Part B, we explore two ways to communicate the eight group moods through embodiment. Chapter 3 presents the generative process of developing the *Vibe Image Set*, a set of illustrations that represent the group moods through various group poses inspired by the art form of *tableau vivant*. Furthermore, this chapter examines what group mood qualities these images communicate to viewers. Chapter 4 presents the artistic process of creating the *Vibe Video Set*, a set of dance videos that represent group moods though bodily movement. Similar to Chapter 3, it explores what these videos communicate to the viewers. Additionally, it discusses how the video set and image set compare in terms similarity of expression and performance.

3

POSING THE VIBE

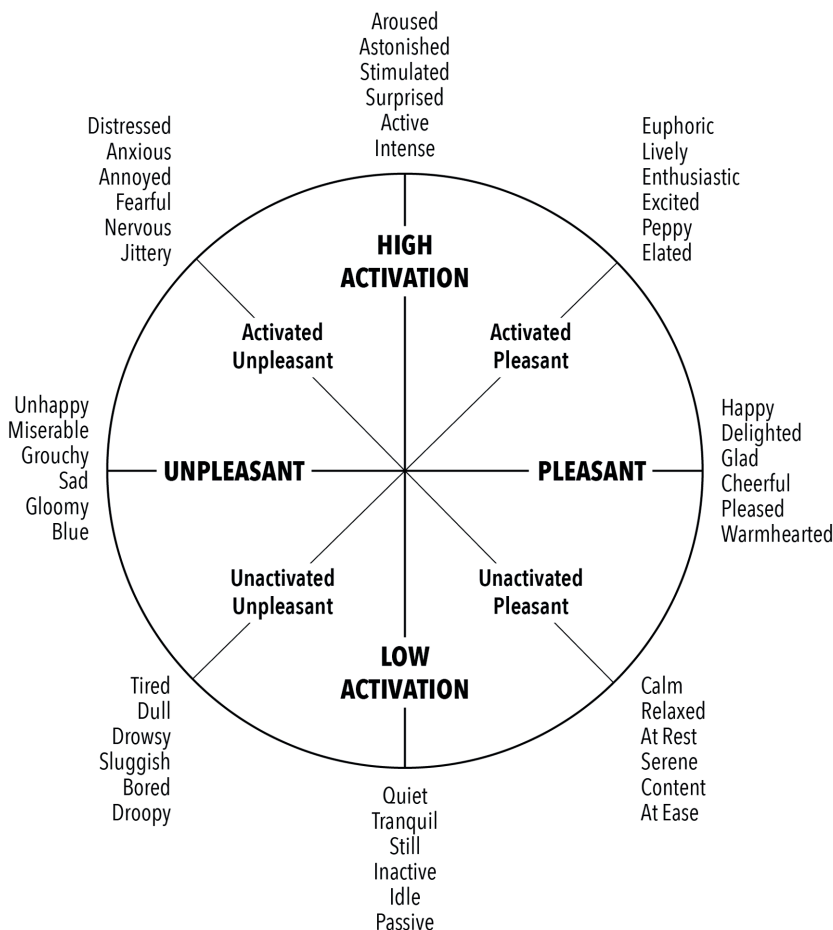Exploring, developing, and testing eight images
expressing group moods

3.1. INTRODUCTION

Group mood has a pervasive impact on the performance and well-being of work groups (see reviews by Barsade & Knight, 2015; and by Peñalver at al., 2020). It can therefore be worthwhile to stimulate 'good office vibes'; group moods that support performance and well-being at work. However, when it comes to supporting group mood management, there is no universal prescription for a good office vibe. A group mood beneficial for one work activity can be detrimental to another. Moreover, what is considered a good vibe can differ between groups, professions, organizations, and cultures, which means that generic attempts at group mood management may not always cater to the situated needs of groups. An opportunity is to enable groups to manage their own group mood in relation to their specific contexts. This starts with building a shared understanding of their current and desired group moods by reflecting on, evaluating, and discussing group-specific issues. Recognizing nuanced group moods is the key to this process. To support granular understanding of group mood among groups, we developed the first descriptive overview of eight group moods (see Chapter 2; Sönmez, et al., 2022a). The next step is to develop materials to communicate these descriptions.

Verbal descriptions and images are two common ways to communicate nuanced subjective experiences. In psychology, verbal labels are commonly used to distinguish affect categories in self-report assessment tools (for a review, see Desmet et al., 2016). The eight-category self-report circumplex model of mood (Larsen & Diener, 1992, see Figure 3.1) has been applied to group mood in the past in order to develop an instrument that allows observers to assess mood in work groups (Bartel & Saavedra, 2002). Verbal labels can be practical for distribution (e.g., a wordlist, a survey) and data analysis (e.g., coding), but they may also inhibit comprehensive understanding, as the information delivered is limited to the generic meaning of a set of words.

Images can contribute to understanding of group mood because they provide an emotionally rich, holistic, and intuitive way to make sense of experiences (Megehee & Woodside, 2010). In particular, visuals with nonverbal cues and embodied metaphors are effective for making sense of abstract concepts (Zaltman, 1997). There are numerous self-report assessment tools that use images depicting facial expressions, with examples reviewed by Desmet et al. (2016) including pictograms (e.g., SAM; Lang,1980), emoticons (e.g., Russkman; Sánchez et al., 2006), and cartoon characters (e.g., LEM; Huisman &Van Hout, 2010 and PrEmo2; Laurans & Desmet, 2012). Experience typologies in the design field often combine visuals with verbal labels, definitions, or descriptions, e.g., visuals of expressive manifestations of 25 positive emotion states (Yoon et al., 2015), comic strips depicting 36 negative emotions

3

Aroused
Astonished
Stimulated
Surprised
Active
Intense

Distressed
Anxious
Annoyed
Fearful
Nervous
Jittery

Euphoric
Lively
Enthusiastic
Excited
Peppy
Elated

HIGH ACTIVATION

Activated Unpleasant

Activated Pleasant

Unhappy
Miserable
Grouchy
Sad
Gloomy
Blue

UNPLEASANT

PLEASANT

Happy
Delighted
Glad
Cheerful
Pleased
Warmhearted

Unactivated Unpleasant

Unactivated Pleasant

LOW ACTIVATION

Tired
Dull
Drowsy
Sluggish
Bored
Droopy

Calm
Relaxed
At Rest
Serene
Content
At Ease

Quiet
Tranquil
Still
Inactive
Idle
Passive

Figure 3.1. Verbal labels used as descriptors of affect categories in self-report circumplex model of mood based on Larsen and Diener (1992).

(Fokkinga & Desmet, 2022), and image collections representing 20 mood states (Desmet et al., 2020). Stylistic differences aside (e.g., line art, comic, photo), these typologies all visualize particular experiences through embodied representations, particularly facial and bodily expressions. Seeing this as an opportunity, we decided to explore embodied ways to communicate eight group moods.

This chapter presents the first outcome of this inquiry: the Vibe Image Set. First, we describe the generative process of developing eight vibe-expressing images. Next, we report an evaluation study. Lastly, informed by the results, we discuss implications and potential applications of the image set.
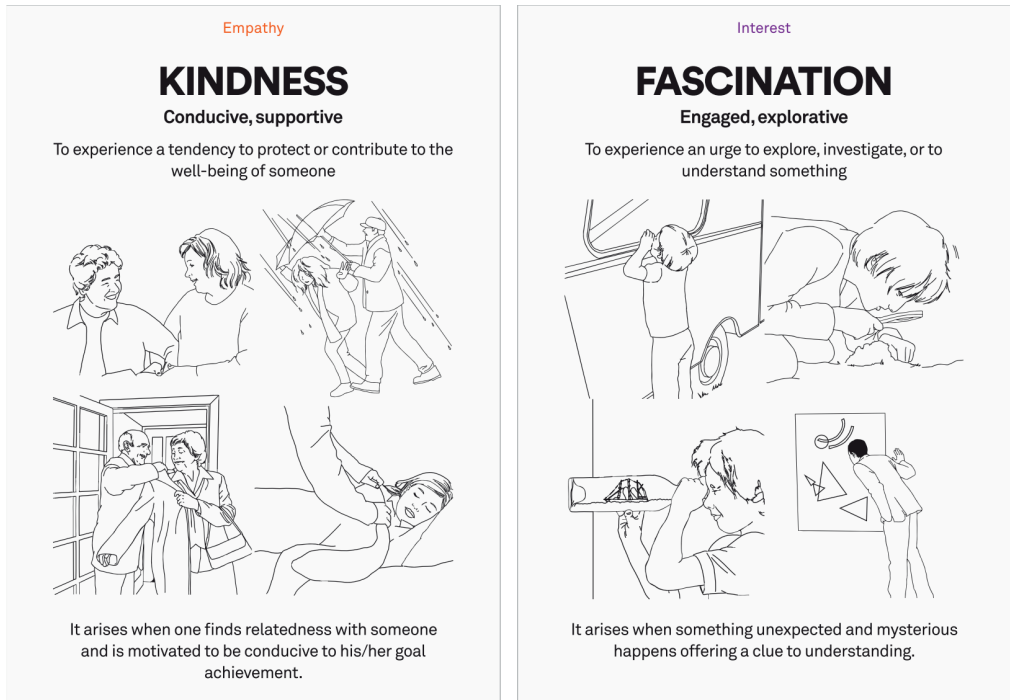
3.2. DEVELOPMENT OF THE VIBE IMAGE SET

Our goal was to create a set of embodied representations that convey eight group moods in a holistic, distinctive, and relatable way. By 'holistic', we mean expressing multiple aspects (feeling, interpersonal, work style) of group mood experiences as a whole. 'Distinctive' refers to expressing identifiable characteristics of each of the eight group moods. 'Relatable' means conveying group moods in a way that the experience can be recognized by a wide range of viewers.

While previous typologies provide good starting points for embodying subjective feelings, they are limited to experiences at the individual level. This means that we needed to find an appropriate means to visualize the interpersonal aspects of distinct group moods. This section presents our vision for embodying group moods based on two common approaches for physicalizing subjective experiences.

Illustrations of prototypical expressions are commonly used to represent human experience. PrEmo2 characters, for example, depict facial and waist-up bodily expressions prototypical of 14 emotions (Figure 3.2; Laurans & Desmet, 2012). Similarly, the PEG cards show four behavioral expressions prototypical of each of 25 positive emotions (Figure 3.3; Yoon et al., 2015). While such expressions can effectively communicate distinct emotions, they may be insufficient to embody nuanced group moods. In contrast to emotions, moods have a more subtle effect on the behavior of individuals. Even though Bartel and Saavedra (2002) have identified several facial, vocal, and behavioral clues that can help observers distinguish ongoing group moods in pleasant-unpleasant and active-inactive dimensions (e.g., rapid vocal pace, hearty laughter, and frequent smiling are observable clues for a pleasant-active group mood), these clues on their own are too generic to represent a holistic experience of group mood. In other words, group mood is not only expressed in the facial and bodily expressions of individuals, but also in interpersonal interactions. Hence, our images should also encapsulate interactions between people.
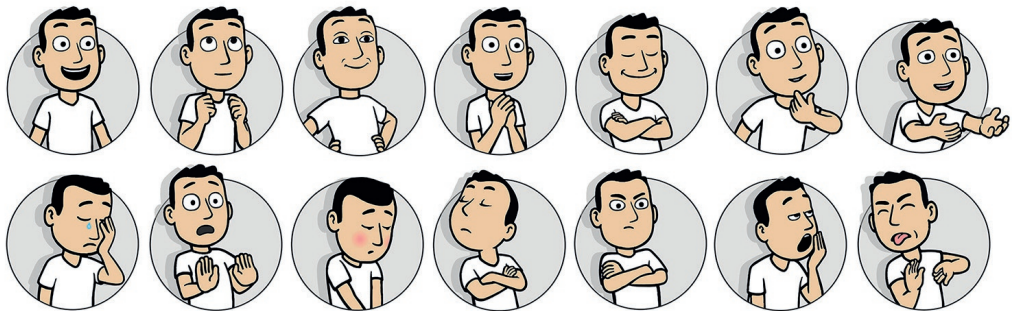
Figure 3.2. Stills of 14 animated characters of PrEmo 2 (Laurans, & Desmet, 2017), an updated version of PrEmo1 (Desmet, 2002).

Empathy	Interest
KINDNESS	**FASCINATION**
Conducive, supportive	Engaged, explorative
To experience a tendency to protect or contribute to the well-being of someone	To experience an urge to explore, investigate, or to understand something
It arises when one finds relatedness with someone and is motivated to be conducive to his/her goal achievement.	It arises when something unexpected and mysterious happens offering a clue to understanding.

Figure 3.3. Two PEG cards representing emotions of kindness and fascination that combine verbal labels, definitions, visuals of behavioral expressions, and eliciting conditions (Yoon et al., 2015).

Another type of representation is a curated set of photos that show the experience in a context. In such images, the type of activity can be used as a metaphor or cue to convey nuances. For example, the image set representing a relaxing mood shows people swimming, resting, and engaging in mindfulness (Figure 3.4; Desmet et al., 2020). As we cannot rely merely on facial expressions to communicate moods, including such contextual details can help people recognize the experience. The downside of showing group mood in a context, however, is that it may narrow one's interpretation to the given activity or situation. How a certain group mood manifests in real-life situations can vary depending on the context. For example, a photo of a team shuffling sticky notes on a canvas can align with the Creative vibe of a student group, while the same Creative vibe might manifest itself differently in an executive team. One way to broadly communicate the commonalities of such interactions is the use of embodied metaphors. According to Zaltman (1997), metaphors tied to bodily systems (e.g., movement and orientation) are essential for our understanding and expression of abstract thought (e.g., feeling *down* reflects a negative mood). Such metaphors are commonly used in artistic images, which are particularly potent at providing a multi-layered, memorable, and empathetic understanding of human experiences (Holm et al., 2018). Accordingly, we decided to develop context-free, artistic images that would resonate with a wide range of groups.

17. RELAXED

FEELING

You feel content, laid-back and mellow. Your mind is occupied with simple things. Your body feels comfortable and somewhat lazy.

PERCEPTION

The world seems a simple and sympathetic place. You feel the sun on your face and a breeze through your hair. There may be challenges in the future but, right now, you are carefree.

REACTION

You react to people and things patiently and with a smile. You are unconstrained, open-minded, and take time to formulate your responses. When you are faced with challenges or complex matters, you may react reluctantly.

TENDENCY

You tend to sit or lie back. Your eyes are closed or half-closed. If possible, you put your feet up. If you move, it is slowly and steadily. You tend to be idle and oblivious to time.

LIKING

You feel like doing activities that are calm, pleasant and familiar, like talking, reading or watching something. If the activity is physical, you prefer something small and simple, like stone skimming across calm waters. You want to enjoy the moment and take time for things.

DISLIKING

You do not feel like doing anything that is demanding or exciting. You are not motivated to get going or to change activities. You do not want to exert yourself mentally or physically.

EXAMPLE

Yesterday, Lily completed a two-week intensive project, for which she had worked for 10 hours every day. She delivered the results on Friday afternoon. Today is a cold but very sunny Saturday. She is enjoying the moment just on her own at home, sitting next to her south-facing French windows for a winter sunbathe.

Figure 3.4. Representation of a relaxed mood that combines verbal label, descriptions and four illustrative images (Desmet et al., 2020, p.17).

Inspired by the development process of PrEmo1 characters (Desmet, 2002) and the EmotionPrism videos (Yoon et al., 2017), we collaborated with actors to benefit from their expertise in human expression and bodily creativity. We used *tableaux vivants* as an inspirational art form to guide the artistic process. Meaning "living pictures" in French, *tableaux vivants* consist of a static scene created by silent, carefully posed actors (see Figure 3.5-7). They can represent a historical event, a theme or an abstract idea (e.g., peace and joy) (Ontario Ministry of Education, 2009, p.172). *Tableaux vivants* can contribute to our goal for multiple reasons. First, they are performed by a group of people and can accommodate various levels of abstraction, thus supporting relatable expressions. Second, they depict full-body expressions, which can more accurately communicate affective information than facial and verbal expressions (Fink et al., 2021). Third, *tableaux vivants* have predefined aesthetic elements: facial expressions, gestures, levels, depth, focal point, proximity, implied motion, overall shape of composition, and fixed, static poses (Anderson & Beard, 2017). These elements can serve as building blocks for actors. Shaping these elements differently in each pose can enable distinctive representations, while combination of them in one pose contributes to a holistic representations. Besides, considering these elements can help actors compile aesthetically pleasing compositions capable of engaging viewers. Lastly, frozen scenes are particularly practical outcomes, as they can be directly translated to still images.

Figure 3.5. Tableau vivant (living picture), Dutch East Indies, circa 1898. Photograph courtesy of Wereldmuseum Amsterdam, part of the National Museum of World Cultures. Licensed under CC BY-SA 3.0. Source: Wikipedia Commons.

Figure 3.6. A tableau vivant performed at a hotel in New York City in 1912, for a benefit for the Stage Women's War Relief. Photograph from the Bain News Service. Source: Library of Congress, Bain Collection.

Figure 3.7. A tableau vivant of the painting 'Regents of the Leproos-, Pest, and Dolhuis in Haarlem' by Jan de Brey (1667). It was staged by photo artist Irene Andessner in Vienna's Kunsthistorisches Museum (KHM) in 2010. Source: Alarmy images.

In order to develop images that can be considered *distinctive, holistic and relatable*, we took the following decisions:

Distinctive: Each image represents one group mood through a unique group pose consisting of at least three people. The style and background are consistent across images to facilitate comparison between group moods.

Holistic: The images represent the experience through multiple elements common of *tableaux vivants*, including facial and bodily expressions, the overall shape of the pose, and the proximity of and interaction between actors.

Relatable: The images strike a balance between abstract and figurative. Minimizing irrelevant information (abstraction) is known to have a beneficial effect on recognizing characteristics (Benson & Perrett, 1991). Images are line drawings and reflect interaction through the inclusion of symbolic elements. Actors are drawn with simple, gender-neutral clothing. No hierarchical roles are emphasized.

The following sections describe the development process in three generative steps: (1) creating group poses to express eight group moods, (2) evaluating and selecting the most representative poses, (3) recreating and illustrating the poses.

3.2.1. Step 1: Pose Workshop with actors

The goal of this step was to create a series of photos of group poses expressing eight group moods. We developed a co-creation workshop with a group of actors to translate our descriptions into bodily expressions.

Participants

A group of four amateur and semi-professional actors with mixed levels of acting experience participated in the workshop. They knew each other from a local student theatre group and their engineering studies. The group volunteered to participate in the workshop to practice their acting skills. Each actor received a €20 gift voucher for their time. Table 3.1 shows details of the participant group.

Table 3.1. Actors that participated in the pose creation workshop

Actor	Gender	Age	Profession	Years of acting experience
A	Female	24	Master's Student (Design engineering)	0.5
M	Male	24	Master's Student (Design engineering)	13
J	Female	24	Master's Student (Design engineering)	10
F	Female	23	Bachelor's student (Civil engineering)	4

Workshop procedure

We held an 8-hour co-creation workshop in a 50 sqm dance studio. All actors wore black, comfortable clothes and were given a box of props (balls, cloths, sticks etc) to facilitate the creative process. Video and audio recordings were made of the workshop. The procedure consisted of five steps:

1. Preparation: Before the day of the workshop, actors read the descriptions of eight group moods in the Eight Vibes (Sonmez et al., 2022b). [27] On the day of the workshop, the researcher explained the purpose, schedule and the expected outcome of the workshop. The *tableau vivant* and the nine essential elements were briefly demonstrated in a training video.[28]

2. Warming up: One of the participants led a warm-up exercise, after which the group was asked to come up with an initial group pose for each group mood in just 30 seconds. For each group mood, actors entered the scene one by one, improvising and building on the poses of those who came before. This quick and intuitive exercise helped the group to discover their initial bodily associations with each group mood.

3. Exploring and creating a pose: In this step, each group mood was translated into bodily gestures and movement using a technique known as bodystorming.[29] The group was given 30 minutes to create each bodily constellation. First, the researcher read out the description

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[27] This was the first edition of the booklet, in which *Safe Haven* was still one of the group moods. In the second edition, *Safe Haven* was replaced by the *Jolly* group mood.

[28] Retrieved from http://www.artcorelearning.org/tableaux-vivants-training. The video demonstrates the preparation steps suggested in Anderson and Beard (2017).

[29] Bodystorming originally entails enacting of people's everyday performances (Burns, 1995) and is often described as 'brainstorming' with the body. In design processes, it is used as an experience prototyping technique, where designers represent product experiences to empathize with users (Buchenau & Suri, 2000). In this workshop, bodystorming was used to arrive at a pure representation of group mood experience, extending beyond everyday expressions to include artistic and symbolic bodily representations.

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of a group mood out loud and provided clarification where necessary, before withdrawing and becoming a mere observer. Next, without any prior discussion, actors started exploring the group mood with their bodies. The actors took turns playing the director, who was tasked with leading the exploration phase and directing the final pose by paying attention to the elements of tableau vivant (Figure 3.8). Actors were free to apply any technique, tactic, and prop in the embodiment phase, such as playing music that they associated with a group mood, which likely helped them get in the group mood in question.

Figure 3.8. Directors (highlighted) leading the embodiment of the Creative (left), and Confrontational group mood (right).

Figure 3.9. Two pose concepts (rows) and their two variants for the Fuzzy group mood.

4. Capturing the pose: In most cases, the exploration phase resulted in several pose concepts. The researcher photographed each finished group pose and its variants (see Figure 3.9 for an example).

5. Selection and reflection: At the end of the workshop, the actors selected one favourite pose for each group mood together based on two criteria: (1) clarity in representing the group mood as a whole and (2) the aesthetic value (considering the elements of tableau vivant).

Pose Workshop Outcome
In total, 43 pose concepts and 159 poses were created, including the initial poses generated in the warm-up step (Table 3.2). Figure 3.10 shows the set of eight poses selected by the actors.

3.2.2. Step 2: Selection workshop with fellow researchers
The goal of this step was to select the poses that best represent each of the eight group moods. This was done in a group discussion with researchers, in which the pose photos generated in Step 1 served as input.

Participants
The participants (Table 3.3) were the main researcher and two fellow researchers who were familiar with the project, work in the field of experience design and had expertise in design for mood regulation.

Table 3.2. Number of photos taken (poses) per pose concept and group mood type

Group mood	Pose concept	Photos taken (n)	Group mood	Pose concept	Photos taken (n)
Chill Flow	CF0	1	**Confrontational**	CO0	1
	CF1	2		CO1	9
	CF2*	2		CO2	3
	CF3	2		CO3	3
	CF4	3		CO4*	3
	Total	**10**		Total	**19**
Fuzzy	FU0	1	**Creative**	CR0	1
	FU1	2		CR1	3
	FU2	3		CR2	6
	FU3	4		CR3	4
	FU4	7		CR4	3
	FU5	6		CR5	8
	FU6	6		CR6	6
	FU7*	18		CR7*	5
	Total	**47**		Total	**36**
Tense	TE0	1	**Slack**	SL0	1
	TE1	3		SL1*	4
	TE2*	5		SL2	2
	TE3	2		SL3	2
	Total	**11**		Total	**9**
Safe Haven	SH0	1	**Fiery**	FI0	1
	SH1	3		FI1	3
	SH2	2		FI2*	2
	SH3	4			
	SH4	1			
	SH5*	10			
	Total	**21**		Total	**6**

* Indicates participants' picks.

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Figure 3.10. Set of eight poses selected by the actors. From top to bottom, left column: Chill Flow, Confrontational, Tense, Slack; right column: Fuzzy, Creative; Safe Haven, Fiery.

Table 3.3. Workshop participants

Researcher	Gender	Age	Role	Experience
AS	Female	31	Main researcher (the PhD candidate)	3 years
PE	Female	29	Fellow researcher (fellow PhD candidate in experience design)	3 years
PD	Male	49	Fellow researcher (professor of experience design and the supervisor of the project)	25 years

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Procedure

1. Filtering: All pose photos were printed on A4. Duplicate poses or highly similar poses were filtered out. In total, 41 photos were eliminated: Chill flow (6), Slack (5), Confrontational (3), Fuzzy (8), Creative (6), Safe Haven (9), Fiery (4). The remaining 118 photos were laid out on a large table in clusters of pose concepts within group mood types.

2. Voting: Participants first read the description of a group mood before individually reviewing clusters and selecting the three most representative photos. The poses picked by the actors (Figure 3.10) received an additional vote.

3. Discussing and deciding: Each researcher explained their selections. Next, consensus was achieved by discussing the strong and weak elements of the selections. In a few cases, the researchers explored alternative pose ideas by practicing embodiment.

Selection Workshop Outcome

The researchers concluded that selected poses could be optimized by enhancing a main pose with several pose elements extracted from different photos (See Appendix A1 for the selections). They also agreed that adding a fourth actor could enrich the expression of interpersonal dynamics in all poses. For each group mood, a main pose, supplementary poses, and revision points were documented on a Miro Board.

For Slack, Fiery, Safe Haven and Tense, the selection of the most representative pose was straightforward, requiring only minor tweaks. For **Slack**, we decided to add a standing figure extracted from another pose (Figure 3.11) in order to enrich the composition by showing a more upright manifestation of sluggishness. For **Fiery**, we agreed vigour should be expressed more strongly, and decided to integrate two separate figures from another image. For **Safe Haven,** we chose to add a fourth figure. Finally, for **Tense,** we decided to remove one of the figures to eliminate her confrontational expression, and to add a new pose instead. Moreover, we agreed to rearrange all figures to face outwards as if facing external threats.

Figure 3.11. Slack: a supplementary figure (right) to be integrated to the base pose (left).

For Chill Flow, Confrontational and Fuzzy, the selected base poses required more adjustments. For **Chill Flow**, we decided to improve facial and bodily expressions to amplify synchrony, balance, and ease, and to add a new figure posing in the continuum of the motion suggested by the original pose. For **Confrontational,** we decided to add figures to communicate various levels of confrontation ranging from passive irritation to active hostility (Figure 3.12). We also agreed to rearrange eye contact between figures to express confrontation directed at multiple separate individuals. For **Fuzzy**, we chose to enrich the composition by incorporating two figures in a standing and squatting pose, each facing different directions and expressing diverse manifestations of fuzziness (contemplation, indecisiveness, searching, and frustration).

For **Creative** we decided to create a new pose from scratch because none of the generated poses were found to be sufficiently relatable. The new pose would reflect a group connected through imagination, absurdity, and playfulness without suggesting gameplay. Ideas for the pose concept included looking something from different angles, creating a shape with bodies, and using blocks to symbolize ideas.

3.2.3. Step 3: Image creation with an illustrator

In this step, we worked with an illustrator with ample experience in drawing human figures to generate eight group-mood drawings of the final image set.

Process

The selected poses and revision points concluded in Step 2 served as the foundation for the iterative illustration process. Two main strategies were adopted in developing the final drawings: (1) integration and (2) recreation.

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Figure 3.12. Confrontational: three supplementary figures to be integrated into the base pose (top left).

Integration: For Slack, Fiery, Confrontational, Tense, and Fuzzy, the illustrator integrated the main and supplementary poses, as well as improving the overall composition and facial expressions.

Recreation: For Safe Haven and Chill Flow, no supplementary poses were chosen to be integrated into the base pose. For Creative, the full pose had to be created from scratch. For the missing figures, the illustrator and the main researcher explored embodied options with puppets and their own bodies, as well as collecting inspirations poses online. The recreation activity was challenging and time consuming, because neither the illustrator nor the researcher were experts in bodily embodiment and had relatively limited somatic creativity.

Vibe Image Set

The Vibe Image Set (Figure 3.13) consists of eight illustrations each depicting a group pose that expresses a group mood.

Figure 3.13. The Vibe Image Set consist of eight illustrations, each expressing a group mood. From top to bottom, left column: Chill Flow, Confrontational, Tense, Slack; right column: Fuzzy, Creative; Safe Haven, Fiery.

3.3. EVALUATING THE IMAGES

The Vibe Image Set was developed to communicate eight group moods through artistic bodily expression. To assess the effectiveness of these images, we conducted an online survey with 38 participants. The research question was twofold: **(1) What qualities of group mood are communicated by the images? (2) To what extent do the images successfully communicate the intended group moods?**

3.3.1. Method

In an online survey, we investigated the associations between 8 images representing group moods and 36 group mood qualities, which were identified in the previous study (see Chapter 2 for details). For each of the 288 image-quality pairs, participants rated the degree to which they associated each quality with the image on a 7-point scale (1=not at all; 7=extremely).

Sampling

47 Respondents were recruited using an online survey recruitment platform (Prolific). All respondents received financial compensation for their participation. The following screeners were applied for purposive sampling:

- Age between 18-60
- Gender balanced
- UK nationality
- Native English speaker
- Employed part-time or full-time
- Working as part of a small group of 2-10 people
- Undergraduate degree or higher

We assessed response reliability using survey completion time (Leiner, 2019). Each respondent's relative speed index per each survey page was calculated by dividing the median completion time by the respondent's completion time. Respondents with a relative speed index exceeding 2.0 for at least five pages were flagged as suspicious. Accordingly, we excluded the data of nine respondents, which resulted in a sample size of 38.

Respondents

Our sample (N=38) was gender balanced (44.7% female, 5.3% non-binary). The majority of respondents had full-time jobs (78.9%) and, working in a small group (60.3%). They had diverse backgrounds. Table 3.4. gives an overview of sample demographics.

Table 3.4. Overview of the respondents

		Number (N: 38)	Percentage (%)
Gender	Male	19	50.0
	Female	17	44.7
	Non-binary	2	5.3
Age	18-30	22	57.9
	31-49	11	28.9
	50-60	5	13.2
Nationality	UK	38	100
Language	English	38	100
Employment status	Full-time	30	78.9
	Part-time	8	21.1
Workgroup experience	Work as part of a small group of 2-10 people	23	60.5
	Work as part of a group and sometimes alone	15	39.5
Highest education level completed	Undergraduate degree (BA/BSc/other)	29	76.3
	Graduate degree (MA/MSc/MPhil/other)	6	15.8
	Doctorate degree (PhD/other)	3	7.9
Field of study	Psychology	5	13.2
	Art/design	4	10.5
	Sociology	3	7.9
	Biology	2	5.3
	Chemistry	2	5.3
	Nursing	2	5.3
	Other	20	52.1
Field of work	Education & Training	7	18.4
	Operations	4	10.5
	Research	4	10.5
	Administrative	3	7.9
	Retail	3	7.9
	Accounting & Finance	2	5.3
	Information Technology	2	5.3
	Marketing, Sales & Business Development	2	5.3
	Health	2	5.3
	Engineering	1	2.6
	Other	8	21.1

Material

Consent and demographics: The opening page introduced the study, the survey task and asked for consent. We provided the same definition of group vibe as was given to the actors *"a group vibe is a shared emotional atmosphere present during a group activity."*[30] The definition was followed by an example to help familiarize participants with the group mood concept: *"imagine getting together with your colleagues for a project planning meeting. After about an hour, you feel that the group is getting less enthusiastic about coming up with tangible solutions. People are becoming more critical of each other's ideas. You cannot put a name to it, but you can feel the tension in the air. This feeling in the air is a group vibe."*

Next, respondents were asked to provide basic demographic data (gender, age, level of education, field of study, employment status, field of work).

Sensitizing: We informed the respondents that the images to be evaluated *"do not portray a natural group work setting; instead, they express the group vibe in an artistic and symbolic way."* To sensitize them to the task at hand, we provided an example image and asked them to choose one of three word pairs that best described the group vibe shown. The image depicted a joyful and energetic group vibe and was drawn in a similar style to our images: it was a line drawing without a background that communicated the emotional atmosphere though four people striking a pose. In this step, respondents practiced translating their perceived group mood into words.

Image evaluation: Participants evaluated eight images by completing three tasks (Table 3.5). The images were shown in a random order, one-by-one, without a title. Participants were asked to first view the image carefully and, in their own words, list one to five words to describe the type of group vibe represented by the image. Next, they rated the degree to which 36 quality words describe the image on a 7-point Likert scale (1 = not at all; 7 = extremely). The quality words were presented in three categories: feeling, interpersonal, and work style aspect (see Table 2.7. for the list of 36 qualities).[31] The main question was modified based on each category and was accompanied by a sentence completion statement to stimulate engagement (Rogers et al., 2003). Each survey page repeatedly showed the image, the statement, and a new set of four quality words with synonyms (Figure 3.14).

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30   Throughout the survey we used the term 'group vibe', instead of 'group mood', as vibe is a more colloquial term that would likely resonate more with participants.

31   In Chapter 2, the 36 qualities were grouped into four aspects: feeling, interpersonal, workflow, and motivational. In the survey, qualities from the workflow and motivational aspects were presented in a combined category called "work style." This decision was driven by two reasons. First, the motivational qualities — process-oriented and goal-oriented — have abstract links to task execution, akin to workflow qualities. Second, this combination ensured a balanced distribution of qualities across the aspects: 12 in feeling, 11 in interpersonal, and 13 in work style.

Lastly, participants were given the option to list other words to describe the group mood in the image.

Table 3.5. Image evaluation procedure: the instruction, data collection method and type of data generated in the three sequential tasks.

Survey Task	Instruction / Question	Data collection	Data
Task 1. Viewing the image and describing the group vibe in the image	The below image represents a group vibe. Please **view the image carefully.** Pay attention to posture, implied movement, gestures, facial expressions, interaction, and distance between the people. According to you, **what kind of group vibe** does this image represent? Please **list 1 to 5 words** to describe it below (use your own words).	Free description	1-5 Words
Task 2. Reporting the word-image association in terms of a) Feeling b) Interpersonal c) Work style	Please **rate the degree** to which the below keywords describe: a) **how people** in this image **feel**. b) the **interaction between people** in this image c) **the way people** in this image would **conduct a work task.** People in this image: a) seem to **feel** _____. b) seem to **interact with each other** in a _____ way. c) would **conduct a work task** in a _____ way.	7-Likert scale	36 word-image scores
Task 3. Describing the group vibe in the image with additional words (optional)	Are there any **additional words** that come to mind to describe the way people in this image **feel, interact, or would conduct a work task?** If yes, please **list 1 to 5 words** below.	Free description	1-5 Words

Data analysis

The two sets of data —Likert scores and free descriptions— were analyzed using multiple methods. Table 3.6 shows each analysis method, its data set, outcome, and corresponding research question. We performed three types of analyses on the Likert scores. First, we ran a correspondence analysis to get a general overview of image–quality associations. Second, we performed a one-sample t-test to determine which words were strongly associated with each image. Third, we calculated the HIT rate to quantify the match between image profiles and the intended group mood. Lastly, we analyzed the free descriptions to better understand respondents' impressions of the images.
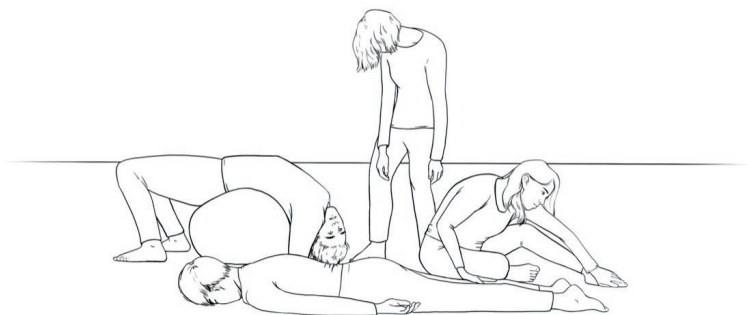
People in this image seem to feel _____.

	Not at all 1	2	3	4	5	6	Extremely 7
Clear-minded (Sharp-minded, Bright, Productive)	O	O	O	O	O	O	O
Stressed (Nervous, Worried, Tense, Pessimistic, On edge, Afraid, Panicked)	O	O	O	O	O	O	O
Chill (Relaxed, Light, Comfortable, Content, Safe, Optimistic)	O	O	O	O	O	O	O
Reluctant (Unwilling to start or continue, Demotivated, Unmotivated)	O	O	O	O	O	O	O
	Not at all 1	2	3	4	5	6	Extremely 7

Figure 3.14. A sample Likert scale page extracted from the survey: the Slack image followed by sentence completion statement and four words (with synonyms) from the feeling category.

Table 3.6. Overview of data analysis, showing research questions, methods, data, outcome, scale, and figure and tables presenting the results.

Research questions	Data	Analysis Method	Outcome	Scale	Shown
RQ1: What qualities of group mood are communicated by the images?	Likert scores	Correspondence analysis	A visual overview of image-quality associations	–	Figure 3.15
	Likert scores	T-test	Expressed qualities	The qualities rated significantly higher than the scale mid-point (4) per image t (37) = 2.042, p < .05	Table 3.7
	Free descriptions	Frequency analysis	Top 10 descriptive words	–	Table 3.9
RQ2: To what extent do the images successfully communicate the intended group moods?	Free descriptions	Coding (with 36 group mood qualities)	Match to intended qualities	*Matching* = Coded by an intended quality *Tolerable* = Coded by an unintended quality that is compatible *Incompatible* = Coded by an unintended quality that conflicts with an intended quality.	
			Alignment with the intended group mood	*Sufficient* alignment = Percentage of matching words ≥ 50 % (*Most–Moderate–Least* in comparison to the set)	
	Likert scores	HIT rate analysis	Degree of representation of the intended group mood	*Sufficient* representation= Percentage of the intended qualities expressed ≥ 50 % 100 % = *Full* representation ≤ 50 = *Insufficient* representation	Table 3.8

3.3.2. Results

Overview of Image–Quality Associations

A Correspondence Analysis (CA) was performed (with SPSS Statistics software) with two factors (symmetrical normalization): Image (8 levels) and qualities (36 levels). The solution visualizes the associations between images and qualities (Figure 3.15). CA aims to explain the highest degree of variance (or inertia) with the minimum number of dimensions (Doey & Kurta, 2011). The two dimensions in the biplot account for 92.5% of the total inertia: 69.6% along the horizonal axis and 22.6% along the vertical axis. The distance between points represents the similarity in their patterns (both for images and qualities).
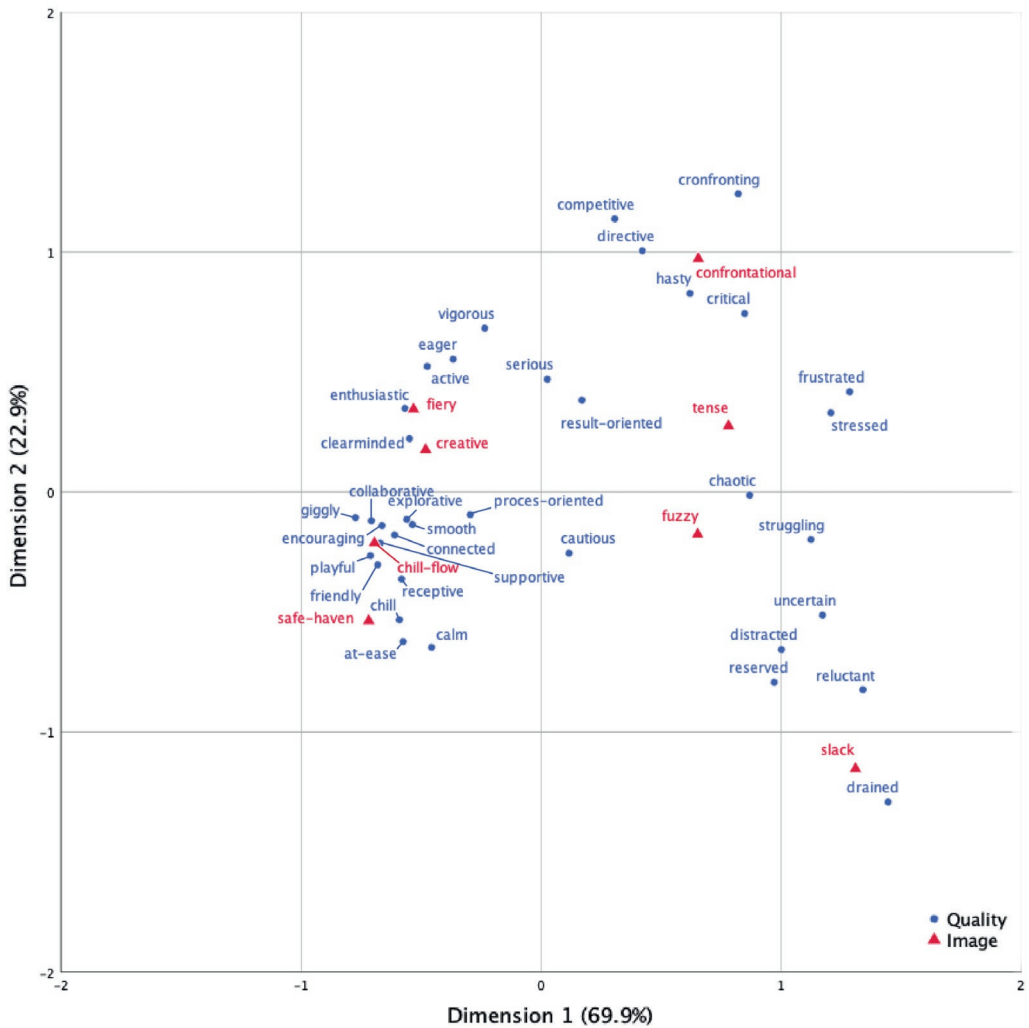
Figure 3.15. Overview of image-quality space: the correspondence plot of eight images expressing group moods (in red) and 36 group mood qualities (in blue)

Overall, the images and qualities show a balanced distribution. The left side of the biplot shows qualities that are associated with positive group moods, such as *enthusiastic, chill* and *encouraging*. The right side shows the qualities that are typically associated with negative group moods, such as *frustrated, uncertain,* and *reluctant*. At the top, we see activated qualities such as *vigorous, competitive,* and *hasty*. At the bottom, we see the deactivated qualities such as *drained* and *reserved*. These two dimensions aligned with the basic affect dimensions of valance (positive–negative) and arousal (activated–deactivated).

The qualities *process-oriented* and *cautious* are located close to the center, which indicates that they are less effective in differentiating the images.

In general, images that express negative group moods are more scattered on the biplot than those expressing positive group moods. This indicates that negative image profiles are more differentiated than the positive ones, which aligns with the general finding across affect research that positive affective experiences show less differentiation than negative ones (Ekman, 2003; Fredrickson, 2003; Frijda, 2007).

The plot indicates that the images are associated with distinct quality profiles with varying levels of similarity. For example, the Slack image is quite far apart from the rest – making it distinct – while still being closer to the Tense than to the Confrontational image. This means that the Slack image expresses more qualities that are similar to the Tense than to the Confrontational image. In other words, the Slack image is perceived as more similar to the Tense image than to the Confrontational image, as seen through the lens of 36 group mood qualities. Some images were perceived as being much more similar e.g., Chill Flow and Safe Haven are very close together.

Image–quality profiles

A one-sample t-test was performed to determine which words were strongly associated with each image. The words rated significantly higher than the scale mid-point per image t (37) = 2.042, p < .05 are marked (*) in Table 3.7. These strongly associated words represent the **expressed qualities** and form an image profile. To provide an overview of eight image profiles, we created a heat map.

The mean scores of word-image ratings were plotted on a matrix. The words (rows) and eight images (columns) are sorted by mean correlation. Specifically, we calculated correlation between columns and between rows using the CORREL function in Excel. Then, we reordered them so as to maximize the correlation between neighboring rows and columns. The color indicates the value on the red-green color spectrum (fully red: 1.00, fully green: 7.00). Accordingly, the further the mean is from the mid-score (4) the denser the color. Note that our Likert scale was unipolar, which means that the color red does not indicate a negative association, but rather a rating below the midpoint (4).

Overall, the heat map suggests four quadrants, representing a positive and negative divide between images and between words. The four images on the right are rated higher on positive qualities, while the four images on the left are rated higher on the negative qualities. It is interesting to see that the broader interpretation again applies to the positive images, and the narrow interpretation applies to the negative images.

Table 3.7. Image–quality matrix with mean scores (heat map). Words that were rated significantly higher than the scale midpoint (4) are marked (*). These strongly associated quality words form an image profile.

Variable no	Quality	Slack mean	Fuzzy mean	Tense mean	Conf. mean	Fiery mean	Chill F. mean	Safe H. mean	Creative mean
6	frustrated	3,63	4,08	* 5,47	* 5,32	1,55	1,24	1,18	1,66
2	stressed	3,61	4,34	* 5,87	4,82	1,82	1,26	1,32	1,82
34	struggling	* 5,03	* 4,63	* 4,95	4,13	2,03	1,68	1,63	2,16
5	uncertain	* 4,97	* 4,87	* 4,95	2,90	1,40	1,79	1,71	2,11
26	distracted	* 5,34	* 4,92	* 4,58	2,82	1,62	1,82	2,63	2,42
12	drained	* 6,84	* 4,68	3,71	2,21	1,24	1,40	2,00	1,34
16	reserved	* 5,50	4,32	3,61	2,63	1,76	2,63	2,00	2,05
4	reluctant	* 6,50	4,45	3,82	3,45	1,40	1,63	1,79	1,66
32	chaotic	4,37	4,00	* 4,68	4,32	1,82	1,74	1,95	3,74
17	critical	2,13	3,92	3,82	* 5,03	2,26	1,61	1,40	2,08
18	confronting	1,55	3,16	3,90	* 5,95	2,50	1,34	1,26	2,05
28	hasty	1,92	2,84	4,08	4,53	2,66	1,74	1,34	2,92
21	directive	1,39	3,29	3,53	* 5,37	3,63	2,32	1,58	2,42
14	competitive	1,29	2,68	3,08	* 5,76	2,90	2,18	1,47	4,21
36	result-oriented	2,87	3,84	4,26	5,24	* 5,76	3,87	3,03	3,97
30	serious	1,97	3,87	4,32	* 5,21	* 5,82	* 4,53	3,42	3,92
24	vigorous	1,18	2,45	3,50	4,58	* 5,95	3,97	3,00	* 5,24
7	eager	1,16	2,53	3,11	4,03	* 6,53	* 4,53	3,37	* 5,29
11	active	1,05	2,32	2,84	3,68	* 5,97	* 5,42	2,92	* 6,61
9	enthusiastic	1,05	2,24	2,66	2,79	* 5,87	* 4,97	3,66	* 5,95
1	clearminded	1,18	2,66	2,47	3,16	* 6,26	* 5,53	* 4,74	* 4,71
35	process-oriented	2,26	3,03	2,79	2,84	4,47	* 5,00	* 4,74	4,29
22	encouraging	1,24	2,53	2,26	1,92	* 5,37	* 5,79	* 5,87	* 4,66
23	collaborative	1,55	2,47	2,61	2,05	* 6,18	* 6,03	* 6,53	* 4,76
20	connected	1,89	2,45	2,74	2,24	* 6,13	* 6,21	* 6,79	* 4,92
13	supportive	1,53	2,42	2,74	1,76	* 5,90	* 5,76	* 6,71	4,18
15	friendly	1,53	2,53	2,26	1,76	4,37	* 5,74	* 6,47	* 4,63
19	receptive	2,08	2,82	2,24	1,87	4,53	* 5,90	* 6,47	* 4,84
3	chill	2,16	3,05	1,71	1,76	3,47	* 6,11	* 6,53	4,37
25	atease	2,61	2,55	1,53	1,82	3,16	* 5,92	* 6,61	* 4,58
8	calm	2,97	3,32	1,66	1,82	4,18	* 5,79	* 6,79	3,61
31	smooth	1,76	2,84	2,21	2,50	* 4,95	* 6,13	* 5,29	4,16
29	explorative	1,68	2,95	2,68	2,26	* 4,90	* 6,11	* 5,74	* 6,05
27	playful	1,50	2,18	1,66	1,53	3,21	* 4,76	* 4,76	* 5,50
10	giggly	1,08	1,79	1,53	1,37	2,63	3,66	3,37	4,50
33	cautious	2,71	3,95	3,47	2,50	3,61	3,63	3,97	2,29

0,00	Not at all
7,00	Extremely

3

We see that the image set expresses almost all qualities, with the exception of *hasty, giggly,* and *cautious. Cautious* has the least diverse mean score across the images, varying between only 2.29 and 3.97. *Cautious* is also the only quality that scores lower than the midpoint (4) on all images, indicating that it is the least effective differentiator for the eight images.

The heat map provides an overall comparison within image profiles. Among the positive images, the Chill Flow image has the broadest interpretation and a significant overlap with the Safe Haven image. Among the negative images, the Slack image has the most distinctive profile, whereas Fuzzy is the least distinctive image given its similar scores on many qualities. The heat map also reveals correlated qualities (e.g., *collaborative* and *connected; frustrated* and *stressed*), which indicates that these qualities may measure a shared underlying dimension.

HIT rate

The HIT rate was used to quantify the degree to which each image represents the intended group mood. Each column in Table 3.8. shows an image profile in relation to its intended group mood. Rows are arranged as following:
- The top three rows in black are the **qualities expressed by the image** (as identified by the t-test) in three aspects: feeling, work style, interpersonal. Some of these qualities are shared by the intended group mood (**shared qualities**), while others do not belong to the intended profile. These are the **additional qualities** that participants associate with the image. Most additional qualities are compatible with intended qualities and can thus be tolerated (marked with a *), but few are in conflict and therefore incompatible (marked with a **). For example, *encouraging* and *friendly* are additional qualities for the Chill Flow image. They are tolerable because, just as *supportive* and *collaborative*, they relate to helpful social interaction. However, a group could not possibly be *calm-chill* and *active-eager* at the same time, therefore *active* and *eager* are labelled as incompatible additional qualities for the Chill Flow image.
- The fourth row shows the **missing qualities** in blue. These are the intended qualities that the image failed to express.

Lastly, the HIT rate was calculated by dividing the number of shared qualities by the intended qualities (shared and missing qualities combined). A HIT rate of ≥50% was considered sufficient. The additional words were excluded from this calculation, as our main interest was to quantify the degree to which the images communicate the intended group mood.

Table 3.8. Image profiles in relation to their intended set of group mood qualities

		SAFE HAVEN	CHILL FLOW	FIERY	CREATIVE	SLACK	CONFRONT.	TENSE	FUZZY
Strongly expressed qualities	Feeling aspect	Calm Chill Clear-minded*	**Active** Calm Chill Clear-minded **Eager**** Enthusiastic*	Active Clear-minded Eager Enthusiastic	Active **Clear-minded**** Eager* Enthusiastic	Drained Reluctant Uncertain*	Frustrated Stressed*	Frustrated Stressed Uncertain*	Drained* Uncertain
	Work style aspect	At ease Explorative* Playful* Process-o. Smooth*	At ease Explorative* Playful* Process-o. Serious Smooth	**Explorative**** Result-o. Serious Smooth Vigorous	At ease Explorative Playful Vigorous*	Distracted Struggling	**Result-o.**** Serious	Chaotic* **Distracted**** Struggling	Distracted* Struggling
	Interpersonal aspect	Collaborative Connected Encouraging Friendly Receptive Supportive	Collaborative Connected* Encouraging* Friendly* Receptive Supportive	Collaborative Connected Encouraging Supportive*	Collaborative Connected* Encouraging Friendly Receptive	Reserved	Competitive Confronting Critical Directive	–	–
Missing qualities		–	–	Directive Hasty	Chaotic Chill Process-o. Uncertain	At ease Critical Frustrated Result-o.	Active Cautious Chaotic Eager Process-o. Struggling Uncertain Vigorous	Active Collaborative Directive Hasty Result-o. Serious Vigorous	Calm Cautious Chaotic Critical Collaborative Process-o. Receptive Reserved Serious
Hit rate		100%	100%	84.6%	69.2%	55.5%	42.8%	30%	18.2%

Additional qualities: * Tolerable, **Incompatible
Shared qualities= Expressed qualities – additional qualities

3

The degrees to which the images represent the intended group moods vary. Overall, images of positive group moods have a higher HIT rate than the negative ones. According to the HIT rates, the image set can be classified into three groups:

Full representation: The Safe Haven (100%) and Chill Flow (100%) images expressed all the intended qualities with no exception. This means that they communicated the intended group mood to the fullest. Safe Haven expressed four additional qualities, all of which were tolerable because e.g., being explorative, smooth, or playful would not impair being process-oriented or at ease when working in a Safe Haven group mood. On the other hand, the Chill Flow image expressed eight additional qualities, two of which were potentially in conflict with intended qualities, as discussed earlier. Note that there is a noticeable overlap between two image profiles, i.e. the Chill Flow profile encompasses all qualities expressed by the Safe Haven image. Moreover, the two images express the same set of qualities in the interpersonal aspect.

Sufficient representation: The Fiery (84.6%) and Creative (69.2%) images represented the intended group moods to a significant degree, with two (Fiery) and four (Creative) missing qualities, respectively. Both images expressed only a few additional qualities, with each image expressing only one incompatible quality. The Slack (55,5%) image expressed the intended group mood sufficiently. Interestingly, it received a lower HIT rate not because there were more missing qualities, but because intended group mood consisted of fewer qualities. In fact, the Slack image missed the same number of qualities as the Creative image and expressed only one tolerable additional quality. In that sense, one could argue that the Slack image provided a more accurate representation than the Creative image.

Insufficient representation: The Confrontational (42.8%), Tense (30%) and Fuzzy (18.2%) images did not sufficiently represent the intended group moods. The number of shared qualities expressed by the Confrontational image was only slightly lower than the number of missing qualities and it therefore offered a poor representation of the intended group mood. However, with only two additional qualities, it did communicate a relatively more accurate profile. The Tense and the Fuzzy images represented the intended group moods the least, having more than twice as many missing qualities as shared ones. Importantly, both images failed to express any interpersonal qualities: *directive* and *collaborative* for the Tense image; and *critical, receptive, collaborative* and *reserved* for the Fuzzy image. According to a t-test, the image expresses *reserved* to a considerable, but weak degree (t= 1.233, p=.225).

Free descriptions

Participants used a rich variety of words to describe the group moods expressed by eight images, with each image being described by an average of 83.4 different words (with the Slack image receiving the lowest number at 70 and the Confrontational the highest number at 96). Some of these words were the keywords given in the rating part of the survey (e.g., *playful, stressed, confrontational*), but many were authentic, i.e. respondents' own words (e.g., defeated, combative, poised). All words can be found in Appendix A2; Table 3.9 gives an overview of the top 10 most frequently used words to describe the eight images.

Common categories were words describing the subjective feelings of the individuals in the images (e.g., serene, relaxed, inspired, energetic, despair), qualities of interactions between people (e.g., friendly, combative), overall group cohesion (e.g., harmonious, synergy, disjointed), and literal actions, activities, or situations (e.g., imitating, guiding, yoga, acrobatic, meditative, artistic, headache). Interesting categories were those that include words that describe *figurative characters,* such as words originally used to describe movement and gestures (e.g., gentle, flowing, graceful, flexible, mobile, step-by step), and those that include material qualities (e.g., overstretched, flimsy).

To understand participants' overall impression of the images, we counted the words used to describe each image. Next, we clustered them by meaning (using the online Merriam-Webster thesaurus [32]). Synonyms (e.g., unmotivated and demotivated), variations (e.g., focus and focused) and words with similar meanings in the image context (e.g., peaceful and serene) were grouped under the most frequently used word. For example, *scared* (n=3), *scary* (n=2) and *fear* (n=2) were grouped under the title *scared* (n=7).

Finally, to evaluate if participants' overall impressions reflected the intended group mood, we coded the most frequently used words by the 36 qualities (Appendix A3 shows the corresponding codes). The words with no direct link to intended qualities were named 'non-matching words'. Among those, words compatible with the intended group mood (tolerable) were marked (*), while those in conflict with the intended group mood were marked incompatible (**).

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32   A trusted online English dictionary (https://www.merriam-webster.com/thesaurus).

Table 3.9. Top 9 to 11 most frequently used words to describe the eight images.

SLACK (N= 23)	n:	CHILL FLOW (N= 43)	n:	TENSE IMAGE (N= 45)	n:	FIERY IMAGE (N=49)	n:
Tired	38	Calm	19	Stressed	19	Focused	19
Lethargic	22	Collaborative	11	Defensive *	15	Together	13
Depressed*	21	Together*	10	Worried	11	Determined	12
Unmotivated	14	Supportive	8	Frustrated	10	Connected	9
Defeated	11	Flowing	8	Disjointed*	9	Teamwork	9
Bored	10	Coordinated	7	Annoyed	8	Energetic	7
Unenthusiastic	9	Energetic*	7	Scared	7	Motivated	5
Disconnected	8	Relaxed	6	Focused	5	Ambitious	5
Uninterested	5	Focused	5	Confused*	4	Serious	5
Defeated	5	Expressive	5	Chaotic*	4	Strong	5
Self-focused	5					Supportive*	5
CONFRONTIONAL IMAGE (N= 58)	**n:**	**SAFE HAVEN IMAGE (N=41)**	**n:**	**FUZZY IMAGE (N= 45)**	**n:**	**CREATIVE IMAGE (N= 51)**	**n:**
Angry	27	Calm	17	Contemplative	12	Energetic	25
Confrontational	13	Relaxed	14	Disconnected	10	Playful	17
Combative	8	Together	13	Stressed*	9	Fun	11
Frustrated	6	Loving	12	Distracted*	8	Creative	8
Stressed*	6	Connected	12	Tired*	7	Flexible	7
Competitive	5	Supportive	11	**Uncollaborative****	6	**Individual****	6
Chaotic	5	Collaborative	10	Confused	6	Strange*	6
Focused	5	Friendly	10	**Solo agendas****	5	Lively	5
Discordant	4	Caring	9	Slow*	5	**Focused****	5
Attacking	4	Happy*	7	Frustrated*	4	Determined*	4
		Intimate	7	Hierarchical*	4	Chaotic	4

N: Number of different word groupings used to describe the image
n: number of people reporting the word (frequency)
Non-matching words: * Compatible (Tolerable), **Incompatible
Words that do not match any of the 36 qualities directly are underlined.

The majority of the most frequently used words —except for the words used for the Fuzzy image— matched the intended group mood qualities. For example, the word *together* matched *connected* —a defining quality of the Fiery group mood. Overall, most non-matching words were tolerable (*), and every image had at least one. For example, *stressed* was considered tolerable for the Confrontational image, because despite not defining that group mood, it can accompany its defining qualities (e.g., *frustrated, competitive*). Similarly, *tired* was tolerable for the Fuzzy image, as it can accompany feeling *confused,* thus would not be in conflict with a Fuzzy group mood.

Only the images for Fuzzy and Creative were described with incompatible words. *Uncollaborative* and *self-focused* were incompatible because despite the fact that the Fuzzy group mood is characterized by being *reserved*, group members still collaborate to achieve clarity. Similarly, *individual* was marked as incompatible because people build on each other's ideas in a Creative group mood. Additionally, *focused* was marked as incompatible as it can conflict with the *playful* and *explorative* nature of the Creative group mood.

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Overall, the number of words matching the intended qualities indicated the extent to which an image aligns with its intended profile. Accordingly, the Slack, Confrontational, Safe Haven, and Fiery images were most closely aligned with their intended group moods. The Chill Flow and Tense images aligned moderately well. Arguably, the Creative image also showed moderate alignment for two reasons: The top five words describing the image (1) included the name of the group mood, and (2) reflected multiple intended qualities — *playful, explorative,* and *receptive*. On the other hand, the Fuzzy image reflected the intended group mood the least, given the large number of non-matching words on the list. Fortunately, the top two most frequently used words (*contemplative* and *disconnected*) did have links with the intended qualities of Fuzzy — *cautious* and r*eserved*.

3.3.3. Conclusions and Discussion
In this study, we investigated the effectiveness of the Vibe Image Set in communicating the intended group moods. Below, we discuss the results and draw conclusions with regard to two research questions. In addition, we reflect on the additional findings, methodology, and limitations.

What group mood qualities do the images of Vibe Image Set communicate?
Overall, results indicate that the Vibe Image Set communicates a wide range of group mood qualities. The top three rows in Table 3.8 show the list of qualities expressed per image. Almost all the tested qualities — except for *hasty, giggly*, and *cautious* — are expressed by at least one image. However, not all images are equally expressive. Images representing positive group moods (Safe Haven, Chill Flow, Fiery and Creative) convey a larger number of qualities than the images of negative group moods, which can possibly be explained by the phenomenon that positive affective concepts are generally interpreted more broadly than the negative ones (Ekman, 2003; Fredrickson, 2003; Frijda, 2007). Importantly, the Tense and Fuzzy images do not sufficiently express qualities belonging to the interpersonal aspect. This requires attention, given that interpersonal interaction is one of the essential aspects in identifying a group mood (see Chapter 2; Sönmez et al, 2022a).

In addition to the given qualities, participants used a rich vocabulary of authentic words to describe the group moods expressed by the images. An interesting category was metaphorical words (e.g., *flimsy, cornered*). Through physical-to-abstract meaning transfer,

these words illustrate the potential of metaphors for describing, expressing, and making sense of group moods (Zaltman, 1997). The use of words that express qualities of movement (e.g., *flowing, slow*) is particularly inspiring for our embodiment inquiry, as it signifies movement as a promising medium to physicalize group moods.

To what extent does the Vibe Image Set communicate intended group moods?

The results showed that the degree to which the images communicate the intended group moods differs. Below we discuss the representativeness of each image, drawing on two sets of results: the HIT rates (main source) and the free descriptions (supplementary source). In addition, we highlight the main improvement points for each image, based on the two revision strategies offered by the HIT rate results (see Table 3.8). These are (1) reducing the expression of additional qualities (marked with a * and a **), and (2) strengthening the expression of the missing qualities (in blue). Figure 3.16 provides a visual overview of the HIT rate results.

SAFE HAVEN	CHILL FLOW	FIERY	CREATIVE	SLACK	CONFRONTATIONAL	TENSE	FUZZY
100%	100%	84.6%	69.2%	55.5%	42.8%	30%	18.2%

The set of qualities defining the intended group mood | Intended qualities expressed by the image | Additional qualities expressed by the image
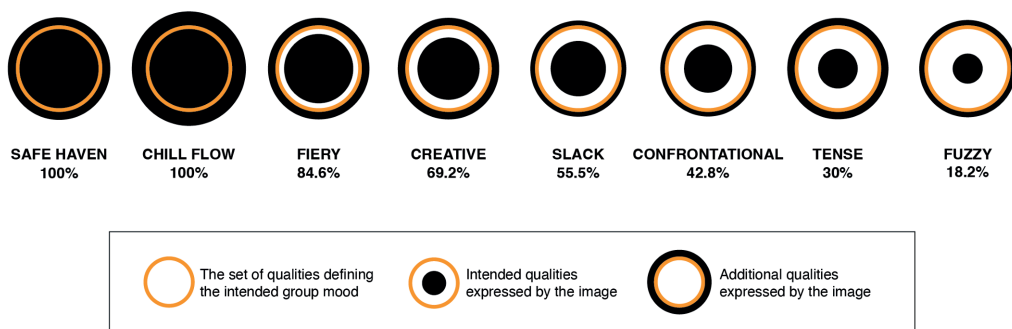
Figure 3.16. A visual overview of the extent to which each image represents the qualities of the intended group mood. Visualization is based on HIT rate results (see Table 3.8).

HIT rates and free descriptions both confirm that the Safe Haven, Chill Flow, Fiery, Creative, and Slack images represent the intended group mood sufficiently.

- The **Safe Haven** image expresses the full set of intended qualities. Reducing the portrayal of additional qualities (*clear-minded, explorative, playful,* and *smooth*) can increase the clarity of the representation.
- The **Chill Flow** image expresses all the intended qualities. Reducing the expression of additional qualities (*enthusiastic, explorative, playful, connected, encouraging,* and *friendly)* and especially the incompatible ones (*eager* and *active*) can enhance the clarity of the representation.
- The **Fiery** image represents a large set of the intended qualities. To achieve a full representation, the expression of the two missing qualities *(directive* and *hasty)* should be

strengthened. Reducing the portrayal of additional qualities (*supportive)*, and especially the incompatible one (*explorative*), can lead to clearer representation.

- The **Creative** image represents a decent proportion of the intended qualities. Strengthening the expression of four missing qualities (*chaotic, chill, process-oriented,* and *uncertain)* is necessary to achieve a full representation. Furthermore, reducing the expression of the additional qualities (*eager, vigorous,* and *connected*), especially the incompatible one (*clear-minded*), is expected to increase clarity. Note that the image is also described by two words that conflict with the Creative group mood (*individual* and *focused*), whose their expression should also be reduced.

- According to HIT rates, the **Slack** image expresses slightly more than half of the intended qualities, making it a (just) sufficient representation. However, all top ten descriptive words align with four intended qualities (*drained, reluctant, frustrated,* and *reserved*). Therefore, although the image does not represent the group mood fully, it can represent part of it quite clearly. As a result, we consider the image as more than 'just sufficient' at portraying the Slack group mood. However, it is still necessary to strengthen the expression of the missing qualities *(at ease, critical, frustrated,* and *result-oriented)* to communicate the group mood fully. Besides, reducing the expression of the additional quality (*uncertain*) will increase the clarity of the representation.

HIT rates and free descriptions both confirm that the Fuzzy image represents the intended group mood insufficiently.

- The **Fuzzy** image expresses only two of the nine intended qualities and is thus insufficiently representative, based on the HIT rate analysis. Most importantly, it does not express interpersonal qualities (*critical, collaborative, receptive* and *reserved*), at least one of which is needed for a holistic representation of the Fuzzy group mood. To achieve a full representation, other missing qualities (*calm, cautious, chaotic, process-oriented,* and *serious)* should also be expressed. Furthermore, reducing the expression of two additional qualities (*drained* and *distracted)* will increase clarity in representation. Note that the image is also described by two words that conflict with the Fuzzy group mood (*uncollaborative* and *solo agendas*), whose expression should also be reduced.

HIT rates and free descriptions show inconsistent results for the Confrontational and Tense images. We conclude that these images represent the intended group moods to an acceptable degree.

- According to the HIT rate, the **Confrontational** image represents the intended group mood insufficiently, as it expresses slightly less than half of the intended qualities. However, all top 10 descriptive words align with intended qualities: *confronting* and *frustrated*, in particular. Given that the second most frequently used word to describe the image is "confrontational", we argue that the image does clearly represent the group mood. However, strengthening the expression of missing qualities *(active, cautious,*

chaotic, critical, process oriented, reserved, and *serious)* is necessary to achieve full representation.

- According to the HIT rate, the **Tense** image expresses less than half of the intended qualities and therefore it represents group mood insufficiently. Moreover, it expresses none of the interpersonal qualities. All top ten descriptive words did, however, align with intended qualities: *frustrated* and *stressed* in particular. While the image does therefore not represent the group mood holistically, it does express part of it quite clearly. To achieve holistic representation, it would certainly have to express at least one interpersonal quality *(directive* or *collaborative).* In addition, strengthening the expression of other missing qualities *(active, hasty, result -oriented, serious, and vigorous)* will ensure full representation. For further clarity, the expression of additional qualities should be reduced *(defensive, disjointed, confused,* and *chaotic).*

The inconsistency between the HIT rate and free descriptions can be attributed to differing analytical focuses. Specifically, the HIT rate analysis assessed whether images were a comprehensive match with the intended group moods, with an image expressing a greater portion of intended qualities being more representative of the group mood. Conversely, the free description analysis assessed a partial match, focusing solely on how many of the top ten descriptive words for an image aligned with any of the intended qualities. Thus, the more words align with any number of intended qualities, the better representation is the image. Given that it may be more challenging for free descriptions to cover the full list of intended qualities, the results of the two analyses may appear contradictory.

Additional findings

The study generated some additional insights. The correspondence plot (Figure 3.15) illuminates how the images relate to each other with regard to the qualities they express. Supporting these relationships, the heat map (Table 3.7) provides a detailed comparison between image profiles. What is most striking is the similarity between the Chill Flow and Safe Haven image profiles, in that the former contains all qualities expressed by the latter. The Slack and Fuzzy images have a similar relationship. This overlap is undesirable because it compromises the granularity of the embodied typology (see Desmet et al., 2021). We envision that revising the images in the way mentioned above will increase the overall distinctiveness of the image set. The Fuzzy image had a striking profile, with the faded colours showing that it seems to be the least distinctive based on the 36 given qualities. This ambiguous interpretation of the image is interesting, given the *confused* and *unsure* nature of the Fuzzy group mood. Could we then consider this image as a successful representation, precisely because it expresses ambiguity? Or is the Fuzzy group mood itself ambiguous to the viewers, which causes them not to recognize its qualities in the image?

We should note that our findings are specific to the associations of the eight images and therefore do not account for the group moods they intend to express. It is worth exploring if these results can be generalized to other embodied representations or even the group moods themselves. Would a different set of mood-expressing materials convey the same qualities? Would the same pattern of similarity account for other representations or group moods in general? For example, can we infer that Safe Haven and Chill Flow group moods are not distinct?

Finally, we reflect on the choice of using mix analysis methods to evaluate group-mood expressing materials. Each of these methods contributed to the research question from different angles. The heat map and HIT rates provided straightforward answers to RQ1 and RQ2 respectively and were therefore the most effective. As an additional method, the correspondence analysis provided a visual overview of the results. Free descriptions deepen our understanding of what people find striking in the images. Combining results of multiple methods was challenging but helped us to draw nuanced conclusions. For example, if we had relied on only the HIT rate analysis, we may have concluded that the Confrontational image represents the group mood insufficiently. The free description analysis, however, showed that the image expresses a part of the group mood strikingly clear, and can thus be considered an acceptable representation of the Confrontational group mood. In sum, our experience underscores that using mixed method analyses can lead to rich and insightful findings, yet researchers should be mindful of the additional time and effort required when deciding on what methods to use.

3.4. GENERAL DISCUSSION

In this chapter, we reported the development and evaluation of Vibe Image Set, an embodied representation of a group mood typology. Our results demonstrated that the image set communicates the intended group moods in a holistic, distinctive, and relatable way. The image set is holistic because the majority of group moods have all three aspects represented. Strengthening the portrayal of the interpersonal aspect in the Fuzzy and Tense images will serve this intention. The set is distinctive because the images express different sets of qualities. Revising the images in the way discussed earlier will improve the overall distinctiveness of the set, especially by enhancing the differences between Chill flow and Safe haven, and Slack and Fuzzy, respectively. Lastly, the image set is relatable, because every image was described by a variety of authentic words, most of which align with intended qualities.

We envision several potential applications for the Vibe Image set. Combined with verbal descriptions, the images can be developed into a tool. Firstly, this tool could be useful for groups as communication material, enabling group members to pinpoint and discuss their ongoing group moods in a granular way. This can initiate a dialogue about other process or performance-related issues, which can be confronting to address otherwise. Secondly, as a training tool, the set can help team leaders and managers to spot nuances in group mood, thus supporting the development of management strategies. Thirdly, it can be used as a research tool to further investigate the group mood phenomenon. For example, the images can be used as props for experience sampling or as an interview aid to help participants express themselves. Lastly, the images can be used as sources of inspiration for designers in various ways. For example, the set can provide a repertoire of group experiences to envision and design for (Yoon et al., 2013). Another example is that aesthetic elements of the poses can inspire the development of group mood-expressing products. For example, the Fiery pose could inspire a unified, directional form, while the Chill Flow pose could inspire sequential, rhythmic, smooth product interactions.

Finally, our findings can be of value to experience research for multiple reasons. Firstly, although the results are specific to the Vibe Image Set, they indicate the potential of embodiment as an effective way to represent collective subjective experiences such as group mood. Previous work in design research has shown that embodied representations can effectively represent individual emotion states (e.g., Desmet, 2001; Yoon et al., 2013). The vibe image set is the first to extend these explorations to a group level. Nevertheless, we envision that other representations of the group mood typology can be conceived. Along this line, it is interesting to explore different means to embody group mood. For example, incorporating movement could enrich the representations for two reasons. First, it may express qualities that are challenging to convey through static images. Second, it may convey dynamic and therefore more nuanced expressions.

Secondly, our findings suggest that the image set has the potential to stimulate a rich vocabulary for describing group moods. Lakoff and Johnson (1980) argue that our conceptual system is fundamentally metaphorical: metaphor is not only a feature of language but also shapes our understanding of the world — our perception, thought and action in daily life. We propose that the metaphorically rich content of these artistic images can facilitate novel ways of articulating the experience of group mood. This aligns with Freeman (2016), who discusses how metaphors can shape and expand our expressive capabilities, potentially involving the use of novel vocabulary.

Thirdly, our findings indicate the value of an artistic approach in generating embodied representations of experience typologies. We collaborated with actors to physicalize group moods inspired by the artform of *tableau vivant*. The artistic approach enriched the development process in two ways. Firstly, it considers the body-first perceptive. To make sense of a group mood, actors first embodied it, and reflection followed later. The movements, interactions, and postures that emerged from their bodily exploration served as the main ingredients for 'designing' a pose. Although the embodiment process was highly intuitive and subjective, the reflection moments helped the actors achieve a relatable outcome. Through group discussions, they were able to identify the essence, to evaluate the outcome, and to tweak their their expressions in iterative steps. Secondly, the approach incorporates somatic creativity. What the styrofoam block is to a product designer, the body was to the actors: a material to shape and prototype ideas. The limitations and affordances of the human body lead to unique, yet still relatable representations. One can argue that the effectiveness of the outcome can be very much dependent on the skills of the artist, which is no less true for designed products and their designers. In our view, as long as we have ways to evaluate the effect, an artistic outcome can be equally effective as a design outcome. Therefore, we propose that an artistic approach can provide unique opportunities when embodying human experiences in the design discipline.

3

DANCING THE VIBE

Exploring, developing, and testing eight
dance videos expressing group moods

4.1. INTRODUCTION

Group mood is a pervasive experience that is often challenging to describe, making it difficult to manage or regulate. In Chapter 2, we proposed that developing a granular understanding of group mood is an essential first step in enabling work teams to manage their group moods. To make sense of this complex social phenomenon, we developed an initial group mood typology consisting of eight group moods that can be experienced in small workgroups: *Chill flow, Fiery, Creative, Fuzzy, Tense, Confrontational, Safe Haven* and *Slack* (Sönmez et al., 2022a). Because the proposed granular understanding requires effective means for communicating group moods, we developed embodied representations of the eight group moods. Chapter 3 presented the development and evaluation of our first output of the embodiment inquiry: the Vibe Image Set. The set consists of eight images, each representing a group mood with a unique artistic group pose. Through an evaluation study, we demonstrated the potential of these images in communicating group moods in a holistic, distinctive, and relatable way. As the next step, the current chapter expands our inquiry to dynamic representations of group mood, exploring the use of videos expressing group mood through human artistic movement.

In design research, images (such as photos and drawings) are frequently used to convey experience typologies due to their ability to enhance communication in various ways (for example, see Fokkinga & Desmet, 2022; Yoon et al., 2015; Desmet et al., 2020). Images can render complex concepts more accessible to a diverse audience, including those with a visual orientation. Additionally, images can be more engaging than verbal representations, adding clarity to abstract ideas, and providing a creative and enjoyable means of communication. Finally, from a practical standpoint, images are easy to integrate into both digital and non-digital design tools, such as websites, apps, booklets, posters, and card sets. Recently, more dynamic forms of embodiment beyond static images have been explored in design research. For instance, Fokkinga (2015) developed a set of short movie clips that represent 36 negative emotions, extracted from commercially available fictional films. These videos were integrated into an online design tool to support designers in intuitively grasping negative emotions. Similarly, Yoon et al. (2017) created a set of videos representing 25 positive emotions through dynamic hand-object interactions performed by professional actors. Integrated into a design tool, these videos served as effective cues for communicating emotions and as inspirational stimuli for designers. At a methodological level, Höök (2018) has proposed a new design approach called soma design, which incorporates body and movement into the design process. This approach is exemplified by the creation of the Aerial Robotic Choir[33] (Figure 4.1), a blended opera performance in which drones respond to dancers' movements and become co-performers of the choreography (Eriksson et al., 2019).

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33   A work-in progress video is available on https://operamecatronica.com/recallasmedea/.
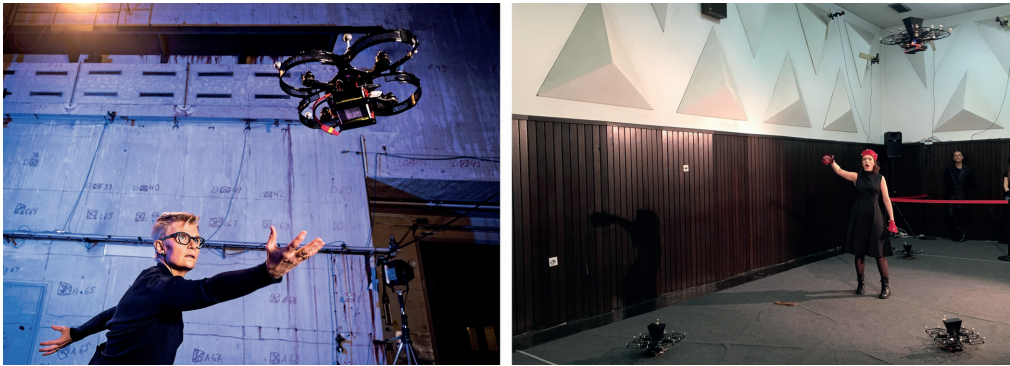
Figure 4.1. Creation of the Aerial Robotic Choir. On the left, the choreographer is designing movements with drones. On the right, the performer is practicing the choreography

Another illustration is the design process of Whisper, an interactive garment developed through embodied explorations led by somatic experts including dancers (Schiphorst, 2011). Drawing inspiration from these examples, we sought to explore the possibilities of dynamic representations of group mood by incorporating human movement. Our approach was to develop a set of videos that represent eight group moods through dance.

Videos offer new opportunities for expressing group mood experiences because they allow for dynamic, multimodal representations. Firstly, videos can effectively communicate dynamism, an essential characteristic of group mood. The qualities, uniformity, and intensity of group mood change during a meeting (see Chapter 2; Sönmez et al., 2022a), and videos can depict these changes by showing how events progress over time. Secondly, motion can help express certain group mood qualities that may be difficult to convey in a static image, such as *smoothness, cautiousness, directiveness, and hastiness*. Thirdly, videos can convey a broad array of information in a single representation. Group mood is a complex, multi-layered collective experience that involves multiple aspects —feelings, interpersonal, workflow and motivational— which can manifest differently among group members (Sönmez et al., 2022a). Videos can depict the diversity of these manifestations through multiple modes of expression, such as music, camerawork, movement, and lighting, all within a compact format.

To develop the videos representing the eight group moods, we adopted an artistic approach, with a team of artists leading the production and the researcher serving as the client. While not commonly utilized in engineering-based design research, art forms such as poetry, music, and dance have been widely used as mediums for data collection, analysis,

interpretation, and dissemination (Jones & Leavy, 2014). Art-based research[34] can be useful for exploring and comprehending complex subjective experiences, as it offers a multimodal lens through which to view them. Leavy (2019) notes that art as a mode of representation can powerfully convey the emotional dimensions of social experiences. Artistic videos can effectively communicate the nuances of group mood for two main reasons. Firstly, by engaging various senses, art can provoke strong affective responses from the audience (Lawrence, 2008), fostering empathic understanding (Eisner, 2008). Viewers, by immersing themselves in the performance, can obtain firsthand, experiential understanding of group mood. Second, the abstraction inherent in artistic expression allows the audience to interpret the experience in diverse ways (Leavy, 2018). The imaginative and creative metaphors used in art can lead to new understandings of the group mood experience (Lakoff & Johnson, 1980).

We identified dance, in particular, as a promising art form to embody group moods for two main reasons. First, dance is deeply integrated in human culture and has been a social glue for society since prehistoric times. Throughout human evolution, dance has served as a means to exchange socially relevant information and enhance coordination, coalition, stabilization, bonding, and closeness within groups (for a review, see Fink et al., 2021). In ritual and sacred forms, dance played an important role in manifesting and fostering group cohesion (Durkheim, 1912/2001).[35] The Sema, for example, also known as the Whirling Dervish Dance, is a spiritual practice in which participants spin in a circle to achieve a spiritual connection. The continuous whirling motion conveys a sense of unity and flow (Figure 4.2). Another example is the Haka, a ceremonial dance in Māori culture representing a tribe's cultural pride, strength, and unity (100% Pure New Zealand, n.d.). Today, it is still performed by the All Blacks, New Zealand's national rugby team, before matches. The vigorous and synchronous movements and rhythmic body slapping are not only used to intimidate the opponents (Figure 4.2) but also to prepare the team physically, mentally, and spiritually for the 'battle' and make them feel more connected to their teammates (*All Blacks*, n.d). Recent studies in experimental psychology provide evidence that exertive and synchronized movement in dance can accelerate group bonding (Tarr et al., 2015). Considering its engrained cultural and collective function, it is not only poetic but also natural to use dance as a means to represent the eight group moods.

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34   Art-based research is a transdisciplinary approach that integrates the principles of creative arts within a research context (Leavy, 2018). In literature, several related terms describe artistic approaches to research, including art-based inquiry, art-informed research, art-inspired research, and research through art.

35   In his seminal work "The Elementary Forms of Religious Life" (1912), Durkheim explored how rituals, including dance, serve to reinforce the collective consciousness of a society or a religious group. He argued that through rhythmic movements, gestures, and bodily expressions, individuals in a group synchronize their actions, emotions, and beliefs, leading to a heightened sense of connection and shared identity.

Figure 4.2. On the left: a Whirling dance (Sema) performance representing spiritual unison. On the right: the New Zealand rugby team dancing the Haka, facing the other team as a show of strength and prowess

Secondly, dance provides a rich medium to embody human experience vividly and holistically (Block & Kissell, 2001). Dancers are experts at translating emotional experiences into bodily expressions and movements.[36] Their extensive movement repertoire, somatic creativity, bodily skills, and aesthetic vision enable them to explore embodied movement in ways that would otherwise not be possible. Furthermore, dance performances often incorporate multimodal elements such as choreography,[37] music, lighting, costumes, and sometimes even audience interaction, enhancing the narrative. Additionally, the ability to perform dance in groups makes it ideal for depicting interpersonal interactions in a relatable way.

This chapter presents the *Vibe Video Set* (Sonmez et al., 2024b): a collection of eight dance videos portraying eight distinct group moods through the art form of dance. First, we describe the generative process involved in producing these videos (4.2.). Second, we report a questionnaire study that evaluated the videos (4.3.) and a workshop session that explored research opportunities with the videos (4.3.4.). Informed by the results, we discuss the implications and potential applications of the video set. Lastly, we compare the video set to the image set that was presented in Chapter 3, assessing their performance and similarity as group mood communication materials, and we discuss potential directions for further research (4.4.).

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36   An anecdote from a dancer, in Block and Kissell (2001, p.10) exemplifies this unique ability to transform emotions into movement: "I create the dance by tuning into my inner impulses and selecting efforts and movement qualities that align with them. For instance, the expression of a personal tragedy might be conveyed through a contracting torso, spiraling downward movements, and a sense of heaviness."

37   Choreography refers to the process of developing and structuring dance sequences through the design of specific steps, movements, and patterns, which are then organized into a coherent and expressive performance that conveys a particular emotion, concept, or message (Ontario Ministry of Education, 2009).

4.2. DEVELOPMENT OF THE VIBE VIDEO SET

We collaborated with dance studio 'The100Hands' to develop the Vibe Video Set (see the box "The 100 Hands"). Guided by the principal choreographer, several creative teams worked on various aspects, including dance, costumes, filming location, sound design, and video production. In multiple meetings, discussions were held to determine the style and content of the videos, as well as the production details (such as team composition, budgeting, and scheduling). The overall brief was defined as follows:
"To create a set of dance videos that depict eight group moods, enabling viewers to recognize the variety of group moods and relate them to their own group mood experiences".

Additionally, the creative decisions in video development were guided by three primary intentions:

1. Holistic: The videos aim to represent group mood experience as a whole by combining its multiple experiential aspects, such as feeling, interpersonal, and work style. To achieve this, a rich blend of artistic elements, including movement, choreography, music, and camera work, are carefully integrated.

2. Distinctive: Each video portrays one group mood through a unique dance choreography and unique accompanying musical arrangements. The dancers, costumes, and settings remain consistent across the videos to allow comparison between the different group moods.

3. Relatable: The videos are designed to be relatable to a broad audience regardless of their profession or level of artistic sensitivity. To achieve this, a dance style that balances abstract and literal expression was chosen. The costumes and the use of some generic office furniture gave a hint of a modern office without specifying any specific profession. To help viewers to relate to each dancer equally, non-hierarchical and gender-neutral expressions were used.

In addition, several pragmatic decisions were made to enable various types of future studies to examine the communicative efficacy of the videos. For instance, the videos were limited to a maximum length of three minutes to accommodate online studies, and verbal descriptions and titles were left out to facilitate mood identification studies.

As input for the creative process, each artist was given a copy of the Eight Vibes booklet[38] (Sonmez et al., 2022b), containing descriptions of the eight group moods. The artistic team expressed that these descriptions helped them align their understanding of each group

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38   This was the first edition of the booklet, in which *Safe Haven w*as still one of the group moods. In the second edition, *Safe Haven* was replaced by the *Jolly* group mood.

mood and gave them starting points for ideation. While the research team participated in key decisions regarding expectations and budget, we did not intervene in the artistic decisions. That is, the creative teams were afforded the freedom to incorporate their own artistic interpretation.

THE100HANDS

The100Hands is a dance production studio based in Breda, the Netherlands, led by Mojra Vogelnik Škerlj and Jasper Džuki Jelen. Known for their innovative approach, The100Hands specializes in creating physical, interactive performances that explore the connections with oneself, others, and the environment. Their work challenges social and theatrical codes, inviting the audience to engage with contradictions, different perspectives, and new realities. Renowned for their performances in public spaces, they often incorporate audience participation to enrich the overall experience (The 100Hands, 2023).

4.2.1. Setting the team

The choreographer assembled multiple creative teams to collaborate on the project. The dance team consisted of the choreographer, five dance students and a dramaturge. The costume and set designer was responsible for determining the style, creating outfits for each dancer, overseeing fitting and make-up, and selecting props for the setting. A music

composer composed unique scores for each video. The production team consisted of a producer, a cinematographer, a video developer, and their assistants. The producer was responsible for organizing the production and post-production process, communicating decisions to team members, managing the budget, and arranging the filming location and equipment. The cinematographer was responsible for recording the videos, while the video developer was in charge of post-production.

4.3.2. Selecting the dancers

The choreographer and the dramaturge recruited five dancers through auditions. The criteria for selection included body condition, group fit, authenticity in expression, ability to carefully follow the instructions, ability to reflect, and availability. All dancers were third-year undergraduate students of the same dance academy. The audition process consisted of the following steps:

Introduction and warm-up: The researcher gave a brief introduction to the project and described group mood as the *"emotional atmosphere in a group".* Physical warm-up activities included stretching exercises, dynamic movement exploration across the space, and building eye contact among the dancers.

Lead and follow: Two exercises focused on group interaction. First, dancers followed random commands given by another participant, such as walking, running, and falling in slow motion. Next, the dancers took turns proposing actions for the group to follow, exploring group responsiveness. Examples include *"Let's create an argument"* and *"Let's follow X [a dancer]".*

Setting a scene: The dancers created a scene through guided improvisation.[39] The choreographer instructed dancers to engage in various emotional expressions in a group context (e.g., boredly sitting through a meeting). Next, the dancers improvised movements by interacting with each other, and the choreographer stimulated them to reflect on the movement elements and the somatic experience of the performed improvisation.

Creating constellations: The dancers were asked to create a dynamic constellation to express a creative group mood. The aim was —in the choreographer's words— to create *"an organism of cause and effect".* The improvised movement sequences were used as a source of inspiration by the choreographer and dramaturge.

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[39] Improvisation entails a (series of) movements simultaneously created by dancers by using intuition and creativity. In guided improvisation, the dancers follow a framework provided by the choreographer, such as exploring a specific emotion or using certain body parts (The Ontario Curriculum, 2009).

Exploring new ways: The dancers were instructed to interact creatively with a chair to explore various sitting possibilities. They were invited to interact with their chair as a partner to create possibilities. After the exercise, the dancers were encouraged to reflect on their bodily experiences of partnering with the chair.

After these steps, the choreographer and the dramaturge selected five dancers and started the choreography creation process.

4.2.3. Creating choreographies

The dance team created eight dance choreographies over the course of ten full-day rehearsals. During each rehearsal day, the team studied two to four group moods. The researcher attended the 4th and the 6th rehearsal, observing the creation of the Slack, Creative and Tense choreographies.

The creation process took a collaborative bottom-up approach. Not only the choreographer but also the dancers had an influential role in generating movement ingredients, which served as building blocks for the choreographies. Below we report five overarching activities that give an impression of the creative process (Figure 4.3). Note that this report is limited to our observations. The specific sequence and content of each activity varied among the different group mood choreographies.
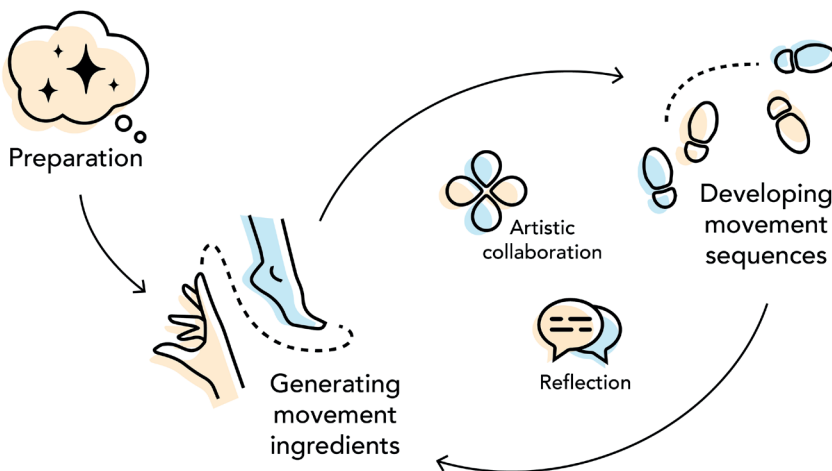
Figure 4.3. Choreography creation process in five activities

Preparation

The creative process started with the choreographer (CH) building his initial understanding of the eight group moods. Reading the group mood descriptions (Sonmez et al., 2022b) and reflecting on his own group mood experiences helped come up with starting points for the choreography.

CH used various embodiment techniques to prepare dancers for studying a particular group mood. For example, the dancers engaged in *contact improvisation* to practice coupling, which was applied to embodying the group mood in question.[40] Additionally, practice sequences and breaks were planned to optimize the mental transition between group moods.

Generating movement ingredients

Rehearsal sessions started with CH describing key characteristics of the group mood to be studied, before suggesting a starting point for the improvisation. For the Creative group mood, for example, he suggested: *"I want to start with something really organized, but then we start building on each other's ideas"*. At this point, he did not instruct dancers to perform specific movements but indicated a conceptual direction. Through improvisation, dancers explored their authentic interpretations of the group mood. CH led the process by giving feedback, proposing new directions, and gathering emerging movement elements.

Developing movement sequences

The improvisation process led, step by step, to a sequence concept, such as the *tower of connection* that emerged during the Creative improvisation (Figure 4.4). CH invited dancers to explore this sequence further: *"Let's create a tower of connection. When you move, it is a consequence of what another person in the group proposes. Let's create a world of cause and effect, a fluid connection"*. The concept was elaborated through numerous iterations, gradually evolving into a refined movement sequence. Note that not all sequences made it into the final choreography.

Next, the dancers transitioned to performing the sequence to music, introducing considerations of timing and rhythm that further refined the choreography. After creating several movement sequences, the dancers practised combining them and adding smooth transitions.

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40   Contact improvisation involves exploring one's own body in relation to the body of another dancer through sharing weight, touch, and movement awareness. Partners mutually support each other's movement while moving in and out of the physical contact (The Ontario Curriculum, 2009).

Figure 4.4. A photo of the *tower of connection* sequence, expressing the Creative group mood

Each group mood presented unique choreography challenges. Some, such as Save Haven, required an organic flow, making the quality of the scene highly dependent on the improvisation performance. Conversely, other choreographies, such as Tense and Slack, were based on a predetermined set of movements, thus requiring practice to achieve precision. For Creative and Chill Flow, the main challenge was developing the underlying concept. CH put great effort into capturing the experiential essence of Chill Flow, before reflecting later that his limited familiarity with that group mood might have hampered his creative process. For Creative, the challenge was to design distinctive movements, given that the act of dancing itself is an inherent embodiment of creativity.

Reflecting

Reflection was an integral part of the embodiment process, as it enabled a shared understanding of a group mood experience. During the rehearsals, CH encouraged dancers to reflect by asking about their embodied experience with the group mood. Occasionally, he used everyday situations as an entry point, referring to the common reluctance to get out of bed in the morning to illustrate the Slack group mood, for example: *"[It's] like you wake up in the morning, thinking 'Oh really are we gonna do this?'"*.

After the rehearsals, CH reflected on the outcome with the dramaturge. This practice was especially valuable for marking distinctions between similar group moods with regard to movement and composition. For example, the Chill and Creative group moods were distinguished in how they expressed *connectedness*. In the words of CH: *"the Chill vibe is about shape; the Creative vibe is more about how bodies relate to each other. It is about building each other in an organic way"*. However, when reflecting on the distinction between Safe Haven and Creative, he concluded that bodily connection was more typical of the former than the latter. He reinterpreted this as a *search for novelty*: *"Creative vibe is about trying new things, being creative with the body and making the audience wonder (CH)"*. As a result, the Creative choreography was redesigned to reflect an explorative, playful, and innovative atmosphere. The *tower of connection* sequence, which was initially made for *Creative*, was ultimately incorporated into the Safe Haven choreography.

Artistic Collaboration

CH collaborated closely with the dramaturge, music composer, costume designer, and cinematographer throughout the choreography creation process. The dramaturge played an important role in interpreting the group moods and translating them into movement and dance compositions. The choreography and music were developed in parallel, with each informing and enriching the other. The composer initially created sound sketches based on his interpretation of the group moods, which were then used in the rehearsals and led to a feedback exchange. For some group moods, such as Chill Flow, the music was the primary driver for choreography development, while in others, such as Creative, it was the other way around.

Costumes were an essential ingredient of the overall aesthetic of the videos, which was meant to be modern and relatable. The costume designer aimed to create a gender-neutral, smart-casual, harmonious look, designing individual outfits tailored to each dancer's body, movement repertoire, and personal preferences, while maintaining stylistic coherence. The costumes were finalized during a series of fitting sessions throughout the rehearsals.

The collaboration with the cinematographer became more frequent towards the end of rehearsals. CH recorded video footage of the refined rehearsal scenes, which reflected the videography he had in mind. Using these video sketches, the cinematographer started the ideation process for filming techniques, ensuring alignment with the artistic vision and narrative coherence of the choreographies.

4.2.4. Video production

Video production consisted of two distinct phases: filming and editing. Filming spanned two full days and took place in a large, open, industrial-style indoor space. The dance team, including the choreographer and dramaturge, the costume and set designer, the producer, the cinematographer, the lighting technician, and a few camera assistants were present during the filming days. Additionally, the research team participated as observers during the first filming day.

The filming process was led by the choreographer (CH) and the cinematographer (CT). CH acted as the director and was responsible for the performance of the dancers. CT operated the camera and was responsible for capturing the dance scenes in such a way that the aesthetics would accentuate the intended expressions. CT first watched the full choreography before discussing ideas with CH on how to shoot the scene, including cinematic elements such as camera movement, angle, perspective, and distance. The choreographies were shot piece by piece and in multiple variations. Artistic decisions were made dynamically, in real-time collaboration between CH and CT.

Editing was the last creative step, resulting in the final videos. The editor was responsible for refining the overall story by curating and assembling appropriate footage, creating seamless transitions, and fine-tuning graphics and sound. CH, CT and the producer gave feedback in this phase. Meanwhile, the composer made final refinements to the musical compositions, harmonizing them with the visual storytelling.

Vibe Video Set

The result of this artistic inquiry is a collection of eight video clips, each featuring a 3-minute dance performance: the Vibe Video Set (Sonmez et al., 2024b).[41] Each video shows five dancers performing a choreography specifically designed to represent a particular group mood (Figure 4.5), maintaining consistency in dancers, costumes, stage, and props across all video clips. The musical compositions and lighting were tailored to support the dance. The choreographies involved actual bodily expressions combined with symbolic movements that communicate metaphors. In Creative vibe choreography, for example, dancers explore a table from unusual angles and discover unique movement sequences to demonstrate *playfulness* and *thinking out of the box*.

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41   The video set is available for viewing on Zenodo at https://doi.org/10.5281/zenodo.13319377.

Figure 4.5. Stills from the Vibe Video Set consist of eight dance videos, each expressing a group mood. From top to bottom, left column: Chill Flow, Confrontational, Tense, Slack; right column: Fuzzy, Creative; Safe Haven, Fiery.

4.3. EVALUATING THE VIDEOS

The Vibe Video Set was developed to communicate eight group moods through human artistic movement. To assess the effectiveness of these videos, we conducted an online survey with 40 participants. The study was designed to answer two research questions: **(1) What qualities of group mood are communicated by the videos? and (2) To what extent do the videos successfully communicate the intended group moods?**

4.3.1. Method

We investigated the associations between the eight videos and the 36 group mood qualities, grouped into the categories feelings, interpersonal, and work style. In an online survey, participants were asked to rate the degree to which they associated each quality with the group mood expressed in each video on a scale from 1 (not at all) to 7 (extremely). Overall, participants evaluated a total of 288 video-quality pairs.

Sampling

40 respondents were recruited through an online survey recruitment platform (Prolific), all of whom received compensation for taking part. For purposive sampling, we applied the same screening and reliability check method as in the image survey in Chapter 3 (see section 3.3.1). All responses passed the reliability check.

Respondents

Our sample (N= 40) had a balanced gender distribution, with 47.5% female participants. The majority of participants were employed full-time (82.5%) and worked in small groups (55.5%). Their backgrounds spanned diverse fields of study and work. Table 4.1 provides a demographic overview of the respondents.

4

Table 4.1. Overview of the respondents

		Number (N: 40)	Percentage (%)
Gender	Male	21	52.5
	Female	19	47.5
Age	31-49	21	52.5
	18-30	17	42.5
	50-60	2	5
Nationality	UK	40	100
Language	English	40	100
Employment status	Full-time	33	82.5
	Part-time	7	17.5
Workgroup experience	Work as part of a small group of 2-10 people	22	55
	Work as part of a group and sometimes alone	18	45
Highest education level completed	Undergraduate degree (BA/BSc/other)	30	75
	Graduate degree (MA/MSc/MPhil/other)	8	20
	Doctorate degree (PhD/other)	2	5
Field of study	Computer Science	4	10
	Computing (IT)	3	7.5
	History	3	7.5
	Psychology	3	7.5
	Chemistry	2	5
	Politics	2	5
	Marketing	2	5
	Mathematics	2	5
	Art and/or design	2	5
	Economics	2	5
	Languages	2	5
	Other	13	32.5
Field of work	Operations	10	25
	Education & Training	6	15
	Information Technology	5	12.5
	Marketing, Sales & Business Development	4	10
	Administrative	4	10
	Accounting & Finance	4	10
	Engineering	2	5
	Other	5	12.5

Material

In an online survey, participants evaluated the eight videos in a randomized order. First, using free descriptions, they described the group mood portrayed in the video using one to five words. Next, they rated 36 quality words spanning the three categories using a 7-point scale to indicate the extent to which each word describes the video (1 = not at all; 7 = extremely). The survey design was adapted from the image survey used in Chapter 3, with minor adjustments (see 3.3.1 for the survey design). In particular, the content, survey task, and procedure remained consistent, with the only alterations being the substitution of images with videos, and that participants gave free descriptions first and Likert ratings second. The format and synthesizing material were modified accordingly, as described below.

First, the survey was extended to 60 minutes because videos take longer to view than images. To prevent cognitive overload, the survey was divided into two parts. In each part, the respondents evaluated a designated set of four videos: Set A or Set B. Set A consisted of Slack, Creative, Chill Flow, and Tense, while Set B included Fiery, Fuzzy, Safe Haven, and Confrontational. Both inter-set and intra-set randomization was applied. Specifically, half of the participants evaluated set A first and set B second, which was reversed for the other half. The videos in each set were shown in random order.

The second adaptation involved the synthesizing material. To prepare the respondents for the survey task, they were shown a scene from one of the videos. To reduce priming effects, the selected scene was taken from the next set, so that respondents starting with Set A were shown a 30-second excerpt from the Confrontational video, which belongs to Set B. After watching the scene, respondents were asked to choose the word pair that best described the group vibe expressed in the video. For the Confrontational scene, respondents could choose between (1) calm and peaceful, (2) hostile and agitated, and (3) joyful and energetic. Respondents were not given any feedback after their choice.

Lastly, we took a precaution to ensure that respondents watched each video in its entirety. The first time a video was introduced, we used a time lock that required respondents to wait until the entire duration of the video had elapsed before proceeding to the next section. The video remained accessible alongside the Likert scales on subsequent pages (Figure 4.6), so that respondents could rewatch the video as needed while rating the qualities.
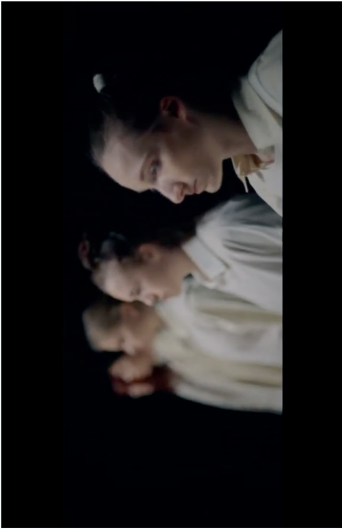
Please **rate the degree** to which the below keywords describe **how people** in this video **feel** (**You can replay** the video on the left).

People in this video seem to **feel** _____.

	Not at all 1	2	3	4	5	6	Extremely 7
Clear-minded (Sharp-minded, Bright, Productive)	○	○	○	○	○	○	○
Stressed (Nervous, Worried, Tense, Pessimistic, On edge, Afraid, Panicked)	○	○	○	○	○	○	○
Chill (Relaxed, Light, Comfortable, Content, Safe, Optimistic)	○	○	○	○	○	○	○
Reluctant (Unwilling to start or continue, Demotivated, Unmotivated)	○	○	○	○	○	○	○

	Not at all 1	2	3	4	5	6	Extremely 7
Uncertain (Unsure, Fuzzy, Lost, Unclear, Confused, Doubtful)	○	○	○	○	○	○	○
Frustrated (Annoyed, Irritated, Negative, Overwhelmed)	○	○	○	○	○	○	○

Figure 4.6. A sample Likert scale page extracted from the survey. The Fiery video (on the left) and the Likert matrix (on the right) consisting of a question, a sentence completion statement, and a scrollable list of quality words with synonyms (from the feeling category).

Data analysis

The two datasets, comprising Likert scores and free descriptions, were analyzed using the same multiple methods that were used in the image survey analysis, reported in Chapter 3. Table 4.2 shows each analysis method, its corresponding data set, its outcome, and the research question it answers. Three types of analysis were performed on the Likert scores. First, a Correspondence analysis provided a general overview of video–quality associations. Second, a one-sample t-test determined which qualities were strongly associated with each video. Third, the HIT rate was calculated to quantify the match between video profiles and the intended group mood. Lastly, free descriptions were analyzed to gain an additional understanding of respondents' impressions of the videos. In addition, we compared these results with the image survey results, which will be presented separately in section 4.4.

4

Table 4.2. Overview of data analysis, showing research questions, data, analysis methods, outcome, scale, and figure and tables presenting the results.

Research questions	Data	Analysis Method	Outcome	Scale	Shown
RQ1: What qualities of group mood are communicated by the videos?	Likert scores	Correspondence analysis	A visual overview of video-quality associations	–	Figure 4.7
	Likert scores	T-test	Expressed qualities	The qualities rated significantly higher than the scale mid-point (4) per image $t\,(39) = 2.042$, $p < .05$	Table 4.3
	Free descriptions	Frequency analysis	Top 10 descriptive words	–	Table 4.5
RQ2: To what extent do the videos successfully communicate the intended group moods?	Free descriptions	Coding (with 36 group mood qualities)	Match to intended qualities	*Matching* = Coded by an intended quality *Tolerable* = Coded by an unintended quality that is compatible *Incompatible* = Coded by an unintended quality that conflicts with an intended quality.	
			Alignment with the intended group mood	*Sufficient* alignment = Percentage of matching words ≥ 50 % (*Most–Moderate–Least* in comparison to the set)	
	Likert scores	HIT rate analysis	Degree of representation of the intended group mood	*Sufficient* representation = Percentage of the intended qualities expressed ≥ 50 % 100 % = *Full* representation ≤ 50 = *Insufficient* representation	Table 4.4

4.3.2. Results

Overview of Video–Quality Associations

A Correspondence Analysis (CA) was conducted (using SPSS Statistics software) with two factors (symmetrical normalization): Video (8 levels) and Qualities (36 levels). The correspondence plot visualizes the associations between videos and qualities (Figure 4.7). The distance between the points represents the similarity in their patterns, both for the videos and the qualities. Two dimensions in the biplot account for 89.9% of the total inertia: 57.3% along the horizontal axis and 32.6% along the vertical axis.
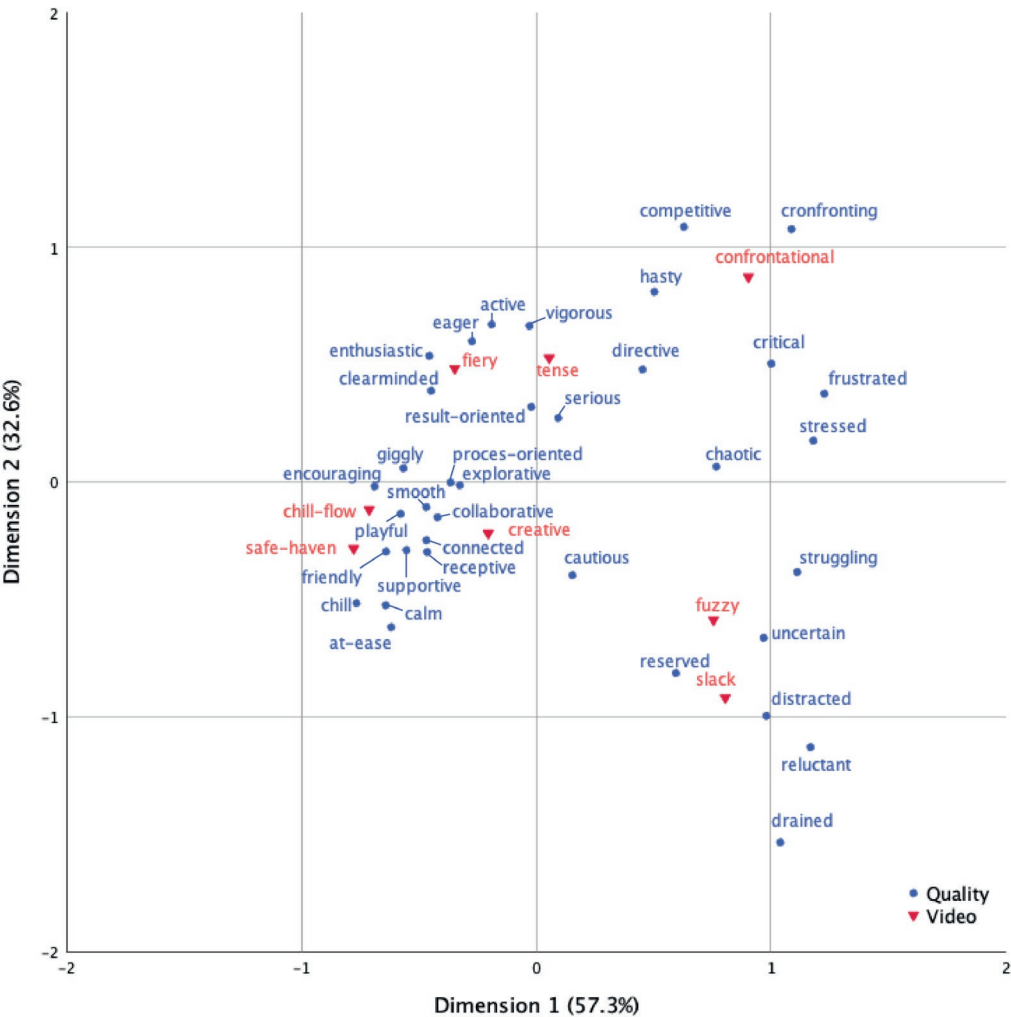
Figure 4.7. Overview of the video-quality space: the correspondence plot of eight videos expressing group moods (in red) and 36 group mood qualities (in blue)

Overall, the biplot shows a balanced distribution of videos and qualities. The left side consists of qualities that are typically associated with positive group moods, such as *friendly, clear-minded, and smooth*. On the right, we see qualities that are associated with negative group moods, such as *reluctant, struggling and directive.* The top of the biplot represents activated qualities (e.g., *competitive, enthusiastic, frustrated*), whereas the bottom represents deactivated ones (e.g., *drained, reserved, at ease*). These two dimensions resonate with the basic affect dimensions of valence (positive–negative) and arousal (activated–deactivated). The closer the qualities are to the center, the less effective they are in differentiating the videos (e.g., *serious, cautious).*

In general, videos representing negative group moods are scattered more widely across the biplot than those expressing positive group moods, which aligns with the general finding across experience research that positive experiences are less differentiated than negative ones (Ekman, 2003; Fredrickson, 2003; Frijda, 2007).

According to the biplot, the videos are associated with distinct quality profiles with varying degrees of similarity. The Confrontational video, for example, has the most distinct profile in the set, as evidenced by its relatively remote location on the plot. The Safe Haven and Chill Flow videos are located in close proximity, indicating that they express a similar set of qualities. Surprisingly, the Tense video is located closer to positive group moods and is interpreted as being more similar to the Fiery video than to the Confrontational video. The Creative video seems to be the least distinctive based on the given qualities, as it is located closest to the center of the biplot.

Video–quality profiles

A one-sample t-test was performed to determine which qualities are strongly associated with each video. The qualities that rated significantly higher than the scale mid-point (4) per video $t(39) = 2.042$, $p < .05$), are marked with an asterisk (*) in Table 4.3. These qualities are considered the **'expressed qualities'** and together form a video profile. To provide an overview of the eight video profiles, we created a heat map.

The mean scores of video-quality ratings were mapped onto a matrix. The qualities (rows) and videos (columns) are sorted by mean correlation using the technique explained in Chapter 3 (see section 4.3.2). The color indicates the mean values on the red-green color spectrum (fully red = 1.00; fully green = 7.00). Accordingly, the further the mean is from the mid-score (4), the denser the color. Note that our Likert scale was unipolar, which means that red does not indicate a negative association, but ratings below the midpoint (4).

Table 4.3. Video–quality matrix with mean scores (heat map). The quality words that are rated significantly higher than the scale midpoint (4) are marked with a *. These strongly associated quality words together form a video profile.

Variable no	Quality	Slack mean	Fuzzy mean	Conf. mean	Tense mean	Fiery mean	Chill F. mean	Safe H. mean	Creative mean
33	cautious	3,5	4,53	3,3	3,1	2,28	3,98	4,38	3,15
32	chaotic	3,28	4,25	4,28	3,08	3,48	1,45	1,45	3,9
4	reluctant	* 5,94	4,05	2,78	1,9	1,4	1,45	1,68	2,93
12	drained	* 6,28	4,25	1,93	1,48	1,25	1,9	2,05	2,63
16	reserved	* 4,65	4,5	2,55	2,3	2	2,7	2,65	2,85
26	distracted	4,35	* 5,18	2,17	2,2	1,8	1,43	1,5	3,48
5	uncertain	* 4,7	* 6,33	3,63	2,98	1,8	1,75	1,8	4,2
34	struggling	4,55	* 4,7	4,18	2,63	2,13	1,63	1,58	2,5
2	stressed	3,3	* 4,95	* 5,4	3,5	2,17	1,38	1,45	2,2
6	frustrated	3,35	3,18	* 5,25	3	2,03	1,3	1,27	1,95
17	critical	2,85	3,28	* 5,65	3,23	2,23	1,75	1,43	2,5
18	confronting	2,25	2,4	* 6,58	3,45	2,42	1,48	1,15	2,23
14	competitive	1,9	2,42	* 6,48	4,13	4,15	2,13	1,43	2,73
28	hasty	2,3	2,58	* 4,78	* 4,68	4,33	1,75	1,55	2,83
21	directive	3,55	2,93	* 5,53	* 5,3	3,95	2,88	2,55	2,88
10	giggly	1,3	1,43	1,18	2,13	2,85	2,08	1,98	3,58
27	playful	1,45	2,13	1,4	2	3,55	3,23	2,88	* 4,58
29	explorative	2,28	3,95	3,13	3,95	* 5,38	* 5,3	* 5,2	* 5,75
25	atease	3,05	2,58	1,27	2,1	3	* 5,05	* 5,55	4,3
8	calm	3,28	2,65	1,53	2,9	3,03	* 6,15	* 6,55	4,35
3	chill	2,8	2,28	1,23	2,78	2,9	* 6	* 6,3	* 4,7
19	receptive	3,3	3,15	2,08	3,5	* 4,55	* 5,53	* 6,1	* 5
15	friendly	2,4	2,93	1,55	3,03	4,4	* 5,3	* 5,98	* 4,95
20	connected	3,28	3,95	2,08	4,3	* 5,43	* 6,3	* 6,78	* 5,25
13	supportive	3,35	3,15	1,73	4,13	* 4,83	* 5,98	* 6,9	* 4,53
23	collaborative	3,58	3,58	2,42	* 5,03	* 5,68	* 6,18	* 6,7	* 5,08
22	encouraging	1,93	2,4	1,9	3,55	* 4,95	* 5,18	* 5,8	3,93
31	smooth	3,1	3,03	2,7	4,28	* 5	* 6,1	* 6,48	4,43
35	processoriented	3,05	2,68	3,15	4,33	* 4,68	* 5,55	* 5,5	4,43
1	clearminded	2,1	2,05	4,05	* 5,38	* 5,83	* 6,1	* 5,6	3,88
9	enthusiastic	1,55	1,88	3,65	* 4,95	* 6,43	* 4,85	* 4,6	4,05
7	eager	1,65	2,33	* 4,72	* 5,33	* 6,25	* 4,88	4,5	3,95
11	active	1,63	2,45	* 5,08	* 5,95	* 6,7	4,43	4,13	* 4,6
24	vigorous	1,98	2,78	* 5,4	* 5,6	* 5,95	4,3	3,63	3,58
30	serious	3,78	3,78	* 5,68	* 5,75	* 5,3	* 4,9	* 4,78	3,5
36	resultoriented	3,23	2,9	* 5,05	* 5,18	* 5,08	* 4,75	4,45	3,75

0,00	Not at all
7,00	Extremely

Overall, the heat map suggests four quadrants: a gradient positive–negative divide between videos and qualities. As expected, Fiery, Fiery, Chill Flow, and Safe Haven express positive qualities, while Slack and Fuzzy express negative qualities. Confrontational and Tense express both positive and negative qualities. Surprisingly, Tense is associated more with positive qualities than negative ones.

The video set expresses almost all qualities, except for *cautious, chaotic, and giggly. Giggly* is the least distinctive quality across the videos, with only 2.4 points of difference between the highest (3.58) and lowest (1.18) mean ratings. It is also the only quality with a mean score below the mid-point (4) for all videos.

The heatmap provides an overall comparison of video and quality profiles. In general, positive videos are interpreted more broadly than negative ones. Chill Flow is interpreted the broadest, with 17 expressed qualities, which overlap with the Safe Haven profile to a great extent. Fuzzy and Slack are interpreted the narrowest, with each expressing only four qualities. Creative seems to distinguish the least on the given qualities, with the minimum variation between its highest and lowest mean scores (max = 5.75; min = 1.95). The heatmap also reveals strong correlations among quality ratings. For example, *calm and chill, eager and active* are rated similarly across the video set, presumably measuring a common underlying dimension.

HIT rate

To determine if the videos express the intended qualities, we performed a HIT rate analysis. The HIT rate quantifies the degree to which each video represents the intended group mood. Each column in Table 4.4 shows a video profile in relation to its intended group mood. Rows are arranged as following:

- The top three rows show the **expressed qualities** (as identified by the t-test) in three aspects: feeling, work style, and interpersonal. Many of these qualities are shared by the intended group moods **(shared qualities).** The others, which do not belong to the intended group moods, are **additional qualities** that participants associated with the videos. Most additional qualities are compatible with the intended profile, and therefore **tolerable** (marked with a *). However, a few conflicts with the intended group mood, therefore considered **incompatible** (marked with a **). For example, *supportive* and *explorative* are additional qualities of the Fiery video. *Supportive* is tolerable, because it relates to cooperative social interaction, as does *encouraging*. On the other hand, a group can hardly be *explorative* and *result-oriented* at the same time. Therefore, *explorative* is marked as an incompatible additional quality for the Fiery video.
- The fourth row shows the **missing qualities**, which are the intended qualities that the video failed to express.

Table 4.4. Video profiles in relation to their intended set of group mood qualities.

		SAFE HAVEN	CHILL FLOW	FIERY	TENSE	CONFRONT.	CREATIVE	SLACK	FUZZY
Strongly expressed qualities	Feeling aspect	Calm Chill Clear-minded* Enthusiastic*	Calm Chill Clear-minded Eager** Enthusiastic*	Active Clear-minded Eager Enthusiastic	Active Clear-minded* Eager* Enthusiastic**	Active Eager Frustrated Stressed*	Active Chill	Drained Reluctant Uncertain*	Stressed* Uncertain
	Work style aspect	At ease Explorative* Process-o. Serious* Smooth*	At ease Explorative* Process-o. Result-o.** Serious Smooth	Explorative** Process-o.** Result-o. Serious Smooth Vigorous	Hasty Result-o. Serious Vigorous	Hasty* Result-o.** Serious Vigorous	Explorative Playful	–	Distracted* Struggling
	Interpersonal aspect	Collaborative Connected Encouraging Friendly Receptive Supportive	Collaborative Connected* Encouraging* Friendly* Receptive Supportive	Collaborative Connected Encouraging Receptive** Supportive*	Collaborative Directive	Competitive Confronting Critical Directive	Collaborative Connected* Friendly Receptive Supportive*	Reserved	–
Missing qualities		–	–	Directive Hasty	Frustrated Stressed Struggling	Cautious Chaotic Process-o. Struggling Uncertain	At ease Chaotic Encouraging Enthusiastic Process-o. Uncertain	At ease Critical Distracted Frustrated Result-o. Struggling	Calm Cautious Chaotic Collaborative Critical Process-o. Receptive Reserved Serious
Hit rate		**100%**	**100%**	**84.6%**	**70%**	**64.3%**	**53.8%**	**33.3%**	**18.2%**

Additional qualities: * Tolerable, **Incompatible
Shared qualities= Strongly expressed qualities – additional qualities

Lastly, the HIT rate is calculated by dividing the number of shared qualities by the number of intended qualities (shared and missing qualities). A HIT rate of 50% or more is considered sufficient for effectively conveying the intended group mood. Note that the additional qualities are excluded from this calculation because our primary focus was on assessing the degree to which the videos communicate the intended set of qualities.

The videos represent their intended group moods to varying degrees. Based on their HIT rates, the video set can be categorized into three groups:

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Full representation: The Safe Haven (100%) and Chill Flow (100%) videos expressed the full set of intended qualities. The Safe Haven video expressed five additional qualities (*clear-minded, enthusiastic explorative, serious,* and *smooth)*, which all were tolerable because they would not impair being process-oriented when working in a Safe Haven group mood. On the other hand, the Chill Flow video expressed seven additional qualities, two of which were incompatible (*eager* and *result-oriented*). Importantly, there is a noticeable overlap between the two video profiles, as all qualities expressed by the Safe Haven video were also expressed by the Chill Flow video. In the interpersonal aspect, there is a full overlap between the two videos.

Sufficient Representation: The Fiery (84.6%), Tense (70%), and Confrontational (64.3%) videos expressed more than half of the intended qualities, representing the intended group moods to a sufficient degree. They missed two, three, and five intended qualities, respectively. They all expressed a few additional qualities, but only for the Fiery video most of the additional qualities were incompatible (*explorative, process-oriented, and receptive*). Notably, the Tense and Confrontational profiles overlap to some extent, with a high level of similarity in the work style aspect. The Creative (53.8%) video represented the intended group mood sufficiently, with six missing and two tolerable additional qualities *(connected and supportive)*.

Insufficient Representation: The Slack (33.3%) and Fuzzy (18.2%) videos expressed less than half of the intended qualities, and thus insufficiently represented their group moods. Importantly, both videos lacked the expression of a third aspect, with the Slack video expressing no work style qualities (*at ease, struggling, distracted*) and the Fuzzy video missing all interpersonal qualities (*critical, receptive, collaborative, reserved*). According to the t-test results, the Slack video expressed *struggling* and *distracted* qualities to a considerable but weak degree ($t=1.198$, $p=.238$ and $t=1.697$, $p=.098$, respectively). The same applies to the Fuzzy video with regard to *reserved* ($t=1.818$, $p=.077$).

Free descriptions

Participants provided various words to describe the group mood communicated by each video, see Appendix B1 for the complete overview. On average, 116 different words were reported per video, with Safe Haven yielding the fewest words at 102 and Fuzzy the most at 124. While some of these words repeated the qualities given for the Likert scale rating task (e.g., *friendly, confused, lethargic*), many were unique (e.g., *gregarious, dazed, slovenly*).

Common categories of words used by participants to describe the group mood communicated by each video included subjective feelings (e.g., *spooked, unbothered, curious, vibrant*), interpersonal interaction (e.g., *manipulative, nurturing, intimidating*), group bond (e.g., *together, cohesive, unified*), task organization (e.g., *methodical, systematic, disorganized*), ways of moving (e.g., *mechanical, forceful, floppy*), ways of acting (e.g., *meticulous, unconventional, reactive*), and activity flows (e.g., *seamless, stuck, incomplete*). Another interesting category was words describing synchronicity and coordination (e.g., *synchronized, in sync, coordinated, simultaneous, sequence, timely*). In rare cases, participants described the situation they saw in the video literally (e.g., *voices, carrying others, searching*) or metaphorically (e.g., *a production line, prison*).

To obtain insights into participants' impressions of the videos, we counted the words they used to describe each video and clustered them based on their meaning, repeating the procedure for the Vibe Image Set that was reported in Chapter 3 (see section 3.3.2). Variations (e.g., *peaceful* and *peace*), synonyms (e.g., *distrust* and *untrust*), and words with close meanings in the context of a group mood (e.g., *harmony* and *unison*) were grouped together by the most frequently mentioned word. For example, *careful* (n=6), *cautious* (n=1) and *meticulous* (n=1) were grouped under *careful* (n=8). We used the Merriam-Webster thesaurus as a source in the clustering process.[42] Table 4.5. shows the top ten most frequently used words to describe each video.

Finally, to evaluate whether participants' impressions align with the intended group mood, we coded the most frequently used words by the 36 group mood qualities (Appendix B2, shows the corresponding codes). The words with no direct link to intended qualities were marked as 'non-matching words'. Non-matching words that were deemed compatible with the intended group mood were marked with a *, while the ones conflicting with the intended group mood were marked as incompatible (with a **).

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42   A trusted online English dictionary (https://www.merriam-webster.com/thesaurus).

Table 4.5. Top 10 to 13 most frequently used words to describe Eight Group Vibe videos.

SLACK VIDEO (N= 54)	n:	CHILL FLOW VIDEO (N= 62)	n:	TENSE VIDEO (N= 54)	n:	FIERY VIDEO (N=65)	n:
Lethargic	35	Collaborative	27	Collaborative	18	Energetic	33
Tired	27	Calm	20	Organized*	16	Competitive**	14
Unmotivated	10	Synchronized	21	Energetic	13	Fast	12
Controlling*	9	Creative*	14	Rushed	12	Coordinated	12
Serious*	6	Precise	9	Stressed	10	Collaborative	12
Repetitive*	6	Focused	9	Directive	10	Structured*	10
Clinical	6	Togetherness*	9	Unsure*	8	Together	6
Robotic*	5	Smooth	8	Fast	8	Focused	5
Struggling	5	Structured*	7	Synchronized*	8	Busy	5
Depressed*	5	Connected*	6	Focused	7	Vigorous	5
						Fluid	5
						Eager	5

CONFRONTATIONAL VIDEO (N= 61)	n:	SAFE HAVEN VIDEO (N=52)	n:	FUZZY VIDEO (N= 56)	n:	CREATIVE VIDEO (N= 58)	n:
Aggressive	28	Caring	22	Confused	30	Curious	12
Competitive	20	Supportive	22	Uncertain	19	Chaotic	12
Confrontational	19	Connected	20	Scared *	13	Playful	11
Tense*	10	Collaborative	20	Lost	11	Energetic	9
Suspicious	9	Togetherness	17	Nervous*	10	Strange*	9
Hostile	9	Trusting	16	Awkward*	9	Friendly	8
Distrusting	9	Calm	14	Disjointed	8	Fun	8
Conflict	8	Gentle	9	Curious*	7	Confused	6
Rushed*	8	Careful*	8	Chaotic	6	Explorative	6
Intense	7	Loving	7	Collaborative*	6	Collaborative	6
		Friendship	7	Unfocused*	6	Unconventional	6
				Low energy*	6		
				Lonely*	6		

N: Number of different word groupings used to describe the video
n: number of people reported the word (frequency)
Non-matching words: * Tolerable, **Incompatible
Words that do not match any of the 36 qualities directly are underlined.

Overall, the majority of words describing the videos matched the intended group moods, except for Fuzzy. For example, "clinical" matches with *reserved* —a defining quality of the Slack group mood. Overall, almost all non-matching words were tolerable (*). To illustrate, "tense" was marked as tolerable for the Confrontational video, although it was coded as

stressed —an additional quality for the Confrontational video. We considered it tolerable, as it can accompany the intended qualities. That is, being "tense" *(stressed)* is neither essential nor an obstacle to experiencing a confrontational group mood. Similarly, "careful" (coded as *cautious*) is marked as tolerable for the Safe Haven because it can coexist with the qualities of the group mood (e.g., *supportive* or *receptive).*

Note that some words do not match any of the 36 qualities directly (underlined), but can be linked loosely. For example, the words "repetitive", "robotic", and "depressed" were used to describe the Slack video. Despite not matching any of the 36 qualities, they are loosely linked to being *drained*— an intended quality— and we thus considered them tolerable. Similarly, although "lonely" does not fully match *reserved* —an intended quality— it is close enough to be considered a tolerable quality for the Fuzzy group mood.

Only one word is marked as incompatible in the image set. "Competitive" conflicts with *collaborative* —a defining quality of the Fiery group mood. In other words, group members do not compete but collaborate with each other towards a shared goal when in a Fiery group mood.

Overall, the number of words matching the intended qualities determines the alignment of the videos with their intended group mood. Accordingly, the Safe Haven and Creative videos are most closely aligned with their intended group mood. Confrontational, Tense, Chill Flow, and Slack are moderately well aligned, with two to five tolerable words. Fiery also shows moderate alignment with only two non-matching words, but one of them is incompatible ("competitive"). This is deserving of thought, given that it is the second most frequently used word to describe the video. The Fuzzy video aligns with the intended group mood the least, with seven non-matching words, all of which were tolerable. Besides, the top two most used words describing the video are linked to *uncertain,* which is an essential quality of the Fuzzy group mood.

4.3.3. Conclusion and Discussion

In this study, we investigated the effectiveness of the Vibe Video Set in communicating the intended group moods. Below, we discuss the results and draw conclusions with regard to the two leading research questions. Additionally, we reflect on the additional findings and limitations of the study.

What qualities of group mood are communicated by the videos of the Vibe Video Set?

Overall, our findings indicate that the Vibe Video Set effectively communicates a wide range of group mood qualities. As depicted in the top three rows in Table 4.4 nearly all tested qualities are expressed by at least one video, with the exception of *cautious, chaotic, and*

giggly. However, it is evident that not all videos are equally expressive. Specifically, the Safe Haven, Chill Flow, and Fiery videos express a broader range of qualities compared to the others, while the Slack and Fuzzy videos express the fewest qualities. This discrepancy aligns with general affect research findings, which indicate that positive subjective experiences tend to be interpreted more broadly than negative ones (Ekman, 2003; Fredrickson 2003; Frijda 2007). Importantly, the Slack and Fuzzy videos lack qualities representing a third aspect, with Slack missing work-style qualities and Fuzzy the interpersonal qualities. This is deserving of thought as all aspects (feeling, interpersonal, and work style) should be represented to ensure a comprehensive understanding of group mood experiences (Chapter 2; Sönmez et al., 2022a).

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In addition to the given 36 qualities, participants used numerous unique words to describe the group moods represented in the videos. Of particular interest were words belonging to two distinct categories: those describing (1) task organization (e.g., *structured, organized, methodical, orderly, systematic*) and (2) synchronicity (e.g., *synchronized, in sync, coordinated, simultaneous, sequence, timely*). These words do not directly align with any of the given qualities but rather refer to opposites to or combinations of some qualities. For example, "organized" refers to the opposite of *chaotic,* and "synchronized" can be interpreted as a combination of *connected* and *smooth.* Here, we discuss two possible explanations for the use of these words. On the one hand, videos may express new qualities that only emerge in dynamic (i.e. non-static) context. It might therefore be worth considering adding these words to the list of 36 qualities. On the other hand, one may wonder whether these words describe not the group mood but the situation. Working in an "organized" way may depend on the task itself rather than on the group mood. Similarly, only certain group activities may support working in "synchrony". This line of thinking would also open up our quality *chaotic* for discussion, as it appears to be the exact opposite of "organized". Drawing a conclusion on these matters would require further research, in which learning what the participants meant by these words could be an effective first step.

To what extent do the videos of Vibe Video Set successfully communicate the intended group moods?

The results showed that the eight videos communicate the intended group moods to various degrees. We discuss the representativeness of each video by combining the two sets of results. Conclusions were informed by the HIT rates (main source) and the free descriptions (supplementary source). Additionally, we indicate main improvement points for each video based on the two revision strategies offered in Table 4.4: (1) reducing the expression of additional qualities (marked with * and **) and (2) strengthening the expression of the missing qualities (in blue). Figure 4.8 provides a visual overview of the HIT rate results.
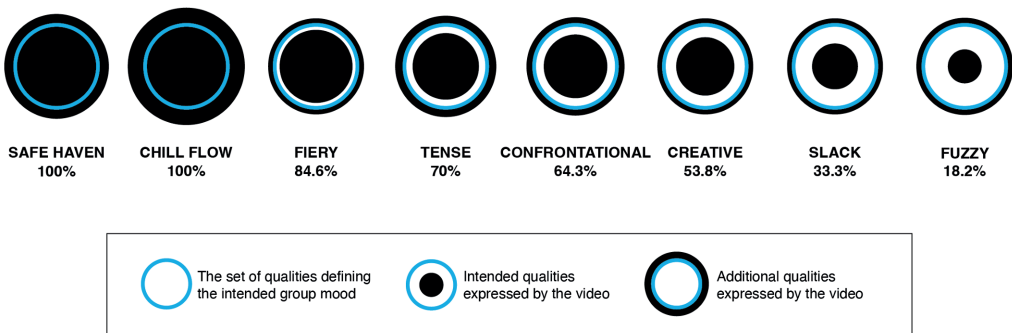
Figure 4.8. A visual overview of the extent to which each video represents the qualities of the intended group mood based on HIT rate results (see Table 4.4).

Both the HIT rates and the free descriptions confirm that the Safe Haven, Chill Flow, Fiery, Tense, Confrontational and Creative videos effectively communicate their intended group mood.

- The **Safe Haven** video expresses all intended qualities. Reducing the expression of additional qualities (*clear-minded, enthusiastic, explorative, serious, and smooth*) can increase the clarity of the representation.
- The **Chill flow** video expresses all intended qualities. Reducing the expression of additional qualities (*enthusiastic, explorative, connected, encouraging, and friendly)* and especially the incompatible ones (eager and *result-oriented*) can enhance the clarity of the representation.
- The **Fiery** video represents a large set of the intended qualities. To achieve full representation, the expression of the two missing qualities *(directive and hasty)* should be strengthened. Reducing the expression of additional qualities (*supportive)*, especially the incompatible ones (*explorative, process-oriented, and receptive*), could lead to a clearer representation. Note that the video is also described as "competitive", a word that conflicts with a fiery group mood and whose portrayal should be minimized. This interpretation could potentially be explained by a misunderstanding, in that participants might have used "competitive" to describe inter-group interaction (how the group interacts with other groups) rather than intra-group interactions (how the group members interact with each other).
- The **Tense** video expresses a moderate portion of the intended qualities. Strengthening the expression of three missing qualities (*frustrated, stressed and struggling)* is necessary to achieve full representation. Furthermore, reducing the expression of the additional qualities (*clear-minded, eager*), and especially the incompatible quality (*enthusiastic*), will increase clarity.
- The **Confrontational** video expresses a moderate portion of the intended qualities. To achieve full representation, five missing qualities (*cautious, chaotic, process-oriented,*

struggling, and uncertain) should be expressed. Furthermore, reducing the expression of the additional qualities (*stressed and hasty*), especially the incompatible quality (*result-oriented*), can enhance clarity. Note that free descriptions also show moderate alignment with the intended group mood. Eight of the top ten most common words match four intended qualities (*frustrated, competitive, confronting, critical, and vigorous)*, suggesting that the video represents part of the group mood quite clearly.

- According to the HIT rates, the **Creative** video expresses slightly more than half of the intended qualities, making it (just) sufficiently representative. Surprisingly, its free descriptions show the closest alignment with the intended group mood, in that all the top descriptive words, except for one, align with eight intended qualities (*active, chaotic, collaborative, explorative, friendly, playful, receptive,* and *uncertain*). This indicates that while the video does not fully communicate the group mood, it does effectively portray some of its key qualities. Therefore, we regard the video as more than 'just sufficient' at representing the Creative group mood. However, in order to fully communicate the intended group mood, efforts should be made to enhance the expression of the missing qualities *(at ease, chaotic, encouraging, enthusiastic, process-oriented,* and *uncertain).* Additionally, reducing the expression of the additional qualities (*connected* and *supportive*) will increase the clarity of the representation.

The Fuzzy video falls short in communicating the intended group mood, as indicated by both the HIT rates and free descriptions.

- The **Fuzzy** video only expresses two of the nine intended qualities, resulting in an insufficient score based on the HIT rate analysis. Most importantly, it does not express interpersonal qualities (*critical, collaborative, receptive,* and *reserved)*, at least one of which should be expressed to achieve a holistic representation of the Fuzzy group. To be fully representative, it should also express other missing qualities (*calm, cautious, chaotic, process-oriented,* and *serious).* Furthermore, reducing the expression of two additional qualities (*stressed* and *distracted)* will increase clarity.

The Slack video communicates the intended group mood to an acceptable degree. The HIT rate and free descriptions show inconsistent results.[43]

- According to the HIT rate, the **Slack** video represents the intended group mood insufficiently, with less than half of the intended qualities expressed. However, the free descriptions are moderately well aligned with the group mood, as five of the top 10 descriptive words match four intended qualities (*drained, reluctant, struggling,* and *reserved*), one of which counts as a missing quality in the HIT rate analysis (*struggling*).

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43   As mentioned in Chapter 3 (see section 3.3.3) the inconsistency between the HIT rate results and free descriptions is probably caused by differences in analysis focus. While the HIT rate assesses a comprehensive match, the free descriptions analysis assesses a partial match with the intended qualities.

This suggests that while the video does not represent the intended group mood fully, it does clearly express a portion of it. To achieve holistic representation, it is necessary to strengthen the expression of work style-related qualities *(at ease, distracted, struggling)*. Additionally, strengthening the expression of other missing qualities *(critical, frustrated* and *result-oriented)* will contribute to full representation. For further clarity, the expression of the additional quality *(uncertain)* should be reduced.

Additional Findings

The study generated additional insights into the relationships between the videos, shedding light on their similarity in terms of expressed qualities. While the correspondence plot (Figure 4.7) gives a general overview of these similarities, the heatmap (Table 4.4) provides a more detailed comparison between video profiles. One notable finding is the overlap between the profiles of the Chill Flow and the Safe Haven videos, with the Chill Flow video expressing all 15 qualities expressed by the Safe Haven video and differing from the latter by only two additional qualities *(eager* and *result-oriented)*. This overlap is undesirable, as it decreases the granularity of our embodied group mood typology (see Desmet et al., 2021). Another interesting observation is that the Tense video is interpreted as being more similar to the positive group moods than to the negative ones. This could be attributed to its interpretation as *eager* and *enthusiastic* rather than *stressed* and *frustrated*. The Confrontational video stands out the most, while the Creative video is the least distinctive based on the given qualities. Furthermore, the heat map reveals strong correlations between some qualities. For example, *reluctant* and *drained* consistently received similar ratings across all videos, suggesting a shared underlying factor. It is therefore worth investigating what underlying factors can be identified for the 36 qualities, which could inform dimensions of group mood in general.

We should note that our findings are specific to the videos rather than the group moods themselves. To investigate the generalizability of our findings, it is worth comparing quality-group mood associations expressed by both the video and image sets.

4.3.4. Research opportunities workshop

To explore further research opportunities with the videos, we organized a two-hour workshop with design researchers from our faculty. To recruit participants, we sent email invitations to our research community, comprising 46 people, targeting researchers with an interest in mood, group dynamics, and dance performances. To generate interest, we included a link to a 30-second video trailer in the email invitation and distributed printed invitations resembling movie tickets (Figure 4.9) around the office. Responding to these invitations, ten researchers volunteered to participate in the workshop, bringing in diverse levels of experience and fields of expertise (as shown in Table 4.5). Three of these researchers

were involved in the project related to this thesis and were therefore already familiar with the videos.

Table 4.5. The experience and expertise of the workshop participants

Experience	Expertise
Junior researcher	Wellbeing and participation
PhD candidate*	Mood-sensitive interactions
PhD candidate	Wellbeing and kindness
PhD candidate	Wellbeing measurement and AI
PhD candidate	Critical futures and participation
PhD candidate	Material experience
Postdoc	Human-robot interaction
Postdoc*	Wellbeing and mood regulation
Full professor*	Mood-driven design
Full professor	Design aesthetics

* Participants who were already familiar with the videos

Figure 4.9. Workshop invitation designed as a movie ticket

Procedure

The researcher (the author) gave a short presentation to introduce the concept of group mood, the eight group mood types, and the purpose and process of creating the videos. The goal of the session was explained as generating study ideas for utilizing the videos in design research. Next, the videos were played on a big screen one by one. In the ensuing 75 minutes, researchers engaged in an open discussion about the potential of these videos as a research material. The generated study ideas were collected on post-its and clustered by the researcher after the session.

Results

Overall, the participants responded to the video set with interest and enthusiasm. They were impressed by its aesthetic quality and acknowledged its unique capacity to convey nuanced group moods. The session provided a variety of research ideas, which we grouped into three overarching research directions, each utilizing the videos with a unique focus: (1) studying the videos, (2) studying the effect and use of videos, and (3) studying group mood with the videos. Below, Table 4.6 lists the research ideas with respect to research directions, objectives, and example research questions, methods, and potential outcomes.

Studying the videos: The studies in this category examine the content of the videos. The first two studies investigate the visual elements of the videos using an analytical approach. Study 1a aims to identify embodiment elements specific to each group mood by utilizing methods from art education or movement sciences such as Laban Movement Analysis (LMA) developed by Rudolf Laban. Alternatively, other modes of expression in the videos (such as camerawork, facial expressions, and music) or the Vibe Image Set (Chapter 3) can be included in the analysis. The premise of identifying these qualities is that they can be translated into design elements when designing artefacts to express a particular group mood. Given the potential influence of movement literacy on the findings, it may be advantageous to involve a dance expert in this study.

Study 1b aims to extract video fragments that express essential characteristics of each group mood. While the act of breaking the video down into pieces may sacrifice the richness of the holistic expression, the fragments can serve as ingredients for certain research purposes, such as expanding the group mood typology. Participants can combine fragments to report new complex group moods. In addition, these fragments can offer a more adaptable alternative for certain research procedures, such as questionnaires or experiments.

The next two study ideas focus on how the videos are perceived in relation to each other (1c) and culture (1d). Both avenues can provide insights into the applicability of the videos. For example, if a video is labelled differently in different cultures, this would mean that the video should either be revised or used with caution when applied in an international context.

Studying the effect and use of the videos: The studies in this category explore the effect and potential use of the videos in the context of group work and the design process. The first idea (2a) involves using the videos as an intervention material to influence group mood during group work. An interesting concept would be encouraging participants to embody the movements in the video instead of merely watching them. The second study (2b) investigates the potential of videos as an inspirational tool in the design process, which can inform the development of design tools or methods targeting group mood. The last

Table 4.6. Research opportunities with the Vibe Video Set

Research Direction	Objectives	Research questions	Methods	Potential Outcomes
1. STUDYING THE VIDEOS	a. Identifying transferable qualities for each group mood	What are transferable qualities expressed in each video?	A visual analysis: Participants describe the movement elements present in the video. Common qualities are marked	A list of transferable qualities that can be translated into other forms of group mood representation, such as designed artefacts.
		What visual/ embodiment qualities do the image and video of a particular group mood have in common?	A visual analysis: Participants describe the common visual qualities present in video and image or in multiple modes of expression in videos.	
	b. Identifying essential video fragments for each group mood	Which fragments of the video are essential for the representation of each group mood? (feeling, interpersonal and work style aspects)	A rating study: People select the most representative video fragments for each of the 36 qualities.	A set of video fragments that can be used to make video collages to represent complex group moods.
	c. Assessing the differences between group mood videos	Which group moods represented by the videos are confused the most?	A labelling study: People label each video with given titles.	A confusion matrix to inform refinement of the videos.
	d. Comparing how the videos are interpreted in different cultures	How does the effectiveness of videos communicating group moods change across cultures?	A cross-cultural study: A multicultural population rates the degree to which 36 qualities are represented by each video	Insight into the cross-cultural performance of videos.
2. STUDYING THE EFFECT AND USE OF THE VIDEOS	a. Investigating the effect of videos on group mood	How can the videos influence group mood?	An intervention study: Group members report their group moods before and after watching a video.	Insights on how to manipulate group mood
			An intervention study: Group members report their group moods before and after embodying movement from a video.	Insights on the potential of the videos as a group management tool
	b. Investigating the use of videos in the design process	How can the videos contribute to designers' process of designing for group mood	A case study: Designers design a vibe-expressing product using the videos as an input	Best practices for using the videos as an inspiration tool
	c. Testing the effect of videos on group mood granularity	Do the videos increase granular vocabulary to describe group mood? If so, in what ways?	An experiment: People describe the group moods they experience before and after watching the videos	Insights into how videos affect granular understanding of group mood.
3. STUDYING GROUP MOOD USING THE VIDEOS	a. Investigating desired group moods	What are the desired group moods (in a certain organization or profession)?	An interview study: After watching the videos, groups reflect on their desired group mood and the ways they facilitate it	A desired group mood palette and tips to achieve them for certain organizations or professions
	b. Investigating group mood management strategies	What strategies do groups use to manage their group mood?	An interview study: Let groups or facilitators watch the videos. Then ask them what strategies they use to set or deal with a certain group mood.	A list of strategies to facilitate or diminish each group mood
	d. Investigate the group mood dynamics	Are there common patterns in the way group mood changes? What are the consecutive group moods?	A longitudinal study: Watching the videos, multiple teams report their group moods during multiple meetings at certain intervals	Type of group mood transition patterns.

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study (2c) aims to test whether videos enhance a granular understanding of group mood, thereby assessing their value for both workgroups and designers. The outcome of these studies can serve a dual purpose. First, they can reveal the potential of videos in facilitating (design for) group mood, and second, the insights gained can inform (design for) group mood management in general.

Studying group mood using the videos: Rather than focusing on the videos, the studies in this category investigate aspects of the group mood phenomenon —desired group moods, management strategies, and group mood dynamics— by utilizing videos as a research tool. The first two studies (3a and 3b) suggest using the videos as a synthesizing material to prepare participants to talk about group mood-related topics in rich detail. The last study (3c) utilizes videos as a measurement tool, more specifically as a self-report inventory. That is, participants can select the videos that reflect experienced vibes through free association without having to translate them into words. These studies exemplify the diverse array of use cases in which the videos can serve as research materials to explore group mood phenomena. However, as the examples are based on the assumption that the videos will increase participants' granular understanding of group mood, it is imperative to test their effectiveness as a research tool (e.g., in studies such as 2c) before utilizing them.

This provided list of study ideas serves as a starting point, offering inspiration for researchers interested in utilizing the Vibe Video Set as research material to explore group mood phenomena. However, it is important to recognize that the possibilities are not limited to the studies outlined here, and there may be many other avenues for using the videos as research material. We hope that the overview will encourage researchers to creatively explore the potential of such artistic representations in studying group mood and other complex subjective phenomena.

4.3.5. General discussion on the Vibe Video Set

In this chapter, we reported the development and evaluation of the Vibe Video Set, a collection of eight dance videos representing group mood through human artistic movement. Our results demonstrated that the video set communicates the intended group moods in a holistic, distinctive, and relatable way. The set is holistic because the majority of group moods have all three aspects represented. Strengthening the expression of the interpersonal aspect in the Fuzzy video and the work style aspect in the Slack video will enhance the holistic representation of the set. The set is distinctive because the videos express different sets of qualities. Revising the videos based on the recommendations outlined earlier can help improve the distinctiveness of the set, especially with regard to the distinction between Safe Haven – Chill Flow and Tense – Fiery. Lastly, the set is relatable, because the videos were described with a variety of authentic words, most of which align with intended qualities.

The research opportunities workshop provided three broad research directions for utilizing the Vibe Video Set for design research. The first direction is to investigate the content of videos with regard to visual elements and associations (e.g., intra-set, cross-culture). The two studies presented in Part B of this thesis are examples of this research direction, as they examined the group mood qualities expressed by the Vibe Image Set and Vibe Video Set. Future studies may also focus on analyzing the movement elements in each video to identify a group-mood specific embodiment repertoire. Such a repertoire could then be a starting point when developing other embodied communication materials, as well as designing products or interactions to express a specific group mood. Secondly, design researchers can investigate the effect and use of the videos in the context of group work. Part C of this thesis will present two studies pursuing this research direction. Lastly, the video set can be used as a research tool (synthesizing material or self-report inventory) in studies investigating group mood.

We envision potential applications for the Vibe Video Set in the context of group work. First, the videos can be used as communication mediums to train group mood granularity. By watching the videos and familiarizing themselves with different group moods, teams can improve their ability to identify their current group mood, enabling them to take appropriate regulatory actions. Secondly, the videos can be used as a conversation starter for reflecting on group dynamics. The artistic, therefore abstract, and multi-interpretive representation of the videos can lower the threshold for discussing negative group experiences, which can otherwise be confronting. Lastly, the videos can be used as embodiment material to help influence group mood. In embodied mood regulation approaches, the body is considered an important source for affect regulation (as discussed in Veenstra et al., 2017). That is, bodily processes can be the cause, not only the results of mood change. In fact, a recent study by Veenstra et al. (2017) showed that a stooped body posture impairs recovery from a negative mood. Although evidence on the effects of the bodily process on mood regulation is limited to posture and individual emotion states, it can be interesting to experiment with an embodied approach in work groups. As an example, the Vibe videos can inspire embodied mood regulation strategies. Imagine a two-step embodiment workshop in which the team first uses the videos as a source of inspirational movement inventory and explores each group mood by moving their body. Next, the team creates a dance sequence to evoke a target group mood. In the same way the New Zealand rugby team performs the Haka dance to get into a Fiery group mood before the match, the new dance ritual could be performed to set a group mood suitable for the upcoming collective task. For example, a workgroup could perform an 'Inspiration dance' to get into a Creative group mood before an ideation task, or a 'Flow dance' to get into a Chill Flow mood before a decision–making meeting.

Finally, the Vibe Video Set contributes to the experience design field in several ways. First, it contributes to the repertoire of experience typologies and extends the dynamic

representation from curated movie clips and acted hand-object interactions to performed dance choreographies. To our knowledge, the video set is the first to embody different group moods through human dance-based artistic movement.

Secondly, our work can serve as an exemplar of embodied design approaches, which are gaining popularity with the rise of technologies that enable movement-based interactions. In the field of interaction design, various movement design frameworks (Ross & Wensveen, 2010; Fogtmann et al., 2008; Bongers & Veer, 2007; Hornecker & Buur, 2006), design approaches (e.g. Hummels et al., 2007), design methodologies (e.g., Loke & Robertson, 2013), and design tools (e.g., Hansen & Morrison, 2014), have been developed to support designers in conceptualizing movement and in designing and evaluating movement-based interactions, particularly with technology. Similarly, the soma design approach proposed by Höök (2018) places the body and movement at the forefront of the design process, arguing that designing with the body enriches interaction design, which has historically been dominated by language and logic. Soma designers can use the Vibe Video Set in the process of designing movement-based interactions.[44] First, they can use the videos as embodiment material. By enacting the movements in the videos, they can empathize with user groups and train their movement sensibility for specific group moods. Second, they can use the videos as design material. Linking to potential research ideas discussed before, extracting movement qualities from each video can inspire design ideas at a more generic level. For example, by identifying "what movement makes a group mood Fiery," designers can translate the movement element in question into a vigorous product interaction. Lastly, on a general level, the videos can be used to train designers' somaesthetic sensitivity and appreciation, which Höök argues will enhance their capabilities in crafting movement-based interactions (see Höök, 2018, pp. 48–53 for the full discussion based on Shusterman's somaesthetics theory).

Lastly, the Vibe Videos demonstrate the potential value of incorporating an artistic approach into experience research. We propose that the artistic style of the videos contributes to the communication of group moods in unique ways. By engaging the senses, the videos vividly bring to life the experiential and interactive qualities of group moods. The nonverbal embodied expressions directly address our emotions, bypassing the need for verbal explanations. Moreover, their aesthetic appeal not only makes them enjoyable to watch but also sparks curiosity about the nuances of group moods. Regarding the artistic process, designers can learn at least two principles from how artists translate subjective

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44   Drawing on literature, Loke and Robertson (2013) mentions two ways to conceptualize movement in design process (1) movement as a design material, which means the moving body is viewed as a creative material, (2) movement is a skill to develop for designers, including movement-based knowledge and sensibility.

concepts into embodied elements. First, the "embody first" approach involves dancers immersing themselves in the experience of the group mood before attempting to articulate it with words. This helps them establish a deeper connection with the experience beyond mere verbal constructs. Designers can adopt this approach to empathize with users in their attempts to generate relevant design solutions. Second, the "embracing subjectivity" approach involves using personal experiences with the group mood as a source for ideation. While introspection has traditionally been left to be practiced behind closed doors in the design discipline, recent work of Xue and Desmet (2019) has highlighted the value of using *researcher's introspection* to understand subjective experiences. Our study demonstrates that the interpretation of eight group moods by a small group of artists can resonate with a wide audience. Finally, we hope our Vibe Video Set encourages artistic collaborations in the design field, as artists with somatic expertise can be invaluable facilitators in the exploratory design process (Schiphort, 2011).

4.4. COMPARISON WITH THE VIBE IMAGE SET

In this section, we compare the results of the Correspondence and HIT rate analyses of the image and video sets. Overall, our results show that as sets, images and videos represent the eight group moods similarly, while the performance and content of the representation vary for different group moods.

4.4.1. Similarity between group moods

Figure 4.10 shows two correspondence plots visualizing the associations between eight group moods represented by 36 qualities in two materials: the image set (on the left), and the video set (on the right). The distances between plotted elements indicate their level of similarity. In both plots, dimension one is interpreted as valence (positive–negative), and dimension two as arousal (activated–deactivated).

Overall, the distribution of eight group moods is remarkably similar in the image and video plots. Although the differentiation between group moods varies depending on how they are represented (image vs. video), the difference is minor for most group moods. Specifically, Confrontational, Slack, Fuzzy, Safe Haven, Chill Flow and Fiery have very similar locations on both plots. On the video plot, the Slack and Fuzzy pair and the Chill Flow and Safe Haven pair seem more similar than on the image plot. Interestingly, the Creative video is interpreted as being less active than the Creative image. The most striking difference is observed in the Tense group mood, with the Tense video being more closely associated with positive group moods —particularly Fiery— while the Tense image is more closely linked to negative group moods such as Fuzzy and Confrontational.
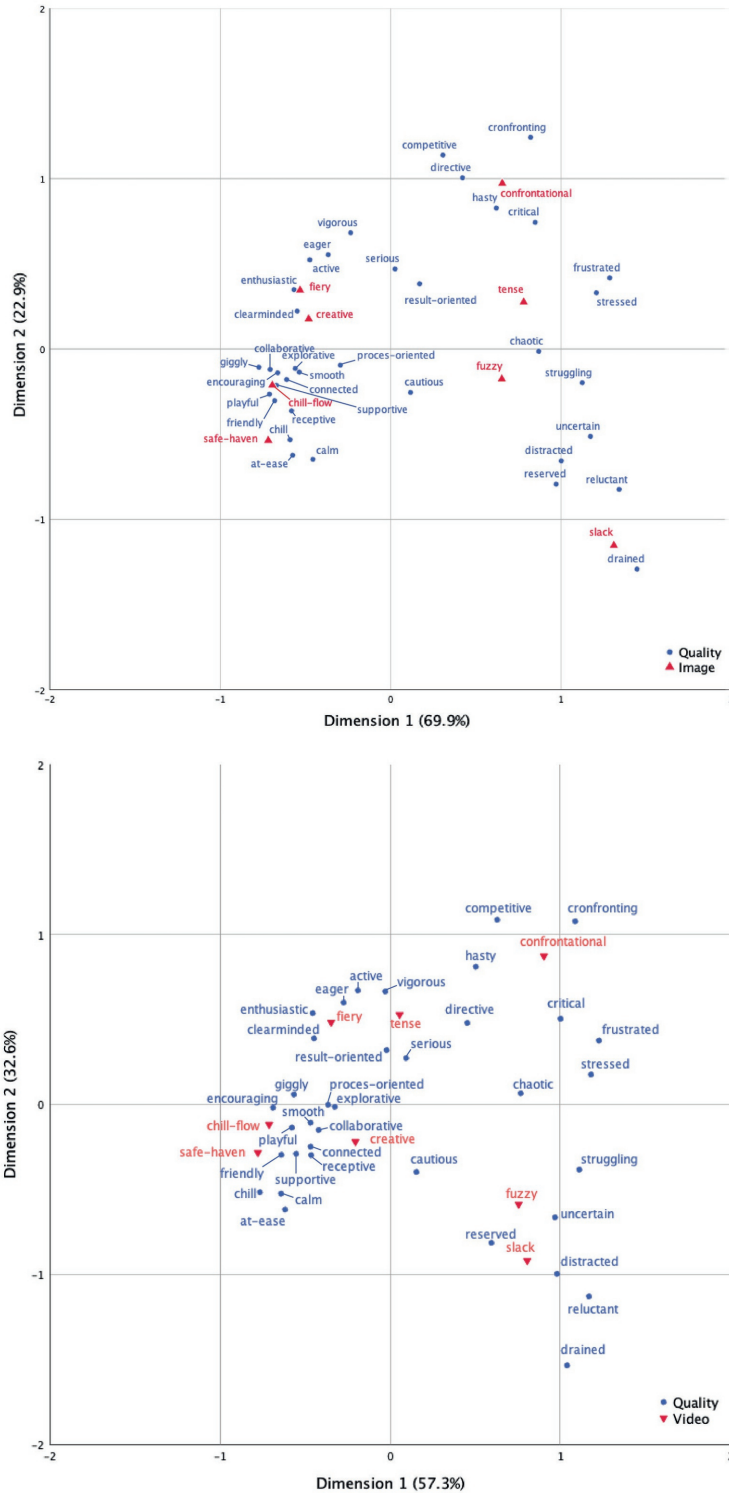
Figure 4.10. The correspondence plots visualizing the associations between 36 group mood qualities (in blue) and two vibe-expressing materials (in red): Vibe images (on the top) and Vibe videos (on the bottom).

4.4.2. Performance of representation

The HIT rates of the image and video sets can be used to compare the performance of the two sets (Figure 4.11).
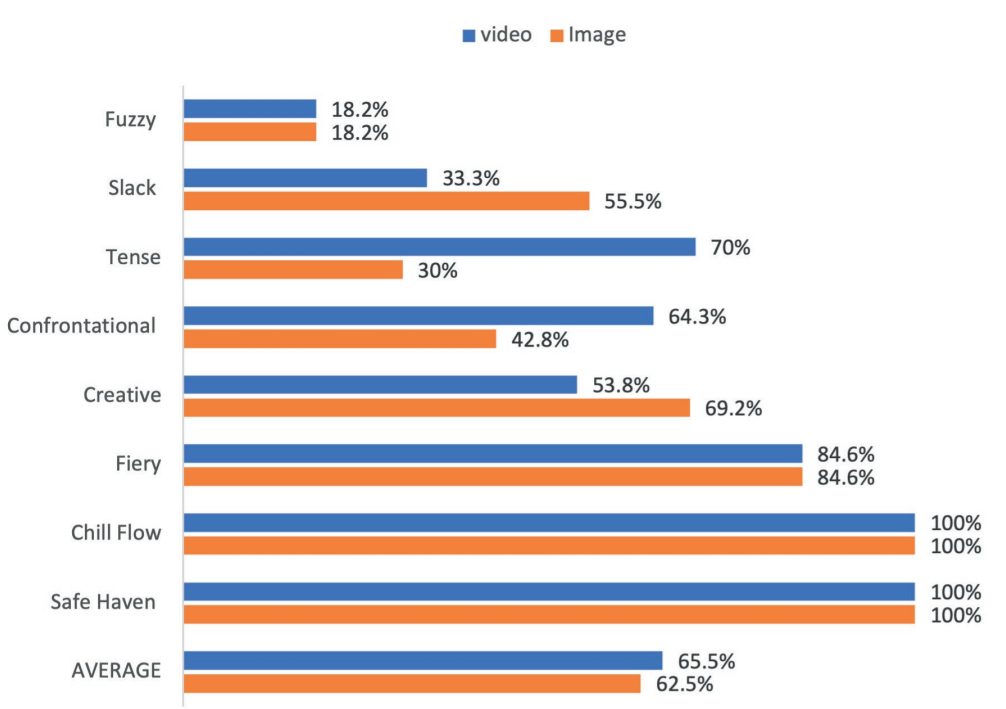
Figure 4.11. HIT rates of images and videos representing each group mood and their average performance

On average, the image and video sets portray the eight group moods to a similar degree (image set= 62.5% and video set= 65.5%). However, images and videos perform differently for individual group moods. Safe Haven (100%), Chill Flow (100%), Fiery (84.6%) and Fuzzy (18.2%) are equally expressed by both mediums. For the remaining group moods, the degree of representation varies. While the images portray Creative and Slack more comprehensively, videos perform better for Tense and Confrontational. The biggest performance difference is between the Tense image and the Tense video (30% versus 70%).

4.4.3. Similarity of representation

Based on the HIT rate results, we compare the content of the images and videos (see Appendix B3 for a visual comparison of the HIT rates). Table 4.7 and Table 4.8 present a comparison of the qualities expressed by images and videos side-by-side for each group mood, enabling a detailed analysis of the similarities and differences in their representation. In both tables,

Table 4.7. Comparison of the qualities expressed by images and videos for the Safe Haven, Chill Flow, Fiery and Fuzzy group moods

		SAFE HAVEN		CHILL FLOW		FIERY		FUZZY	
		Image	Video	Image	Video	Image	Video	Image	Video
Expressed qualities	Intended qualities	At ease Calm Chill Collaborative Connected Encouraging Friendly Process o. Receptive Supportive		At ease Calm Chill Clear-minded Collaborative Process o. Receptive Serious Smooth Supportive		Active Clear-minded Collaborative Connected Eager Encouraging Enthusiastic Result o. Serious Smooth Vigorous		Struggling Uncertain	
	Additional qualities	Clear-minded* Explorative* Smooth*		Connected* Eager** Encouraging* Enthusiastic* Explorative* Friendly*		Explorative** Supportive*		Distracted*	
		Playful*	Enthusiastic* Serious*	Active** Playful*	Result o.**		Process o.** Receptive**	Drained*	Stressed*
Missing qualities						Directive Hasty		Calm Cautious Chaotic Collaborative Critical Process o. Receptive Reserved Serious	

the top section shows the **intended qualities** (those aligned with the intended group mood) and **additional qualities** (those expressed beyond the intended ones) expressed by each medium. The bottom section shows the **missing qualities** (the intended qualities that were not expressed).

Images and videos express group moods with varying levels of similarity. To keep the discussion concise, this section focuses on the similarities between the mediums regarding the intended qualities they express. Table 4.7 presents group moods for which the images and videos are highly similar in representation, while Table 4.8 presents group moods with lower similarity in representation.

Expressing the same set of intended qualities: Videos and images express the same intended qualities for Chill Flow, Safe Haven, Fiery and Fuzzy (see Table 4.7) which means that the representation of these group moods is consistent across the two mediums. This consistency implies that viewers of both mediums will get a similar understanding of the group moods. In the case of Fuzzy, however, it should be noted that while the two representations are consistent, they are also poor, with both mediums expressing only two intended qualities: *struggling* and *uncertain*.

Table 4.8. Comparison of the qualities expressed by images and videos of the Creative, Confrontational, Slack and Tense group moods

Expressed / Missing qualities	CREATIVE Image	CREATIVE Video	CONFRONTATIONAL Image	CONFRONTATIONAL Video	SLACK Image	SLACK Video	TENSE Image	TENSE Video
Intended qualities (expressed by both)	Active, Explorative, Playful, Collaborative, Friendly, Receptive		Competitive, Confronting, Critical, Directive, Frustrated, Serious			Drained, Reluctant, Reserved		
Intended qualities (medium-specific)	At ease, Encouraging, Enthusiastic	Chill		Active, Eager, Vigorous	Distracted, Struggling		Frustrated, Stressed, Struggling	Active, Collaborative, Directive, Hasty, Result o., Serious, Vigorous
Additional qualities	Clear-minded**, Eager*, Vigorous* Connected*	Supportive*	Result o.**, Stressed*	Hasty*	Uncertain*		Chaotic*, Distracted**, Uncertain*	Clear-minded*, Eager*, Enthusiastic**
Missing qualities	Chill	Chaotic, Process o., Uncertain At ease, Encouraging, Enthusiastic	Active, Eager, Vigorous	Cautious, Chaotic, Process o., Struggling, Uncertain	At ease, Critical, Frustrated, Result o.	Distracted, Struggling	Active, Collaborative, Directive, Hasty, Result o., Serious, Vigorous	Frustrated, Stressed, Struggling

Expressing a different set of intended qualities: In the case of Creative, Confrontational, Slack, and Tense, images and videos do not express the exact same set of intended qualities (see Table 4.8). The Creative group mood is represented by five shared and four different intended qualities. While the Creative image expresses *at ease, encouraging, enthusiastic,* the Creative video expresses *chill.* The Slack image and the Confrontational video cover all the intended qualities expressed by the other medium. Additionally, the Slack image expresses *distracting* and *struggling,* while the Confrontational video expresses *active, eager,* and *vigorous.* Surprisingly, the Tense image and the Tense video share no qualities, with each expressing the intended qualities that the other misses.

An interesting question is whether the similarity in group mood representation in images and videos can be explained by shared aesthetics. As an initial exploration, we compared embodiment elements observed in the representations of Chill Flow (high similarity) and Tense (low similarity).[45] Our comparison focused on elements that could be observed in both mediums —posture, facial expression, actual or implied movement, interaction, shape, space, and proximity between bodies— while excluding modes of expression reserved for the videos (e.g., music, light, camera movement and angle). Our initial observations suggest that it is indeed possible to explain the similarity in representation by the use of common embodiment elements in both images and videos.

Sharing the highest number of group mood qualities, the Chill video and image have several common embodiment elements. Both the video and image depict the group as being in constant motion, moving in a relaxed, effortless way with open body postures. Facial expressions appear neutral and concentrated. Arms trace invisible lines through the air in a sustained, deliberate manner, with the upper body gracefully joining in the movement. Differences in the movements of individuals are counterbalanced by an overarching sense of synchrony within the group. In the image, actors pose as a continuum of a single movement sequence, generating a sense of big motion by responding to each other's individual poses. Similarly, in one scene, dancers seamlessly transfer from one ongoing movement to another (Figure 4.12 middle left). In another scene, they perform the same movement facing in slightly different directions with slight delays, conveying a sense of ease and freedom (Figure 4.12 bottom left). The spacious group composition is also consistent in both representations.

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45   Since we are not experts in embodiment, our observations may be limited. To mitigate this potential shortcoming, we relied on the dance glossary of the Ontario Ministry of Education (2009) as a source of embodiment vocabulary. This comprehensive glossary gathers movement terminology from various dance pedagogies such as Laban, thus enriching our understanding of the embodied elements portrayed in the videos.
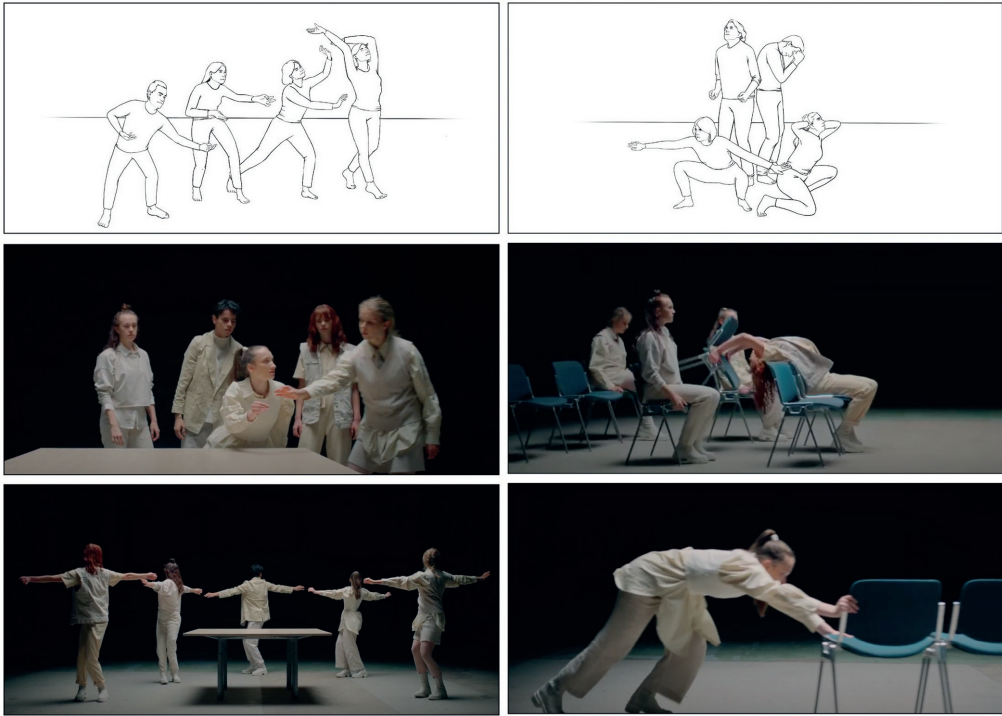
Figure 4.12. (left) Chill Flow image and two video scenes, (right) Tense image and two video scenes.

Conversely, the Tense image and video exhibit notable differences in terms of embodiment elements. The most striking difference is the use of space. In the image, the actors are packed tightly in the center, displaying closed body postures and defensive facial expressions that suggest they are almost paralyzed in response to an outside threat (Figure 4.12 top right). In contrast, the video shows the group in action with sharp locomotor movements. The bodies 'carve out' space by pulling and pushing chairs around, testing structures and following each other's commands (Figure 4.12 middle right). The video portrays intense effort, with one dancer moving a chair with an impressive back stretch and another dancer pushing a stack of chairs (Figure 4.12 middle and bottom right). These expressions of hard work, directness, and dedication are possible reasons why the video is perceived as being so similar to the Fiery video. Although stress and struggles are communicated through restless movements and exaggerated attention to detail, they are not as obvious as they are in the image. Drawing on these two examples, we propose that it is possible to identify embodiment qualities that are typical of group mood representations.

4.4.4. Underlying Dimensions of Group Mood

The comparative analysis aside, we also explored the underlying dimensions represented by these two mediums for expressing group mood. Both the image and video analyses revealed strong correlations among some of the 36 qualities, with *frustrated* and *stress*, for example, receiving similar scores across the image and video set, possibly revealing a common dimension. To investigate the underlying dimensions of the 36 qualities expressed by the images and the videos, we performed an explanatory factor analysis on the combined Likert scores (with SPSS software), using Principal Components extraction and Varimax rotation. In general, factor analysis uses the correlations of a large number of variables to identify a smaller set of underlying factors (Hair et al., 2014). When there is no prior assumption about the variables, explanatory factor analysis is appropriate.

Barrett's test of sphericity yielded a significant result ($\chi 2$ (630) = .962, $p<0.001$), confirming the viability of the factor model for the dataset. The cut-off point was based on eigenvalues (>1). The analysis resulted in four factors explaining 70.8% of the total variance. The factor loadings in Table 4.9 indicate the strength of the correlation between the measured qualities and the factors.

Factor one was solid with an eigenvalue of 8.71 and explained 24.2% of the variance. Factor two explained an additional 21.6% of the variance with an eigenvalue of 7.79. Factor three had an eigenvalue of 6.68 and accounted for 18.6% of the variance. Lastly, 6.3% of the variance was attributed to the last factor, with an eigenvalue of 2.28. Note that three variables were problematic. *Process-oriented* had an acceptable but insignificant (<0.5) factor loading (0.48). *Reserved* and *result-oriented* had commonalities slightly below significance (both 0.49). Following the recommendations of Hair et al. (2014), we disregarded these poorly represented variables when interpreting the factor solution.

The factor analysis revealed that four factors were sufficient to explain the underlying structure of the 36 qualities associated with the two sets of group mood-expressing materials. The qualities showed a balanced distribution among the first three components. **Factor one** is defined by the qualities *eager*, the opposite of *drained, distracted,* and *reluctant.* We interpreted this factor as focused readiness: i.e., the motivation, energy, and focus propelling the group forward, and therefore labelled it **drive**. **Factor two** was labelled **disharmony** and interpreted as friction, disagreement, and dominance between the group members. Among the 11 qualities, *hasty, critical, and directive* defined this factor. **Factor three** consisted of 11 qualities, but was mainly defined by *playful* and *giggly*. We interpreted this factor broadly as being open to people, novelty, and fun, and labelled it **openness**. Lastly, **factor four** was labelled **caution,** as its only defined by being *cautious*.

Table 4.9. Four underlying dimensions and the factor loadings of 36 qualities expressing group mood (>0.30 are shown).

Rotated Component Matrix[a]

	Component			
	1	2	3	4
eager	.816			
drained	-.808			
distracted	-.792			
active	.772		.385	
reluctant	-.767			
enthusiastic	.765		.436	
clear-minded	.751		.317	
uncertain	-.750	.408		
vigorous	.743	.336		
reserved *	-.625			
struggling	-.584	.500		
serious	.564			.525
result-oriented *	.517			.403
confronting		.791	-.310	
hasty		.785		
critical		.764		
competitive	.320	.750		
frustrated	-.344	.712	-.313	
stressed	-.359	.687	-.353	
directive		.670		
calm		-.646	.456	
chaotic	-.374	.621		-.354
chill		-.599	.570	
smooth	.490	-.500	.369	.360
playful			.814	
giggly			.781	
friendly		-.460	.723	
explorative	.399		.677	
receptive		-.498	.668	
encouraging	.457	-.378	.645	
connected	.368	-.466	.623	
at ease		-.584	.616	
collaborative	.417	-.399	.603	.325
supportive	.338	-.488	.572	.326
process-oriented	.345		.448	.374
cautious				.718

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.[a]

a. Rotation converged in 10 iterations.

These factors underlie the 36 qualities expressed by two sets of visual representations of the eight group moods: eight Vibe Images and eight Vibe Videos. Consequently, we regard these four factors as potential dimensions of the group mood phenomenon. In other words, as an alternative to 36 qualities, eight group moods can be described across four dimensions: **drive** (indicating whether the group is driven or reluctant to achieve a goal), **harmony** (reflecting whether the group is harmonious or incompatible), **openness** (indicating if the group is open or closed to novelty, people, or fun) and **caution** (reflecting if the group is cautious or careless).

4.4.5. General discussion on comparison

In the second part of the chapter, we compared the Vibe Image Set and Vibe Video Set with regard to the Likert ratings obtained from separate studies. Our findings indicate that the sets represent eight group moods similarly in terms of intra-set distribution and average performance. However, there is variance in how separate group moods are expressed in their image and video representations. Our initial exploration into the content of the mediums revealed that the similarity in representations could be explained by shared embodiment qualities. Additionally, our findings revealed four dimensions to describe group mood as an alternative to the 36 group mood qualities. In this section, we discuss the implications of our findings for group mood research and applications in group work and design context, and provide recommendations for future research.

Consistency in representations

The remarkable similarity in the overall group mood distribution and average performance is noteworthy, considering the images and videos were developed by different artistic teams, using different artistic mediums and processes. This means both sets convey a similar overall understanding of eight group moods, with neither set outperforming the other. This is surprising, as one would expect videos to perform better, given their ability to convey more information simultaneously.

However, the performance of and similarity between individual group moods do differ. First, it should be noted that the Chill Flow, Safe Haven, and Fiery images and videos represent group moods sufficiently and consistently, i.e., with the same set of intended qualities, indicating that it is possible to generate artistic representations that consistently communicate group moods regardless of style and creator's interpretation. On the other hand, Confrontational, Slack, and Creative are represented differently in the video and image sets. Strikingly, the Tense video and image have no qualities in common, which could mean three things. First, performance may depend on the quality of the artistic outcome. Another dance team might have developed a Slack choreography that did fully represent the group mood. Second, some mediums may be more effective in representing certain group moods. For example, the stillness of the image can amplify the passiveness of Slack,

while the restlessness of Tense may be conveyed better in movement. Third, some qualities may be less suitable for expression through either medium, which could also explain the consistently poor representation of the Fuzzy group mood. Accordingly, the choice of which medium to use depends on the group mood and the purpose of the application. For example, images may be more practical to use as a card set in team meetings, while videos can be more engaging for workshops and audiences with artistic interests. Indeed, it is worth testing the use and experience of these materials as intervention tools in the context of group work.

Additionally, we suggested two revision strategies to consider when improving the representation of each group mood: reducing or strengthening the expression of certain qualities. However, one may wonder how reducing *enthusiasm* but strengthening *stress* would translate in the Tense video, as these qualities are not isolated components that can be easily independently manipulated. After all, art is a holistic representation in which multiple elements work together —such as expression, movement, and music. By proposing these strategies, our aim is to provide a shared vocabulary for researchers and artists to align their revision goals. Additionally, it is important to acknowledge that revising artistic representations can be challenging, particularly in the case of dance videos, where the complexity of the representation is high. Reducing the expression of a specific quality may require reproducing the entire video, which would be time-consuming and costly.

Shared embodiment qualities

Our initial exploration of the content of images and videos revealed that the similarity between representations could be explained by shared embodiment qualities (e.g., open posture, smooth movement, rhythmic motion), which may represent invariant aesthetic features of group mood. Invariant features[46] are properties of an object that remain constant despite changes in viewpoint or conditions, meaning that they are transferable from one domain to another. Extracting shared embodiment qualities, therefore, can provide new insights into communicating group moods in design. Designers can make use of such qualities as an inspirational starting point to express or influence group moods. For example, the synchronicity shared by Chill Flow image and video can inspire a wall clock design that conveys a Chill Flow vibe. This wall clock could highlight the hidden rhythm between the hour, minute, and second hands—perhaps through synchronized visual patterns, lighting or sounds. Alternatively, the same quality can be embedded in user interaction to facilitate a Chill Flow group mood. Imagine a workshop timer that continues working only if the group members move a crank in a synchronous manner. Moving in synch could help to evoke a chill flow vibe in the group.

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46   The invariance concept is commonly used in mathematics, physics, computer science, and psychology, and it is a critical component of James Gibson's theory of perception (Goldstein, 1981).

Identifying the shared embodiment qualities requires further research into the content of the image and video sets. To enhance validity, we have proposed four recommendations. Firstly, embodiment experts should be involved in designing and analyzing the study. Secondly, when analyzing the dance videos, supplementary elements such as music and camerawork should also be taken into consideration. Thirdly, it may be worth exploring existing embodiment frameworks or analysis methods in movement science and performance arts, such as Laban Movement Analysis (LMA)[47] and the Six Viewpoints (STSEMS)[48] framework to inform the analysis process. Lastly, as our comparison was based on two different datasets —each consisting of intra-set ratings— comparing images and videos in pairs (e.g., the fiery image versus the fiery video) can increase the validity of the comparison.

While extracting transferable qualities is an interesting area of research, it is important not to overlook the value of the holistic expression provided by the videos. To clarify, we do not suggest replacing the images and videos with a prescribed list of qualities to design with. We agree with Boehner et al. (2008) in recognizing that codifying, generalizing, and modelling the aesthetic experience for design may risk losing or overlooking ineffable aspects of the phenomenon in the design process. Therefore, a plausible approach would be for designers to interpret the group mood video representations and extract relevant embodiment qualities that inspire and are relevant to their design goals. However, it is essential to acknowledge that not all designers possess artistic literacy[49] or a rich embodiment vocabulary. In such cases, a predefined list of embodiment qualities, as a supplement to the image or video, can be helpful in triggering the designer's artistic sensitivity, enabling them to recognize qualities they might otherwise overlook.

Implications for Group mood research

Our findings extend our understanding of group moods in several ways. Firstly, the observed similarity in correspondence between group moods suggests a generalizable relationship between them. Further investigation into these relationships could reveal patterns and transition thresholds between group moods. Contributing to the understanding of group mood dynamics, such knowledge can open up new research directions to aid group mood

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47   LMA is a method to describe and document human movement qualities in four categories: body, effort, shape, and space. It is based on Labanotation, a comprehensive movement notation system developed by the choreographer Rudolf Laban (Hansen & Morrison, 2014).

48   The Six Viewpoints, developed by Mary Overlie in the 1970s, is a performance art theory that identifies six fundamental elements of performance: space, time, shape, emotion, movement, and story. It provides a framework for analyzing and creating performances, and a shared language for performers and directors (Overlie, 2016).

49   Artistic literacy refers to the ability to understand, appreciate, communicate effectively, interpret, and critically analyze various forms of art. According to National Core Arts Standards (2023), artistic literacy creates links between art and other fields of study, which allows for the incorporation of meaning across different subject areas.

management. For example, based on the level of similarity, we would expect moving from a Tense towards a Confrontational vibe to be less effortless than moving towards a Creative vibe. If this is true, what would be the strategies to transition from Tense to Creative? Exploring activities or products that support groups to make such transitions could be a fruitful avenue for future research.

One issue that warrants attention in future research is the consistent overlap between Chill Flow and Safe Haven. In both representations, Chill Flow covered all the qualities expressed by Safe Haven. This might mean that the group moods are not experienced distinctively. In fact, the three qualities distinguishing them are from the same factor dimension (openness). Accordingly, it could be worth revising the definition of these group moods to enhance the granularity of the typology. This can be achieved by removing Safe Haven from the set or by redefining a new group mood by using its distinguishing qualities.

Secondly, our findings revealed four potential dimensions to describe eight group moods. Describing such a complex subjective phenomenon requires making a trade-off between granularity and simplicity (Desmet, Sauter & Shiota, 2021). While these four dimensions provide a less granular vocabulary compared to the original 36 qualities, they offer an alternative lens for understanding and operationalizing group mood. In organizational research and practice, these dimensions could serve as variables for measuring and manipulating group mood, developing them into a self-report vibe measurement instrument, allowing groups to report their mood experiences. Periodic reports could provide insights into group dynamics, supporting group mood management efforts.

In the design discipline, the four dimensions could help designers envision alternative group mood experiences (e.g., what would an undriven yet harmonious group look like?) and could provide a structured yet flexible design space for idea generation. For example, to support a Fiery group mood, designers could explore ideas to increase group drive, focusing on qualities such as being eager, active, focused, and motivated. Lastly, these dimensions could serve as criteria for evaluating design interventions, allowing designers to assess the effectiveness of their designs by measuring changes in group vibe along the four dimensions.

4

PART C

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Facilitating Group Mood Reflection

In part B of this thesis, we developed two vibe-expressing materials in groupwork settings. In Part C, we will explore the application of these materials. In Chapter 6, we incorporate the *Vibe Images* into an intervention and examine its impact on group mood management during group work. In Chapter 7, we utilize *Vibe Videos* as an embodiment material in a workshop and evaluate the workshop's effect on group mood reflection. Our findings extend the understanding of the group mood management process and provide insights on supporting group mood management in small workgroups.
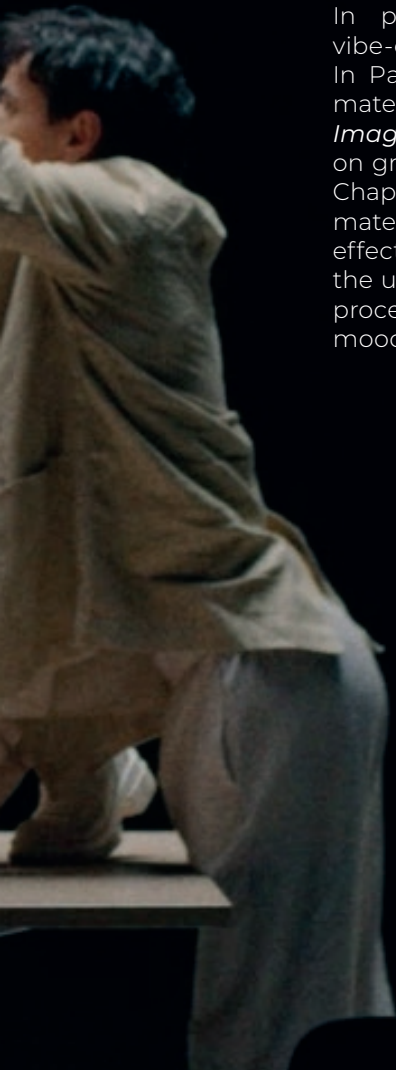
EIGHT VIBES INTERVENTION

Facilitating group mood management during group work

5.1. INTRODUCTION

In today's professional world, teamwork has become more crucial than ever before. Almost every achievement, from tech advancements to product and service innovation, results from collective efforts. In the pursuit of increasing group performance, the emphasis on cultivating positive team dynamics, or *good vibes*, has never been more pronounced. However, the road towards achieving these good vibes remains somewhat elusive.

People often have a generic sense of what constitutes a 'good vibe' for a particular task. For instance, it is commonly believed that a positive group mood fosters creativity, while a negative group mood is thought to be more beneficial for decision-making tasks (Kelly & Spoor, 2007). Although research supports some of these notions, there is no definitive conclusion on which mood best suits a specific task (Jones & Kelly, 2013). Interestingly, the same group mood can have both positive and negative effects, depending on how the task is framed (Martin & Stoner, 1996).

Given the nuanced nature of group moods, which extends beyond simple positive and negative distinctions, and considering the multiple contextual factors influencing them (see Chapter 2; Sönmez et al., 2022a), allowing with the diverse tasks within a single group assignment, we find it extremely challenging, if not impossible, to offer a universal prescription for which group mood is best suited to which situation and how to achieve it. In essence, what group mood is most beneficial and how it is achieved depends on the situation. Acknowledging this complexity, we view group mood management as an integral practice in teamwork, involving collaborative efforts to establish a group mood that aligns with the specific situation during a group meeting.

Much of the research on group mood (including group affect and group emotion) regulation is concentrated on the concept of mood (or emotion) contagion, which suggests that leaders can modify group mood by transmitting their own mood to team members (e.g., Sy et al., 2005). An alternative approach involves altering the context to leverage the benefits of the current group mood (Jones & Kelly, 2013). This can include adjusting the group composition, group focus, and the framing of team progress. At the organizational level, Ashkanasy and Daus (2002) provide eight techniques for managers to develop and maintain a positive emotional climate at work, which range from training employees' emotional intelligence to changing organizational culture and redesigning jobs[50]. Although these approaches and

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[50]   Preventive techniques are: (1) Assess the emotional impact of jobs, (2) Create a positive and friendly emotional climate through modeling, (3) Encourage a positive emotional climate through rewards and compensation systems, (4) Select employees and teams based, in part, on a positive emotional attitude, (5) Train employees in emotional intelligence skills and healthy emotional expression. Restorative techniques are: (6) Culture change, Environmental and job change through job re-design (7) Individual change through targeted training, punishment, re-assignment, or firing (Ashkanasy & Daus, 2002).

strategies offer valuable insights into influencing group mood at a general level, they are challenging to apply in context of teamwork. They tend to predominantly target leaders and managers, relying on their ability to manage their own mood, to recognize employees' emotions, and to decide what is the best group mood for the task, while overlooking the impact of interpersonal interactions among group members and the group's collective capacity to regulate its group mood.

At the heart of the group mood experience lies the group itself. However, not every group member possesses the skills to understand and navigate the spectrum of group moods effectively. While some groups may devise tactics to address unwanted group moods, such as taking a break to ease conflicts or delivering a motivational speech to counteract slackness, not everyone is equipped to regulate moods. We posit that empowering groups to understand and regulate their own group mood— stimulating, sustaining, reducing, preventing, or changing [51] certain group moods—is pivotal for effective group mood management.

Recognizing the importance of a granular understanding of group mood as a foundational step towards effective management, we introduced an initial typology of group moods in Chapter 2. This typology provides a descriptive overview of eight distinct group moods commonly experienced in small work groups. Chapters 3 and 4 presented two sets of materials designed to communicate these eight group moods. Building on this foundation, the current chapter explores the potential of the initial typology in group mood management.

We present an intervention study conducted with twelve small project groups. In the study, the typology was operationalized through a card set, which was designed by incorporating the images developed in Chapter 3 and descriptions generated in Chapter 2.

In the subsequent sections, we first introduce the card set and outline the study procedure. Following that, we present our results, introduce the *Vibe Management Cycle,* and discuss its implications for group mood management on the basis of our findings.

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51   Emotion regulation is defined as "the process of initiating, maintaining, modulating, or changing the occurrence, intensity, or duration of internal feeling states and emotion-related physiological processes" (Eisenberg et al., 2000, p.137). Similarly, mood regulation extends beyond merely shifting to positive moods. Individuals engage in mood regulation for various reasons, including maintaining their current mood or even intentionally adopting negative moods (Desmet, 2015), which likely applies to group mood regulation as well. By highlighting these motives, we aim to broaden the readers' perspective on what group mood regulation can entail.

5.2. INTERVENTION STUDY

The objective of the intervention study was to explore the potential of the group mood typology in supporting group mood management during groupwork. Our research question was: **In what ways does using the typology influence group mood management activities of groups?** Within this open exploration we were particularly interested in several aspects: (1) awareness, (2) granular understanding, and (3) regulation of group mood.

For this intervention we choose to operationalize the typology of eight group moods as a card set. Design researchers have emphasized two key features that render such card sets advantageous for group use: tangibility and visual content (e.g., Yoon et al., 2016a; Casais, et al., 2016; Beck et al., 2008; Lafrenière et al., 1999). Firstly, as physical objects, cards are easy to browse, shuffle, organize, and combine by a group of people. Secondly, their content often combines visual and textual elements, providing compact and engaging information while allowing for multiple interpretations, which can stimulate group dialogue.

Card sets are widely used communication formats in design research. A broad range of cards-based design tools has been developed to support granular understanding of subjective experiences. For instance, the Positive Emotion Granularity (PEG) cards (Yoon et al., 2015) depict 25 positive emotions to aid designers in cultivating a nuanced understanding of positive emotions. The Design with symbolic meaning for user happiness (SIM) cards (Casais et al., 2016) present sixteen design directions to inspire designers when ideating for symbolically meaningful products. Similarly, the Playful Experience (Plex) Cards (Lucero & Arrasvuori, 2013) encompass 22 categories of playful experiences to guide designers when designing for playfulness. Card sets have also been designed for broader audiences beyond design professionals. A recent example is the Interpersonal Mood Regulation Strategy Card Set (Esnaf-Uslu, 2024), which outlines nine strategies that service providers can employ when managing their clients' moods during service encounters. Drawing inspiration from these examples, we developed the Eight Vibes Card Set (Sonmez et al., 2024a) as an intervention tool to communicate eight group moods in the context of our study.

5.2.1. The Eight Vibes Card Set: an intervention material

The Eight Vibes Card Set consists of double-sided cards, with each card depicting one of the eight group moods (Figure 5.1). The front features a title, three to five keywords, and an image. These images were generated and evaluated in Chapter 3 and were used as is (see Figure 3.13 for the final set). The keywords were selected from the *Eight Group Vibes Booklet* (Sonmez et al., 2022b) to offer a concise overview of each group mood.
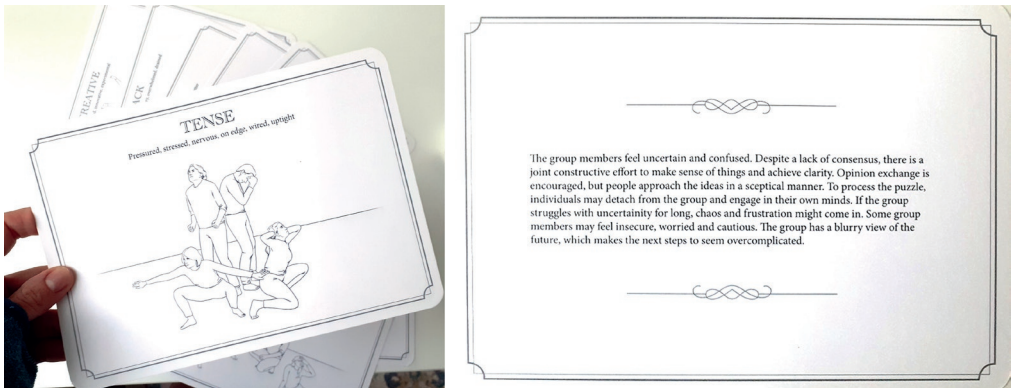
Figure 5.1. The Eight Vibes Card Set (Sonmez et al., 2024a): (left) the front, (right) the back of the Tense card.

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Figure 5.2. The visual style that inspired the cards.

On the back of the cards, the group mood is described in approximately 90 words, including the feelings experienced by group members, their interpersonal interactions, their work style, and their perception of the task. Just as the keywords, these descriptions were sourced from the Eight Group Vibes Booklet and shortened for better readability, while preserving their essence.

The choice of typeface and the decorative frame was inspired by the visual style seen in silent movies (see Figure 5.2 for an example), complementing the tableau vivant style of the images. The cards were printed on A5 size 300g paper. The full set of cards can be found in Appendix C.

5.2.2. Sampling

The intervention was conducted during a one-day creative group assignment in the context of a two-week elective course offered as part of a master's program at the Industrial Design Faculty of TU Delft. The course teaches the basic principles of emotion-driven design theory and methodology, supplemented with a series of research and design activities.

Three considerations guided the selection of this specific course. Firstly, students that enrolled in the course exhibit a keen interest in subjective experiences and therefore likely intrinsically motivated to participate in our study. Secondly, the intervention's potential to enhance understanding of group mood aligned seamlessly with the course's overarching goal, which aims to cultivate competencies in recognizing, understanding, and differentiating subjective phenomena. Thirdly, one of the course assignments provided a natural intervention ground. In this assignment, groups of three students were tasked with designing and creating a snack that conveys a specific emotion, requiring a collective effort towards a shared goal. The assignment involved a variety of group activities, such as discussion, idea generation, decision-making, conceptualization, prototyping, and presentation, with some time pressure, thus increasing the likelihood of various group moods emerging. It is worth noting that the intervention protocol was designed to minimize interference with the assignment as much as possible. Students were given 10 hours spanning two days to complete the assignment.

5.2.3. Participants

In total, 12 teams of three students (N=36) participated voluntarily in the intervention, intending to improve their understanding of group mood. They were master's design students with diverse cultural backgrounds. Teams were formed randomly, with many students having no previous experience working together.

5.2.4. Method

The study consisted of four sequential steps, conducted in two parts: (A) the card set intervention, and (B) reflection (Figure 5.3). Prior to the study, the researcher (the author of this thesis) gave a definition of group mood, introduced the card set and the purpose of the study to all participants in a plenary session. Group mood was described as follows:

"Group vibe, or group mood, describes a shared feeling. It is an emotional atmosphere experienced by group members at a certain time of collective activity. A group vibe is mostly low intensity and in the background of the group practice. It emerges and changes gradually. At least eight types of group vibe can be experienced in work-related group activities."

After introducing the card set, the purpose of the study was described as *"to explore the potential of the card set in managing the group vibe"*.
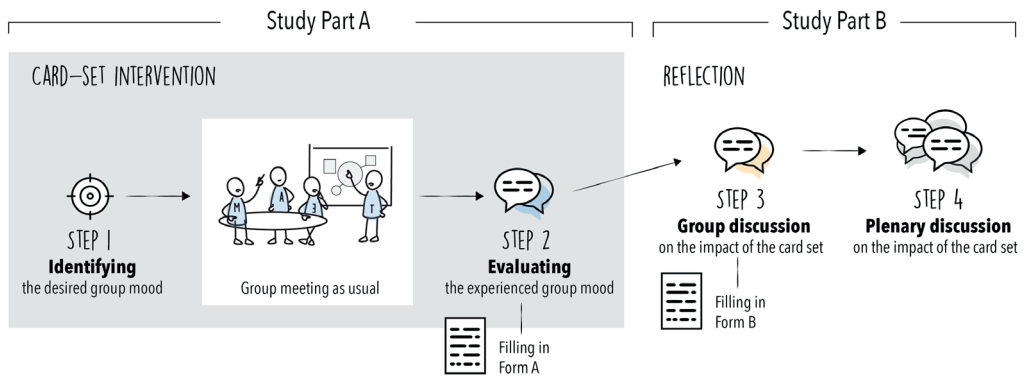
Figure 5.3. Study procedure consisting of two parts and four steps.

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Each group was asked to pick one group member to serve as the *vibe manager*, who was responsible for reminding the group to follow the intervention steps as instructed. Each vibe manager received the card set and an information sheet with the definition of group mood and the intervention steps.

Part A: Card set intervention

Groups were asked to perform the following two steps every time they met for at least an hour. Consequently, the total number of times the intervention was performed varied across groups, depending on each team's meeting frequency and duration.

Step 1. Identifying the desired group mood (15 minutes): At the beginning of the meeting, the group reviewed the cards and discussed their preferred group mood for the meeting. The question given to guide their discussion was:
-    What is the intended group vibe for your meeting, and why?

As a group, they picked one or multiple cards that represented their desired vibe. Putting the card(s) aside, the team members then proceeded with their meeting as usual.

Step 2. Evaluating the experienced group mood (15 minutes): At the end of the meeting, the group reviewed the cards again and discussed the group mood they had experienced during the meeting. The following questions guided their discussion:
-    What type of group vibe did you experience? Was it the same as your desired vibe, or was it different?
-    Did you take any actions (deliberate or intuitive) to influence (set, change, maintain) the group vibe during your meeting? If so, what did you do, and how did it affect the group vibe?

The vibe manager reported the outcomes of the discussion via an online form (Form A). The form asked for the group name, meeting number, type of the meeting (online, in-person, or hybrid), the kind of task undertaken in the meeting, the duration of the meeting, the desired and experienced group mood of the meeting, whether they took any actions (deliberate or intuitive) to regulate the group mood (yes/maybe or no), and if yes/maybe, the situation, the action, and its effect on the group mood.

Part B: Reflection

In Part B, participants reflected on how using the card set influenced group mood management during their meeting. They first discussed its impact with group members (step 3), followed by a plenary session in which all participants and the researcher discussed their insights (step 4).

To encourage an in-depth discussion in each step, we provided participants with questions focusing on three aspects that we envisioned would be the impacted: (1) awareness (recognizing the existence of a vibe), (2) granular understanding (distinguishing between different vibes), and (3) regulation (managing the vibe collectively as a group). Participants were also encouraged to express additional insights beyond these aspects. The questions were as follows:
- What was the effect of using the card set on your awareness of the group vibe?
- What was the effect of using the card set on your granular understanding of the group vibe?
- What was the effect of using the card set on regulating your group vibe?
- Do you have any additional comments about how using the card set effected your group mood?
- Do you have any additional comments about the card set?

Step 3. Group discussion (30 minutes): One day after completing their group assignment, the groups reconvened to reflect on their experiences using the card set and its impact. The vibe manager reported the discussion outcomes using an online form (Form B), responding to the questions mentioned earlier.

Step 4. Plenary discussion (60 minutes): A week later, all participants and the researcher gathered for an hour-long plenary session to collectively discuss the impact of using the card set during their meetings. The main researcher (the author of this thesis) facilitated the discussion, with another researcher responsible for note-taking. The session started by reflecting on the overall intervention experience and moved on to discuss the card set's impact, addressing the questions mentioned earlier. In addition, participants shared insights on the card set's usability, usefulness, and applications, offering suggestions for

improvement. They also asked about group mood and its management in general, further enriching the dialogue.

5.2.5. Data analysis

The data set comprised the written responses from Form A (step 2) and Form B (step 3), along with the notes taken during the plenary discussion (step 4). To obtain an overview of the meeting details and the desired and experienced group moods, the researcher performed a frequency analysis on the data extracted from Form A. The results of this analysis are presented in section 5.3.1. Subsequently, to gain insight into the impact of the card set, a thematic analysis was performed on the data extracted from Form B and the researcher's notes. Following the thematic analysis steps as outlined by Braun & Clarke (2006), we identified 14 codes and grouped them into five themes, which are presented in section 5.3.2. The thematic analysis revealed further insights regarding the card set's usability, which are presented in section 5.3.3.

5.3. RESULTS

First, we will present a detailed report on the meetings, offering an overview of the desired and experienced group moods, their alignment, and the regulation rate (5.3.1.). Subsequently, we will provide insights into the impact of the card set on group mood management through five action-based themes (5.3.2.). Lastly, we will present additional findings regarding the usability of the card set (5.3.3.).

5.3.1. Desired and Experienced Group Moods

The intervention was implemented in 20 group meetings, each lasting an average of 97.5 minutes (ranging from 30 to 240 minutes). These meetings involved various group tasks, including planning, material gathering, idea generation, conceptualization, decision-making, and prototyping. Of all meetings, 95% were conducted in-person.

Table 5.1 shows the combination of desired and experienced group moods per meeting. The match between the two is indicated in the last column using three categories: full match (F), partial match (P), and no match (N). Partial matches refer to situations in which there are only a few overlaps between the desired and experienced group mood combinations. The green column highlights the meetings where deliberate or intuitive actions were taken to regulate the group mood (marked with a✓).

Table 5.1. The desired and experienced group moods and the occurrence of regulatory actions per meeting.

Group Meeting No.	Desired Group Mood			Regulatory Action	Experienced Group Mood						Match
	Chill Flow	Fiery	Creative		Chill Flow	Fiery	Creative	Safe Haven	Tense	Fuzzy	
1.1		x	x	✓	x		x			x	P
1.2	x	x	x	✓	x		x		x	x	P
2.1	x				x						F
2.2	x				x						F
3.1			x	✓			x				F
3.2	x			✓				x		x	N
4.1			x	✓			x	x			P
5.1	x			✓	x						F
5.2			x						x		N
6.1			x	✓	x					x	N
6.2	x			✓			x				N
7.1			x	✓		x	x				P
7.2	x		x				x		x	x	P
8.1			x	✓	x		x				P
8.2	x				x						F
9.1		x	x	✓	x		x				P
10.1			x	✓	x						N
11.1		x	x		x		x				P
11.2	x	x			x	x					F
12.1			x	✓			x				F

F= full match, P= partial match, N= no match between desired and experienced group mood (combination)

Only three of the eight group moods, namely Creative, Chill Flow, and Fiery, were chosen as desired vibes. For 70% of the meetings, groups selected a single group mood (broken down as 40% Creative and 30% Chill Flow). In the remaining 30% of meetings, multiple group moods were chosen, with 25% of meetings opting for combinations of two moods (15% Creative-Fiery, 5% Creative-Chill Flow, and 5% Fiery-Chill Flow). In 5% of the meetings, a combination of three group moods was desired.

Groups reported experiencing a wider range of group moods, including Safe Haven, Tense, and Fuzzy, in addition to the desired vibes. None of the groups experienced the Slack or Confrontational vibes. The experienced group mood fully matched the desired vibe in 35% of the meetings, while it partially matched in 40% of the meetings. In the remaining 25% of the meetings, groups experienced a completely different group mood than the desired one.

Participants reported taking deliberate or intuitive actions to manage their group mood in 65% of the meetings (N=20), while there was a complete mismatch between experienced and desired group moods in 20% of cases (Table 5.2). In 35% of the meetings, no deliberate or intuitive strategies were employed, with 5% representing a complete mismatch.

Table 5.2. The vibe match and occurrence of regulatory action matrix

The match between the desired and experienced group mood	Did you take any actions (deliberate or intuitive) to regulate the group mood?	
	Yes/maybe	No
Full match (F)	15 %	20 %
Partial match (P)	30 %	10 %
No match (N)	20 %	5 %
Total (N=20)	65 %	35 %

These results highlight that merely identifying the desired group mood at the beginning of a meeting did not guarantee its achievement. Groups did not always take actions, whether deliberate or intuitive, to regulate their group mood. Moreover, even when actions were taken, they did not necessarily result in the intended group mood. Crucially, two aspects remain unclear: (1) the extent to which the actions taken influenced the group mood, and (2) whether and to what degree identifying the desired group mood using the card set prompted the regulatory actions.

5.3.2. Impact on Group Mood Management

In this intervention study, we explored the influence of using the Vibe Card Set on group mood management, focusing on three aspects: awareness (A), granular understanding (GU), and regulation (R) of group mood. The thematic analysis identified five actions in which the card set influenced group mood management processes. Table 5.3 presents the five actions (themes), comprising thirteen topics (codes) with the rightmost column illustrating their connections to the three aspects (A, GU, R). In the following sections, we will report these actions one by one, elaborating on how the card set facilitated each action.

Table 5.3. The list of actions (themes), topics (codes), and the related aspect

Themes	Codes	Related aspect*
Understanding group mood	- Awareness of the existence, variety, and potential effect of group moods	(A)
	- Distinguishing different group moods	(GU)
Intending for a desired group mood	- Defining the desired group mood	(A), (GU)
	- Challenges in choosing a desired group mood	(A), (GU)
Noticing ongoing group mood	- Awareness of the ongoing group mood	(A)
	- Noticing the change in group mood	(A)
	- Awareness of own behavior	(A)
Regulating group mood	- Behaviors as potential regulatory actions	(R)
	- Difficulties taking regulatory actions.	(R)
	- No need for regulation	(R)
Evaluating the experienced group mood	- Acknowledging the change in group mood	(A)
	- Identifying points for improvement	(R)
	- Appreciating pleasant group dynamics	(A)
	- Acknowledging unpleasant group experience	(A)

*(A) Awareness of group mood, (GU) granular understanding of group mood, (R) regulating group mood

Understanding group mood

Awareness of the existence, variety, and potential effect of group moods (A): Interacting with the card set brought participants' attention to the existence of a variety of group moods and their impact on group work. Participants reported that the card set helped them recognize *"the extent of vibes that exist when working in a group"*. Another participant stated, *"I was not at all aware of the existence of a group vibe, except for the basic 'this is a nice atmosphere'"*.

Distinguishing different group moods (GU): The cards help participants understand how it feels to be in different group moods and how to recognize them by observing their group members' actions. However, participants noted that *"more time [long-term use], experience [more frequent use], and information [detailed information on group moods and theory] is required"* to obtain a deeper and more granular understanding of group mood.

The images were considered particularly valuable for understanding group moods for two main reasons. First, looking at the images and the titles gave the participants a quick overview of the eight group moods. Secondly, the bodily expressions represented in the images helped them recognize the group moods *"I think body language also says a lot. To me creative is very understandable, the movements make sense to me"*. One participant found the extreme body expressions useful for distinguishing group moods intuitively *"I do find it very intuitive because they're [images] quite extreme. That makes it easily recognizable. I think if it was subtle, it would make it harder for me to know what you mean"*. However, another participant expressed the concern that less artistically sensitive individuals may

not recognize the vibe expressed by the bodily expressions. She recommended placing more emphasis on facial expressions to ensure understanding among a wider audience.

Intending for a desired group mood

Defining the desired group mood (A, GU): Having to choose a desired group mood using the cards stimulated group members *"to think about the type of group mood [they] strive for"* at the start of their meeting and to describe it more specifically: *"With the card set we could better talk about the different vibes "*. One participant mentioned that *"it was the first-time group mood became a point of discussion"* in a group meeting. Despite being uncommon, some participants found this discussion liberating, as it *"made it easier to discuss the energy levels that isn't really brough up before starting a meeting"* and provided them with a more *"personal [instead of generic] group introduction"*. Choosing a desired vibe was considered pleasant, as it enabled *"an honest conversation about [everyone's] intentions for the meeting"* and ensured that *"[group members] are in the same wavelengths [expectations]"*.

When deciding on the desired vibe, participants considered their individual mood states and energy level, the goal of the meeting, and the group mood's potential effect on the activity at hand. Interestingly, how to foster the desired vibe was not discussed. Only one group jokingly hypothesized what would they do to create one of the negative group moods.

Challenges in choosing a desired group mood (A, GU): Some participants felt limited by having to choose a desired vibe using the cards at the start of the meeting, while others felt it was ineffective. One participant indicated that it was *"awkward, harder, less free"* to start the meeting by choosing a desired vibe. Another participant regarded it redundant since the activity itself called for an obvious vibe, stating *"I knew the activity we would be doing was brainstorming. And then directly, the mindset will be 'all right we need to be the creative mood'"*.

Participants expressed feeling hesitant to choose negative group moods (Fuzzy, Confrontational, Slack and Tense), with calling them an *"obvious no-go"* and not even reading their descriptions. It was argued that they are less likely to be chosen at this stage, because *"no one would want to choose a negative vibe for a perfect workday"*. In response, one participant stated that seeing these cards might have helped his group subconsciously avoid the negative vibes in their meeting. Furthermore, another participant mentioned that negative group moods also have positive aspects that may be useful for group work and may therefore be worth incorporating in the desired group mood mix (e.g., allowing Slack when the group is tired and there is no urgency). Some participants did not consider choosing certain cards because the content sparked negative perceptions. Specifically, they noted that the image expressions were *"too negative",* which they interpreted as potentially

disruptive to the workflow. They recommended either reducing the negativity in the image expressions or enhancing the visibility of the beneficial aspects in the accompanying text.

Noticing ongoing group mood

Awareness of the ongoing group mood (A): Choosing a desired vibe using the cards at the beginning of the meeting helped the group members become more aware of the ongoing group mood during the meeting. Some participants remarked that they were *"more mindful and conscious about the vibe"* during the meeting, describing this effect as *"a minor effect in unconscious levels"* which made *"it [group mood] linger in the back of your head"*. One participant mentioned forgetting about the chosen vibe while being immersed in the groupwork.

Noticing the change in group mood (A): Participants reported that they became especially aware of the group mood when they felt it move in an undesirable direction. The disparity between the desired and ongoing vibe was openly acknowledged during only two meetings in a very light-hearted way: *"Oh this is not at all our intended chill vibe"* or *"Let's do something creative"*. Interestingly, no deliberate actions were taken to change the group mood in either case.

Awareness of own behavior (A): Participants remarked that the desired vibe also defined an expected way of behaving in the group meeting: *"I felt my relations to the others were more defined than they would have been at the start of other projects I've done"*, and led some participants to be more self-conscious about how they relate and interact with other group members.

Regulating group mood

Behaviors as potential regulatory actions (R): When asked if they took actions to regulate their group mood, participants reported engaging in various spontaneous behaviors that potentially influenced group mood. One group stated that starting their meetings with this light-hearted exercise might have nudged them towards avoiding behaviors associated with that particular vibe. An interesting example was *reverse thinking* in the beginning of the meeting, i.e. imagining how to foster a negative group mood. We considered the behaviors reported by the participants as examples of regulatory actions and grouped them into eight categories, as presented in Table 5.4.

Table 5.4. Eight categories of behaviors reported as potential regulatory actions

Behavior Categories	Behaviors as potential regulatory actions
Looking for inspiration	- Looking for inspiration online - Mind mapping to explore different options - Trying out weird recipes - Broadening our view with new ideas
Physicalizing the group mood	- Keeping physically active
Changing the setting	- Playing relaxed music - Playing uplifting music
Showing acceptance	- Not judging each other's ideas - Respecting each other
Stimulating collective input	- Asking each person what they think of the idea - Asking each other for ideas - Deciding together
Connecting on a personal level	- A good chat over lunch
Reminding the desired group mood	- Calling for action to get into the desired group mood - Acknowledging the mismatch between the current and desired group mood
Adjusting own behavior	- Trying to be more easy-going
Reverse thinking	- Imagining how to foster a negative vibe

Difficulties in taking action to regulate (R): Many participants mentioned the challenge of taking deliberate actions to achieve or maintain their desired vibe during the meeting, primarily because of a lack of knowledge on how to influence the vibe: *"We did not really know what we had to do to aim for a certain vibe. We didn't know what creates or triggers a vibe".* The card set was considered unactionable, as it does not offer guidance on and tips for regulating group mood: *"The card set isn't really actionable. It just describes on a higher level what the vibe means or how it goes. But if a person acts hostile, for instance, how do you recognize this and how can you act upon this?"*

No need for regulation (R): One group reported that they did not feel the need to regulate their vibe since the desired vibe emerged and persisted naturally throughout the meeting. Another group deemed regulation unnecessary as their vibe never felt it was headed in *"a wrong direction".* It was not easy to commit to the chosen desired vibe at all times, as group members were immersed in the group work itself. Another group did not try to regulate the vibe, arguing that for such a small group assignment *"the atmosphere didn't really matter".*

Evaluating the experienced group mood

Acknowledging change in group mood (A):): Using the cards to evaluate the group mood after the meeting helped groups acknowledge changes in group mood that might have otherwise gone unnoticed: *"We did [while discussing] notice a change in vibe afterwards [...] We would not have noticed this without the cards".* Consequently, some groups were able

to pinpoint actions that potentially contributed to the shift (listed as potential regulatory actions in Table 5.4).

Identifying points for improvement (R): Participants felt the evaluation was a valuable step for driving insights into improving the vibes in the next meeting: *"When we reflected on the group vibe after the meeting, it was interesting to see what we would like to do different in the next meeting, if the group vibe did not meet what we planned".* Given the short time span of the group work, only a few groups reported discussing vibe improvements hypothetically.

Appreciating pleasant group dynamics (A): Furthermore, the act of evaluating created an opportunity to appreciate pleasant group dynamics: *"Having to reflect on the vibe and experience made us more aware of all the emotions we were feeling in the context of the group and appreciate the good parts more".*

Acknowledging unpleasant group dynamics (A): One participant considered the card set *"a great tool to express what is going wrong".* Others remarked that certain groups may struggle to discuss negative experiences organically during work and that being asked to reflect on the vibe creates an opportunity to initiate such a conversation. However, acknowledging the negative vibe by pointing out the corresponding card can be confronting in some contexts. One participant highlighted that some group members may be reluctant to accept a negative group mood, especially in multidisciplinary teams where people may have different standards for a "good vibe". This initiated a discussion about the importance of encouraging an analytical approach in defining the experienced vibe, for example by including a behavior checklist.

5.3.3. Usability of the Eight Vibes Card Set

We gathered some additional insights about the usability of the card set with regard to practicality of use, visibility and readability of content, and clarity of purpose. Overall, the card set's physical design was found to be practical, effortless, and unobtrusive during group meetings. However, one participant found it challenging to tell the cards apart because *"the images look the same from a distance",* possibly due to the black line-art style. Moreover, some participants struggled to read the descriptions in one go, citing the amount of text and the formatting (a single, wide column) as potential reasons.

Opinions on the clarity of the purpose of the card set varied, with one participant expressing a lack of enthusiasm due to the ambiguity of the cards' purpose, while another immediately recognized it as a means to improve group communication: *"the goal is to achieve a coherent group that works together well through improving the communication in the group about group vibes".* Participants recognized the card set's potential as a multipurpose group mood

management tool (e.g., training material, reflection), but emphasized the need for guidance in using it for different goals.

5.4. DISCUSSION

This chapter reported an intervention study that explored the potential of the eight-group-mood typology in facilitating group mood management. To operationalize the typology, we created the Vibe Card Set by integrating group mood descriptions and images generated in the previous chapters of this thesis. Twelve small project groups used the card set during their meetings and reflected on its impact on managing their group mood, with a focus on three aspects: awareness, granular understanding, and regulation of group mood. Our findings offer insights into the group mood management process and in the potential of the eight-group-mood typology in facilitating effective group mood management in relation to these three aspects.

In the following sections, we will discuss the ways in which the card set supports each aspect and pinpoint potential barriers to its effectiveness (as shown in Table 5.5). Next, we will introduce the Group Mood Management Cycle —based on the five actions through which the card set impacts group mood management processes— and discuss its implications for supporting group mood management.

Table 5.5. The ways in which the card set supports each aspect and potential barriers to its effectiveness

Three aspects of group mood management	Supported by	Barriers
Awareness of group mood	• Initiating a dialogue about preferred group dynamics • Increasing awareness of ongoing group mood • Increasing awareness of pleasant and unpleasant group dynamics • Increasing awareness of group mood phenomenon (existence, variety, potential effect and complexity)	• Not being attentive to group mood during group work • Reluctance to acknowledge negative group moods in group discussion
Granular understanding of group mood	• Providing an overview of diverse group moods • Enabling group members to describe desired and experienced group moods	• Overlooking the descriptions of negative group moods
Regulation of group mood	• Enabling group members to identify a desired group mood for the meeting	• Not noticing the group mood during group work • Not knowing on how to influence group mood • Perceiving regulation as a time and effort-intensive task • Viewing regulation as unnecessary or unethical

5.4.1. Vibe Card Set Impact on Group Mood Awareness

The card set appears to be effective in fostering awareness of group mood. The intervention enhanced participants' awareness of the desired, ongoing, and experienced group mood as well as the concept of group mood in general. First, the process of selecting a desired group mood initiated a dialogue on preferred group dynamics. Group mood, often elusive, became a legitimate point of discussion within the group. Participants embraced the *vibe talk* as a constructive dialogue about their group mood, viewing it as a valuable opportunity to strengthen personal connections and align goals, especially beneficial for newly formed teams.

Second, starting the meeting with a chosen vibe increased awareness of the ongoing group mood. For most groups, this awareness remained subtle during the meeting, yet two groups explicitly acknowledged the group mood out loud, which might have triggered actions to regulate it.

Third, using the card set to evaluate the experienced group mood enhanced participants' awareness of both pleasant and unpleasant aspects of the group dynamics. This process empowered groups to identify areas for improvement in subsequent meetings.

Fourth, the card set heightened awareness of the existence, variety, and potential effect of group mood, along with its inherent complexity. During the plenary reflection, participants talked about mixed vibes, vibe-activity dependency (e.g., associating creative group moods with brainstorming activities) and the potential disparities between how group members perceive vibes.

Two issues appear to undermine the card set's effectiveness in supporting awareness of group mood. First, selecting a desired group mood does not guarantee that group members will pay due attention to group mood during the work. Some participants reported paying little attention to their group mood, as they were deeply immersed in their tasks, which may prevent the group from noticing changes in group mood and taking actions to regulate it.

The second barrier appears to be the reluctance to acknowledge perceived negative group moods during the evaluation step. Adhering to the social validity principle (Cialdini, 2001), group members might hesitate to express negative experiences if they contradict the majority's opinion. In groups with problematic dynamics, members may be less willing to speak up about negative group moods.[52] This reluctance can be heightened in hierarchical

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52   This hesitancy to speak up can be linked to the phenomenon of *employee silence*, which sees individuals intentionally withhold their thoughts on improving work conditions in the face of organizational challenges (Van Dyne et al., 2003). Additionally, openness in discussing negative group moods may depend on the team's and organization's *emotional culture*, which is defined as "shared affective values, norms, artifacts, and assumptions that govern which emotions people have and express at work and which ones they are better off suppressing" (Barsade & O'Neill, 2016, p. 60).

groups by the presence of a dominant leader. Providing step-by-step guidance, such as through targeted questions or qualities to collectively uncover the experienced vibe could be beneficial. This would shift the responsibility for identifying a negative group mood from group members to the tool (e.g., questionnaire, instruction, or product).

5.4.2. Impact on the Granular Understanding of Group Mood

Using the card set enhanced the granular understanding of group moods in two ways. First, the cards provided an overview of the diverse range of group moods encountered in work settings. The images facilitated intuitive comprehension, while the accompanying descriptions offered details that helped group members recognize and distinguish between different group moods. Second, using the cards enabled participants to describe their desired and experienced vibe. Participants effectively conveyed their group mood with the vocabulary provided by the card set and by combining multiple group moods. In line with the intended impact, participants anticipated that prolonged use of the card set could further enhance granular understanding, allowing groups to experience a variety of group moods across different situations.

The reluctance to pick negative cards, however, could potentially undermine granular understanding. When selecting the desired group mood, some participants overlooked the negative group moods, considering them an obvious threat to effective group work. This led some participants to skip the descriptions of the negative group moods, preventing them from gaining a deeper understanding of experience and potential impact of these group moods. This may in turn have also hindered the group members' ability to recognize negative moods during group work, consequently impeding proactive actions to address them. A way to overcome this barrier of negativity bias could be to redesign these cards to look more neutral. For example, toning down the expressions in the images or emphasizing the potential benefits of 'negative' group moods in the descriptions could increase the card set's effectiveness in terms of fostering granular understanding.

5.4.3. Impact on Regulating Group Mood

The card set in the presented intervention appears to have limited impact on regulating group mood. Although identifying a desired vibe increased awareness of the ongoing group mood and how it fluctuates, this did not necessarily lead to a desired group mood. Only 35% of all meetings resulted in a desired group mood, indicating that merely identifying a desired vibe is insufficient for its attainment. Surprisingly, in 35% of all meetings, no actions were taken to regulate the group mood. Of the other 65% of meetings in which intentional or intuitive regulatory actions were taken, less than a quarter resulted in a desired vibe. These findings indicate the need for additional support beyond identifying a desired group mood to effectively regulate the group mood in group meetings. We identified four barriers for effective regulation, which provides valuable insights for future efforts to support group mood management.

The first barrier is the lack of awareness of the ongoing group mood. Without noticing the group mood, one cannot take deliberate actions to regulate it. This emphasizes the need for tools or methods that help groups notice changes. Examples include reminders of the desired group mood or prompts for reflecting on the ongoing mood.

The second barrier is the lack of knowledge of and experience in influencing group mood. Many groups expressed a struggle with understanding the triggers or obstacles that affect certain moods, which often causes them to go along with the prevailing group mood. Since the ideal group mood and the ways to achieve it depend on various factors —such as meeting type, group dynamics, the task, and even how the task is framed —prescribing universally effective regulation strategies proves challenging. Empowering groups to gain experience and practical know-how in regulating their group mood could be more effective. This could involve helping members understand what strategies work best or worst in their specific context and why. Listening to others' experiences in managing different group moods and developing interpersonal or intrapersonal skills can contribute to this knowledge accumulation process.

The third barrier involves the perceived effort and time required for group mood regulation, which seems likely to be overshadowed by the primary goal of accomplishing the group task. Unless regulation is perceived as either easy or urgent, it may be viewed as a daunting task and, consequently, neglected. This suggests that activities enabled by regulation tools or products should be as effortless as possible.

The fourth barrier involves individuals viewing group mood regulation as unnecessary or unethical. The plenary discussion revealed negative connotations associated with the terms "management" and "regulation," which participants felt might be manipulative acts or disruptive interventions to the natural flow. This finding emphasizes two key considerations when introducing groups to group mood management. First, careful thought should be given to establishing the proper terminology (e.g., intervention, long-term plan, strategic thinking), determining who is in charge of group mood management (e.g., the leader, the entire group, or the designer), clarifying the purpose of management (e.g., performance, well-being, or group cohesion), and ensuring that strategies are applied without making individuals feel manipulative. Secondly, it is worth exploring the role of intentionality in group mood management. How deliberate should management be? Can groups be trained to intuitively "react" to unwanted group moods rather than consciously applying "strategies"? Could embodiment serve as a potential medium for achieving ambiguous yet directed regulatory behavior? Can bodily expression be a less confronting or more poetic alternative for our efforts to synchronize in a good vibe?

As an unexpected finding, the activity of evaluating the experienced group mood appears to be valuable for supporting group mood management in long term. It creates an opportunity to reflect on individual perspectives and actions contributing to the group mood, stimulating the group to identify possible adjustments for future meetings. Supporting long-term groups in such a reflective process could enable ongoing development of group-specific regulation strategies.

5.4.4. Group Mood Management Cycle

The intervention study revealed five distinct steps through which the Vibe Card Set influenced management of group mood during group work: understand, intend, notice, regulate, and evaluate. In Figure 5.4, we visualize the interactions between these steps: the *Group Mood Management Cycle*. Serving as a framework that represents the insights generated in the study about the group mood management process, the cycle offers several potential entry points for design. Drawing insights from our study, we describe each step, identify potential challenges, and provide recommendations.

Step 1 Understand: This step involves becoming aware of group mood with regard to its existence, variety, and potential impact and developing an ability to distinguish between various group moods. Providing detailed descriptions and examples of distinctive group mood experiences can support a nuanced understanding. Group reflection can be useful for group members to devise shared group mood definitions.

It is worth noting that this step is less action-oriented than the other four steps. Despite its direct connection to the 'Intend' and 'Evaluate' steps, its influence permeates the entire process. Insights gained at any step contribute to the overall understanding of group mood, and a deeper understanding can support each step in the process.

Step 2 Intend: In this step, group members collectively define the desired group mood for their meeting. This involves considering the meeting context, the task at hand, individual moods, and a shared understanding of the desired group mood and its potential impact. While established groups may navigate this process automatically, newly formed groups may benefit from open discussions. Integrating this step into icebreakers or team-building activities could make it less daunting, with facilitating questions promoting constructive discussions.

Step 3 Notice: This step involves being attuned to the ongoing group mood during the meeting. Given the immersive nature of the group task, it can be challenging to notice fluctuations in the group mood. Facilitating moments of reflection or giving gentle reminders of the intended group mood can aid in recognizing unwanted changes.
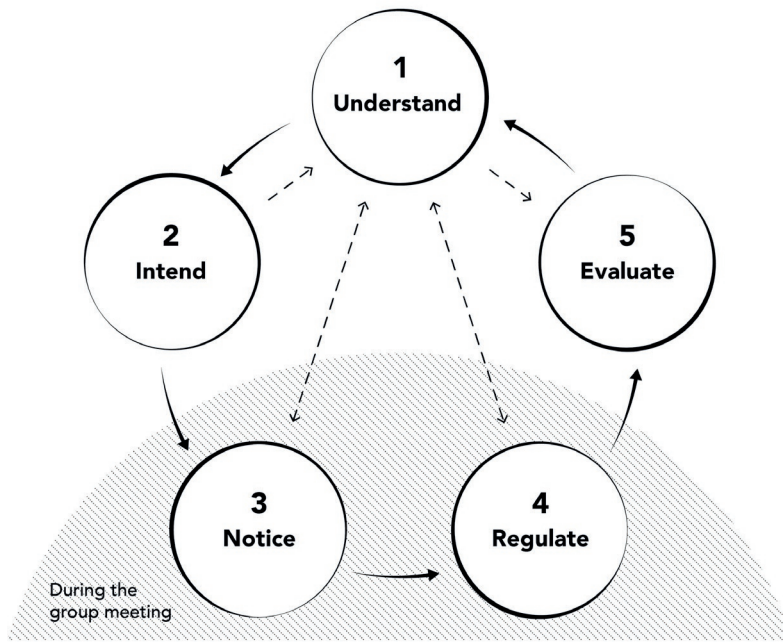
Figure 5.4. Group Management Cycle

Step 4 Regulate: This step involves influencing the ongoing group mood with deliberate actions or intuitive responses, to maintain the current group mood or transition to a different one. What constitutes an appropriate regulatory action, and how it can best be implemented, depend on group dynamics and meeting context. Providing groups with strategies for triggering specific group moods can be helpful for this step.

However, given that the primary purpose of meetings is to accomplish group tasks, a fully conscious approach to regulating group mood may not always be practical. Alternatively, regulation can be seamlessly integrated into group interaction, empowering members to intuitively manage their group mood with less deliberate actions. This requires group members to develop a repertoire of regulatory actions tailored to the specific group. Reflecting on past experiences can aid in accumulating such knowledge, and consequently in growing competence in group mood regulation.

Step 5 Evaluate: This step focuses on assessing the group mood after the meeting. Particularly in long standing teams, this can provide an opportunity to acknowledge unnoticed aspects of group mood, pinpointing behaviors or situational factors affecting group mood. Guidance in this step can help group members engage in open and constructive dialogue and identify effective actions to take in future meetings. The insights gathered in this step expand group members' understanding of group mood.

Note that the Group Management Cycle is not presented as an exhaustive or definitive model for group mood management. Rather, it constitutes a preliminary framework, and further research may uncover additional steps or relationships between the current steps. Notwithstanding its early stage of development, the cycle offers several pragmatic entry points for supporting group mood management, by centering on the collective experience of the group. To start, researchers can leverage the five steps to explore new avenues for investigating group mood. By focusing on the "regulation" step, for example, they can delve into the existing regulation strategies employed by groups and facilitators. In organizational settings, the 5-step cycle can serve as a framework to communicate group mood management and as a guide to develop interventions, training programs, or workshops to enhance employees' group mood management skills. Within workgroups, the cycle can function as a roadmap to practice group mood management. Tailoring the cycle to their work context and needs, groups can develop tactics to deal with their vibes. Additionally, the cycle can be implemented in other group development activities, such as team building and conflict resolution activities. Finally, designers can take each step as a starting point for creating services and products to empower groups in managing their group moods. For instance, a product that unobtrusively reminds the group of their desired group mood can bring the attention back to the group mood during the meeting (step 3: notice). Alternatively, a service that provides visualized reports of the group mood at the end of the meeting can spark new insights (step 5: evaluate).

5.4.5. The Vibe Card Set

In our study, we created the Vibe Card Set to operationalize the eight-group-mood typology. Our findings indicate the card set's potential for facilitating group mood management. It proved most effective in understanding group moods (step 1), identifying the desired group mood (step 2), and evaluating the experienced group mood (step 5). This corresponds with the design of the intervention, as the cards were not intended for use during the meeting, which encompass the noticing (step 3) and regulating (step 4) stages.

We envision that the card set can be developed into a versatile toolkit applicable across various stages or tailored to specific ones. We foresee application possibilities for various contexts in which an enhanced group mood contributes to the main activity, including team kick-off meetings, sensitive group sessions (e.g., discussions involving privacy, identity, or sensitive topics), and training sessions (e.g., interpersonal communication, leadership).

When developing the card set into a toolkit, clear instructions tailored to diverse usage scenarios should be included. In addition, the usability issues discussed in Section 5.3.3 should be addressed. To ensure effective content, we recommend aligning image revisions with suggestions in Chapter 3 (section 3.3.3.) and conducting a thorough evaluation of descriptions and keywords.

5.4.6. Limitations and Future Research

Finally, addressing the study's limitations, we suggest some directions for future research. First, our study focused exclusively on design students collaborating in short-term teams. Expanding the scope to include diverse professional groups and non-creative domains will yield additional insights into the process of group mood management and the card set's efficacy within different contexts. Such explorations might reveal new steps or identify those that that are not relevant for certain context. Besides, a longitudinal study can explore the long-term effects of the card set.

Second, our study relied on participants' retrospective reflections, an approach that is sensitive to recall bias. Capturing participants' experiences in real time with experience sampling methods can offer additional insights into each stage of the management cycle.

Lastly, it is important to note that our findings are limited to the card set's design and the corresponding intervention steps. Operationalizing the group mood typology in different ways and formats may uncover new opportunities and challenges. Furthermore, as discussed earlier, an intentional approach to group mood management may not always be feasible; thus, investigating more intuitive ways for managing group vibes represents a promising avenue for further research. For instance, the eight vibe dance videos introduced in Chapter 4 could serve as a starting point for exploring an embodied approach.

5.5. CONCLUSIONS

In this chapter, we explored the potential of the eight-group-mood typology in facilitating group mood management. In an intervention study, twelve small project groups used the typology—operationalized in a card set—to identify their desired group mood and evaluate the experienced group mood in their team meetings. While using the typology supported awareness and granular understanding of group mood in various ways, it was less effective in facilitating group mood regulation.

Our findings suggest that merely identifying a desired group mood at the start of a meeting does not necessarily stimulate members to actively regulate their group mood. A significant barrier appears to be the absence of practical knowledge of and experience in effectively influencing group mood. However, it was also found that reflecting on the experienced group mood after the meeting can be beneficial for long-term group mood management. It helps group members to pinpoint specific triggers of group mood and stimulates them to discuss potential adjustments to improve group mood in their future meetings.

By adopting a group-centric perspective, this chapter provides initial insights into the group mood management process and offers practical entry points for future efforts aimed at supporting group mood management in small work group meetings.

5

VIBE MOVES WORKSHOP

Facilitating group reflection
on lived group mood experiences

6.1. INTRODUCTION

Considering the pervasive impact of group mood on group work, managing the *vibe* in meetings becomes essential. However, there is no one-size-fits-all prescription for regulating group mood. The desired group mood and the most suitable strategy to achieve it depend on the team and the situation and are influenced by various factors such as meeting setting, activity, individual moods, and underlying group dynamics (See Chapter 2, Sönmez et al, 2022a). Therefore, successful group mood management relies on groups to evaluate their situation and take appropriate steps to cultivate the vibe that aligns with their particular needs and goals at that moment. However, this proves challenging for many groups.

As discussed in the previous chapter, merely identifying a desired group mood at the start of the meeting does not ensure its realization. Groups find it challenging to notice group mood and take actions to regulate it during the meeting, while the primary focus is on the group activity at hand. We propose that to overcome this challenge, groups can be equipped with a group-specific understanding of the group mood—knowledge of how the group experiences and manages different vibes—along with the know-how to regulate it effectively. One way to obtain such knowledge is "to collect information about oneself—one's behaviors, habits and thoughts— and reflect on them" (Li et al., 2010, p.557), a common approach in personal informatics[53]. In fact, our previous study highlighted that reflecting on lived vibe experience is a promising way to raise awareness of the actions shaping group mood, and to encourage a dialogue on potential adjustments for future meetings.

Reflection, defined by Boud et al. (1985, p.19) as "intellectual and affective activities in which individuals engage to explore their experiences in order to lead to new understandings and appreciations", can be a powerful means for stimulating change. According to these authors, reflection can facilitate behavior change, readiness for application, and commitment to action (as cited in Phielix et al., 2011, p. 1089). In other words, through reflection, individuals can perceive experiences differently, which can potentially influence their future actions and reactions (Leigh & Bailey, 2013). Reflection is a common step in various behavior change models, especially during the transition from understanding one's own behavior to taking an action. Examples include the stage-based model (Li et al., 2010) and the lived informatics model (Epstein et al., 2015) of personal informatics, as well as the transtheoretical model of change (see the contemplation stage, Grimley et al., 1994). Furthermore, practicing self-reflection and developing an understanding of one's

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53   Personal informatics (PI) refers to the practice of collecting and reflecting on personal data to gain insights into one's own behavior, habits, and overall well-being. PI systems utilize technology to assist users in tracking various aspects of their lives (e.g., physical activity, sleep patterns, and dietary habits), by proving means to collect, store, monitor, explore and reflect on their personal information (Li et al., 2010; Epstein et al., 2015).

own emotions are associated with greater competence in regulating them (Barrett et al., 2001; Brown et al., 2007). Similarly, reflecting on group mood may enhance one's ability to regulate it.

Reflection can manifest individually or collectively and can be facilitated in various ways including writing, dialoguing, visual methods (e.g., drawing, mark-making), movement, and through the use of objects or metaphorical representations (Petsilas at al., 2019). The Vibe Moves workshop is designed to incorporate co-reflection and embodied reflection approaches. In the subsequent sections, we delineate each approach, elaborating on the value they bring to the workshop.

6.1.1 Co-reflection

Co-reflection involves two or more individuals engaging in critical thinking about their experiences to reach a new shared understanding (Yukawa, 2006). It is a form of shared reflection that emphasizes using a common reference point while reflecting. We consider co-reflection to be particularly suitable for group mood reflection for multiple reasons. Firstly, group mood is a shared affective experience that may be perceived or experienced differently at the individual level. A natural approach to cultivating a shared understanding would be to bring these varied perspectives together within the group, using a common reference point: in this case, the bodily experiences in the workshop. Secondly, engaging in reflection as a group, rather than as individuals, can yield additional insights that surpass individual thoughts (Løvaas & Vrålep, 2020) and can thus enhance the depth of group mood reflection. Lastly, group reflection fosters courage in addressing challenging situations at work (Løvaas & Vrålep, 2020). People often feel less inclined to disclose mood-related information to individuals outside their immediate friend group (Westphal, 2023). A dedicated co-reflection session can empower work groups in discussing issues related to group mood, enabling them to devise plans for positive change.

6.1.2. Embodied refection

Although engaging with thoughts is the core of traditional reflective practice, it is not the only way to make sense of our experiences. Aligned with experientialist theories that refute Cartesian dualism,[54] Merleau-Ponty (2002) posits that body and mind are inseparable aspects of human experience, making movement and language complementary means to express and understand our subjective experiences (as cited in Leigh & Bailey, 2013, p.163). In this vein, embodied reflection recognizes the body as a valuable source of knowledge, integrating bodily experiences, sensations, and movements into the reflection process. We foresee that these ingredients can be valuable for group reflection on group mood for two

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54   Cartesian dualism conceptualizes the mind and body as distinct and separate entities that interact with each other.

reasons. First, given the pervasive and abstract nature of group mood, individuals may find it challenging to describe it in words. Alternatively, exploring it through bodily interaction, in a nonverbal way, can potentially be liberating for group members. Secondly, becoming aware of these otherwise unobvious interactions of the experience can provide new insights, thus enhancing the richness of the group reflection.

In the design discipline, the embodied approach has been explored in various design cases. An early example exploring the role of embodied understanding in design is Van Rompay et al.'s (2005) chair study, which illustrated that designed objects can express characteristics associated with bodily experiences (massive vs linear forms being perceived as being old-fashioned vs futuristic). More recent is the soma design approach developed by Höök (2018), which advocates reincorporating body and movement into the design process to design better products. The literature reports a few examples where embodiment is used as means for design research. Among those is a workshop series where dancers employed performance-based techniques to prototype a robotic agent named SpiderCrab (Wallis et al., 2010). In mood research, another workshop utilized role-playing as a method for educators to explore interpersonal mood regulation strategies (Esnaf -Uslu, 2024). Similarly, the Vibe Moves workshop offers groups activities to embody group moods through dance and to discuss their lived vibe experience in relation to their movements.

6.1.3. Vibe Video Set as a Supporting Material

In this workshop, we used the Vibe Video Set (Sonmez et al., 2024b) as an inspirational material to support embodiment. The set comprises eight professional dance videos, each representing a distinct group mood through artistic human movement (see Chapter 4 for more information on content). The videos serve a triple purpose in the workshop. First, they provide participants with an explicit bodily language for expressing group moods. The choreographies blend actual bodily expressions with symbolic movements that convey metaphors. Participants can draw inspiration from these movements as a starting point for embodiment, selecting those that resonate with their personal experiences and align with their individual preferences or physical capabilities.

Second, the videos aim to provide participants with a shared understanding of group mood, thus enabling them to reflect on their experience using a shared language. An online study in Chapter 4 demonstrated that the video set effectively communicates the intended group moods in a holistic, distinctive, and relatable way.

Third, they aim to provide participants with a flexible framework for group mood reflection. As the videos are context-free—not depicting specific work settings or professional roles—they remain open to interpretation. Depending on the specific situation discussed during reflection, the bodily expressions in the videos can be interpreted in multiple ways.

Moreover, observing the group mood detached from real life may make it less confronting for participants to reflect on negative experiences.

In the following sections, we present the steps of the Vibe Moves workshop and report a study which explores the workshop's potential in facilitating effective group reflection on group mood.

6.2. VIBE MOVES WORKSHOP

The Vibe Moves workshop is designed to facilitate a group reflection on lived group mood experiences that are gathered through embodiment. It consists of four steps: preparation, embodiment, reflection, and wrap-up, as visualized in Figure 6.1. The embodiment and reflection steps are repeated for each group mood that is explored. The Vibe Video Set (Sonmez et al., 2024b) is used as an inspirational material to support the embodiment step, consisting of three stages.

VIBE MOVES WORKSHOP

For each group mood

STEP 1	STEP 2	STEP 3	STEP 4
Preparation	**Embodiment**	**Group Reflection**	**Wrap-up**
for the workshop	of the group mood	on the group mood	of the workshop
- Introduction	Stage I : Watch the video		
- Warm-up	Stage II: Move individually		
- Selecting group moods	Stage III: Move as a group		
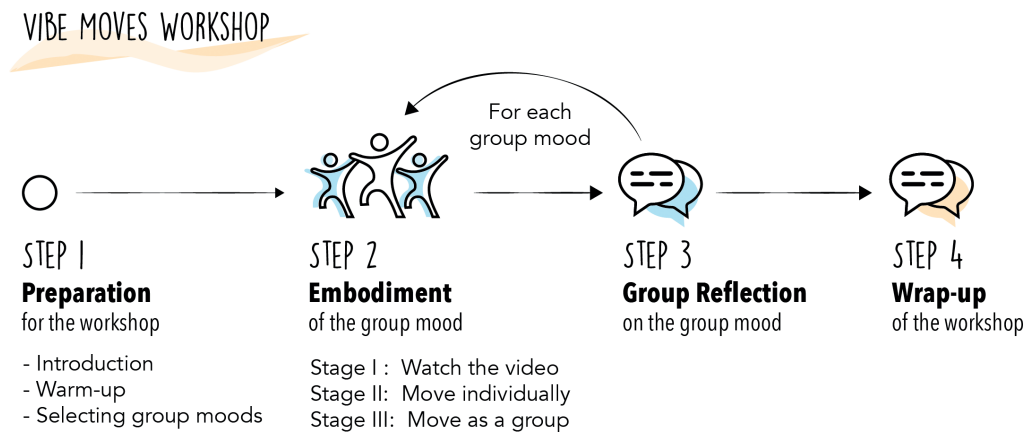
Figure 6.1: The four steps of the Vibe Moves workshop

Step 1. Preparation

In this step, participants receive information about the goal and plan of the workshop, do warm-up exercises, and select the group moods that they want to reflect on.

Introduction (10 minutes): The facilitator introduces the concept of group mood, the Vibe Video Set, and the workshop plan. The presentation includes a definition of group mood, an explanation of its significance for group processes, the idea of group mood management, and the names of eight different group moods. The Vibe Videos are introduced as a means

to communicate these group moods through bodily expression. The goal of the workshop is explained as an opportunity to reflect on different group moods through bodily movement, using the videos as a source of inspiration. To familiarize participants with the style of the videos, a short preview of the set is shown.

Warm-up (15 minutes): To prepare physically and mentally, participants do two warm-up exercises. These online exercises were originally designed for improvisation training for theatre students. First, participants warm up their body by following a seven-minute video with instructions (National Theatre, 2014). The next exercise, the *Emotion Walk,* prepares participants for physicalizing and expressing emotions through movement (Marx, 2022). Participants begin by walking in a circle naturally. Then, following the facilitator's guidance, they change how they walk to embody three emotions: e.g., sadness, anger, and happiness.

Selecting group moods to reflect on (5 minutes): Participants are given eight group mood tags, each containing the name of a group mood followed by three descriptive keywords (Figure 6.2). As a group, they choose two group moods that they want to reflect on in the workshop, and shortly discuss what they think each group mood entails. Participants are recommended to opt for group moods that they have experienced before.

CHILL FLOW	TENSE
Calm, Smooth, At ease	Stressed, Frustrated, Hasty
FIERY	CONFRONTATIONAL
Clear-minded, Eager, Vigorous	Conflicting, Competitive, Directive
FUZZY	SAFE HAVEN
Confused, Uncertain, Chaotic	Supportive, Connected, Friendly
CREATIVE	SLACK
Open-minded, Explorative, Enthusiastic	Drained, Reluctant, Reserved

Figure 6.2. Eight group moods tags to choose from

Step 2. Embodiment of the group mood

The selected group moods are explored one by one, in a three-stage embodiment process taking 15 minutes in total. First, the group watches the video expressing the group mood. In the second stage, participants are asked to embody the group mood individually by

moving along with the video ("move with the vibe"). In the third stage, they are invited to move along with the video again, but this time as a group, by reacting to each other's movements. Participants join the group movement one by one, following the facilitator's signs (i.e., gentle shoulder tap).

In stage two and three, the participants are encouraged to use their body in a way that feels comfortable and pleasing, without worrying about the performance. They are reminded that the video is meant for inspiration, and they are not required or expected to mimic the professional dance movements shown in the video. They have complete freedom of movement, which can include mimicking movements and creating their own, choosing the level of expressiveness and interaction they feel comfortable with. Sitting, standing, maintaining eye contact from a distance, coming closer, or even physical contact are all acceptable, as long as they feel comfortable. Speaking during the embodiment exercise is discouraged.

Step 3. Group Reflection on the group mood

Following the embodiment exercise, the group is invited to reflect on their experience with the group mood in a 15-minute group reflection, using the following questions to guide the conversation:

- How would you describe this vibe in relation to your bodily experience? How did your body feel as you moved?
- Can you recognize this vibe in your group work? Can you provide any examples?
- Do you currently do anything to deal with or stimulate this vibe within your group? If so, what approaches do you use?

Step 4. Workshop Wrap-up

At the end of the workshop, participants are invited to share their takeaways from the session. Two questions guide the 30-minute discussion:

- What new insights or experiences did you get from this workshop?
- Is there anything from the workshop that you would like to apply to your group work?

6.3. STUDY

The primary objective of this study was to assess the efficacy of the Vibe Moves workshop in promoting reflection on real-life vibe experiences within small work groups. Furthermore, we aimed to gather insights to enhance the workshop format. The study was guided by the following key research questions: **(1) What is the impact of the Vibe Moves workshop on group reflection on group mood? (2) How do the participants experience the format of the workshop?**

6.3.1. Sampling

The groups were recruited using a purposive sampling approach, using the researcher's [author of this thesis] network, specifically targeting small professional groups who are interested in gaining insights into group dynamics and enjoy physical movement. Figure 6.3 shows the image used in recruitment communications, which included a link to an online form requesting basic information such as group size, duration, company name, and available dates. As compensation for their time, each participant received a €30 gift voucher.

Figure 6.3. Call for participation to recruit potential participants.

6.3.2. Participants

A total of five small groups of 3 to 6 members (N=20), volunteered to participate in our study. Among these groups, four were professional workgroups representing diverse organizations in the Netherlands, including two design consultancies, one multinational furniture retailer, and one university. The fifth group was a student project team from the Industrial Design Engineering faculty at TU Delft, intentionally included for diversity purposes. The workshops were conducted separately with each group in a spacious room at their respective organizations.

The groups varied in terms of composition, job experience and group engagement. Three of the groups had an international composition, while the other two consisted solely of Dutch participants. While four teams consisted solely of design (research) professionals, one had a multidisciplinary composition. None of the groups were newly formed. Table 6.1 provides an overview of the participant groups. For a more detailed overview see Appendix D1.

Table 6.1. An overview of the participating groups.

Group no.	Number of participants	Gender	Nationality	Profession	Organization	Average time spent working together (per week)	Minimum membership duration
G1	3	Mixed	Dutch	Designer/ researcher	Small design consultancy	10.5 hours	3 months
G2	4	Mixed	Dutch	Design/ researcher	Small design consultancy	n.a.*	5 months
G3	3	Female	Mixed	Design researcher	Technical university	9.3 hours	18 months
G4	3	Mixed	Mixed	Design students (MSc)	Technical university	15 hours	5 months
G5	6	Mixed	Mixed	Mixed	Large-sized furniture retailer	12 hours	2.5 months

*= Group members work with one another in multiple projects but not all together.

6.3.3. Procedure

Participants were explained the purpose of the study and signed a consent form. The study consisted of two parts: a 90-minute workshop session (Part A) followed by a 30-minute group interview (Part B), as visualized in Figure 6.4. Both parts were facilitated by the researcher [author].

Part A: Workshop session

In Part A, the workshop was conducted in four steps as described in Section 6.2, with slight modifications to cater to situational variations. Initially, the first participant group (G1) was tasked with exploring three group moods. For the subsequent groups (G2-5) however, we
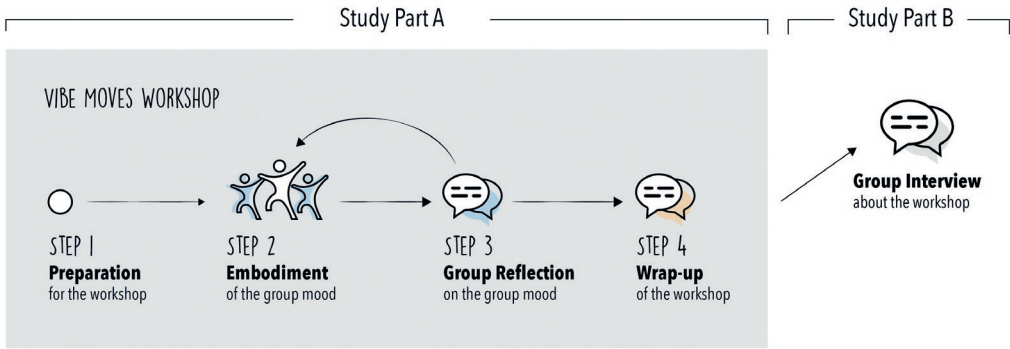
Figure 6.4. The study procedure

reduced this number to two to reduce participant workload. To ensure a balance between positive and negative experiences, we instructed groups to select one positive and one negative group mood. Notably, these categories were intentionally left unlabeled, allowing groups to choose without predetermined positive or negative associations. To ensure that all group moods are explored in the study, we explicitly assigned the Confrontational group mood to the last group (G5) since it was not chosen by any of the other groups. Table 6.2 provides an overview of the group moods chosen by each group.

Table 6.2. Group moods chosen by each participating group

Group	Group mood 1	Group mood 2	Group mood 3
G1	Fiery	Tense	Safe Haven
G2	Creative	Slack	-
G3	Chill Flow	Fuzzy	-
G4	Fiery	Fuzzy	-
G5	Safe Haven	Confrontational	-

Part B: Group interview on workshop experience

Immediately following the workshop, participants were invited to discuss their workshop experiences. They were invited to elaborate on the format and the perceived value of the workshop for group mood management. Additionally, they discussed the use and application of the videos. The discussions were audio-recorded. The following questions guided the discussion:

- How did you experience the workshop in general?
- What is your opinion on the workshop format (embodiment and reflection steps, instructions, and facilitation)
- In what ways would attending this workshop be valuable for workgroups facilitating group mood management?
- How did you make use of the videos in the workshop?

6.3.4. Data Analysis

The dataset consists of audio recordings collected during group reflections (step 3) and wrap-up (step 4) in Part A, as well as the group interviews in Part B. A total of six hours of audio data were transcribed and subsequently analyzed using Atlas.ti. We identified 34 codes, grouped into 18 subthemes and 10 themes: five related to RQ1 (the impact of the workshop on group mood reflection) and five related to RQ2 (the experience of the workshop format) (as shown in Table 6.3). Our study findings are organized according to these themes, with subthemes presented as key insights.

Table 6.3. Coding scheme: The research questions, themes, subthemes (key insights) and codes.

Main Titles (Corresponding to RQs)	Themes	Sub-Themes (KI=Key insights)	Codes
The impact of the workshop on group mood reflection (→RQ1)	1. Expressing group mood	KI 1. Expressing understanding intuitively	- Intuitive expression
		KI 2. Connecting on an experiential level	- Feeling the 'vibe'
	2. Defining and describing group mood	KI 3. Crafting group-specific definitions	- Defining individual experience - Defining group experience - Connecting to core qualities
		KI 4. Describing group mood with movement-based metaphors	- Movement-based metaphors
	3. Analyzing and evaluating group mood	KI 5. Growing awareness of own and others' behavioral tendencies	- Awareness of own behavioral tendencies - Awareness of others' behavioral tendencies
		KI 6. Highlighting the potential value of negative group moods	- Benefits of negative group moods - Drawbacks of overly positive group moods
	4. Drawing conclusions on the team's group moods	KI 7. Intention to cultivate missing group moods	- Acknowledging missing group moods - Intentions to improve team's group moods
		KI 8. Acknowledging positive group moods	- Acknowledging team's 'good vibes'
	5. Strategies for managing group moods	KI 9. Sharing insights into triggers and strategies to manage group mood	- Anecdotes about group mood situations - Example strategies to regulate group mood - Suggestions to deal with negative group moods
		KI 10. Intention to use embodiment as a regulation strategy	- Power of bodily expression in regulating group mood - Examples of embodied regulatory actions

6

Main Titles (Corresponding to RQs)	Themes	Sub-Themes (KI=Key insights)	Codes
The experience of the workshop format (→RQ2)	1. Selecting group moods to explore	*KI 11. Selecting negative group moods*	- Selecting negative group moods
	2. Watching the videos before and during embodiment	*KI 13: Enabling and restricting movement repertoire (watching before)*	- Usefulness of watching before embodiment - Drawback of watching before embodiment
			- Usefulness of watching during embodiment - Drawback of watching during embodiment
	3. Embodying group mood	*KI 15. Moving individually*	- Preparing for group movement - Feeling uneasy moving alone
		KI 16. Moving as a group	- Synchronizing - Creating unique movements - Challenge of embodying negative group moods
	4. Reflecting on group mood	*KI 17. Reflecting on the group mood*	- Embodying before reflection - Tangible discussion - Comparing two group moods
	5. Workshop Room	*KI 18. Impact of workshop room*	- Size of the room - Affordance of the room - Privacy

6.4. RESULTS

6.4.1. The Impact of the Workshop on Group Mood Reflection

In this section, we present ten key insights about the observed workshop's impact on group reflection across five key themes: (1) expressing group mood, (2) defining and describing group mood, (3) analyzing and evaluating group mood, (4) drawing conclusions on team's group moods, (5) strategies of managing group mood. Within each of these themes, we highlight the unique role played by embodiment in feeding the reflection process. Notably, the groups did not restrict their reflections to one-off group mood situations in the past. Instead, they engaged in simultaneous reflection on multiple past situations, their embodied experiences during the workshop, and the broader concept of group mood.

Expressing group mood
Key insight 1: In the embodiment step, participants expressed their understanding of a specific group mood in an intuitive way.

In the embodiment step, participants expressed their understanding of the vibe through movements intuitively. Although the expressions were unique to the team, some common movement qualities were observed in repeating vibes. For example, one group [G1] embodied Safe Haven by moving around and on top of the table, while another group [G5]

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Figure 6.5. Common movement qualities emerged in the embodiment of Safe Haven group mood: (top) G1 waving hands around each other's upper body, (bottom) G5 making waves with holding hands (photos are taken and anonymized by Alev Sönmez).

formed a circle, both engaging in close physical interaction. The former group waved their hands around each other's upper bodies, while the latter group made wave-like motions with their hands held together (Figure 6.5).

Key insight 2: Through embodiment, participants were immersed in the explored group mood, which later helped them describe it in detail.

Participants reported feeling immersed in the group mood while expressing it through movements. As one participant described: *"We didn't only think about what Slack or Creative means, but we also felt it through movement"* [G2]. Being sensitized to the vibe on an experiential level helped groups to discuss it later, as *"it's easier to describe something that you just experienced"* [G4].

Defining and describing group moods

Key insight 3: By interpreting their movements, participants crafted definitions for their group mood experience. While these definitions were specific to each group, they connected to the predefined qualities of that group mood.

In the reflection step, by linking their movements to the vibe experience, participants described how they perceived and experienced the group mood, both personally and as a group. For example, one participant elucidated their attempt to move *"as weird as possible"* during Creative embodiment, by defining Creative group mood as *"doing something you don't do on a daily basis, stepping out of your comfort zone, and doing a movement which is out of the box"* [G2]. Another participant defined their experience of Tense by highlighting the misalignment with their group embodiment, stating, *"In the dance, we were too much in line, we followed each other or make room for someone. Whereas when I have this tense moment, I feel disconnected. You don't understand the other's language"* [G1].

These definitions often reflected the predefined (core) qualities of that group mood (see Chapter 2, Sönmez et al., 2022a). For instance, one participant connected their "*flowy*" movement in the Creative dance to 'explorativeness', saying, *"I was moving flowy. For me, the Creative vibe is also a way of just moving with what happens"* [G2]. Another participant emphasized the quality of commitment when describing their Fiery group movement "*it was being committed to a decision. When we jumped over each other, we needed to commit to the jump, otherwise we would fall on the person and both get hurt"* [G4]. Another participant defined Chill Flow by emphasizing its collaborative quality expressed in their group movements, *"we really were handing over, letting each other express, doing things separately but then coming together; which is the way we work"* [G3].

Key insight 4: Participants used movement-based terms as metaphors to describe their

group mood experience, which unlocked new perspectives for reflecting on the group mood.

One group stated that the bodily exploration gave them a vocabulary to describe the vibe that they would not use otherwise [G4]. Movement-based metaphors, i.e. terms originally used to describe movements in their dance or in the videos, were a particularly interesting category. For example, when elaborating on the Slack video, one participant pointed out that *"In the movie, there were people slacking, but there were also people literally moving [pushing] other people"* [G2]. Later in the reflection, the participant used the word *pusher,* to describe their role in the team in reference to that scene. They explained *"Sometimes I feel like slacking, but I'm the one who needs to push the other ones or guide them or give them the energy to go"* [G2]. In another group, one participant *put a chair upside down* in the Fuzzy embodiment to *"confuse the group with an unrealistic perspective"* [G3]. Later on, their teammate used this movement as a metaphor to explain how they handle a Fuzzy vibe in their team *"Then somebody puts the chair upside down. We might be confused, but instead of throwing the idea away we still try to look at it, ask each other questions"* [G2]. The same group referred to their *passing on* movement in Chill Flow embodiment as a metaphor for building on each other's work: *"Trust that you have with each other that makes the smoothness of passing on even better"*. Such terms provided them with new perspectives to think of the vibe experience. For example, using the word *reactive* to describe their movements in the Fiery embodiment, one participant said they looked for *reactive* moments in their group work when asked to come up with examples of Fiery vibe [G4].

Analyzing and evaluating group mood experience

Key insight 5: Analyzing their bodily expressions in the movement exercise, participants grew their awareness of their own and other's behavioral tendencies in specific group moods.

Reflecting on their bodily expressions in the movement exercise, participants became aware of their behavior patterns in different vibes and shared them with the group. For instance, when embodying the Confrontational vibe, one participant felt an *"immediate need to turn away, to smile, or to say sorry"* [G5] to compensate for their hostile eye contact with others. Analyzing this tendency, the participant realized finding it *"quite uncomfortable to be confrontational to people"* [G5]. Another participant recognized the urge to hold an object, noting their tendency to use visual materials to avoid direct confrontation with others: *"I need a drawing, a whiteboard, a picture! I'm uncomfortable with confrontation just verbally. If we disagree and draw it out, or look at the same diagram, then I can see your viewpoint because we're looking at something together.... [This helps] distancing person from the issue. It's not about you, it's about this! [the issue on the visual]"* [G5]. By observing and comparing

each other's movements, participants gained insights into how their teammates behave in a certain vibe. For instance, one participant noticed that their teammate moved much faster in the Fuzzy embodiment, explaining that while their teammate becomes hyperactive when trying out solutions, they tend to *"stop and think"* in a Fuzzy vibe [G3].

Key insight 6: The participants highlighted the potential value of the 'negative' vibes.

The reflection touched upon the value of negative vibes. One group considered confrontation as *"a form of honesty"* and an opportunity *"to deepen the connection"* [G5]. One participant expressed working best with those who they can have confrontational discussions with [G5]. Another group concluded that the seemingly inappropriate Slack vibe, which they all avoid, is only natural in a work setting, stating, *"I think it's not a bad thing. I think you should have time to slack. If there's something in your head, then it's not efficient to continue"* [G2]. One participant exemplified how having *"too much"* Safe Haven at the office can hamper focus and professionalism, with someone else adding that *"if I were in Safe Haven vibe all the time, I would be cuddling everyone but get nothing done"* [G1].

Drawing conclusions on team's group mood dynamics

Key insight 7: As their awareness of diverse group moods grew, participants were motivated to cultivate missing group moods in their work team.

The workshop created awareness of the variety of the group moods and options for changing them in a team [G5]. The groups did not only recognize group moods that occur frequently in their team, but also group moods they missed in their work setting (e.g., Creative). One participant from a design agency mentioned, for example, *"I don't feel that I have time to be creative, while I do think that it is important to be creative once in a while, when you work at a creative agency"* [G2]. Although such reflections did not lead to concrete plans, they stimulated the intention to improve the vibe. For example, a participant from the design agency asked *"how can you make more time for these creative things?"* after the workshop, while another was inspired to embrace a more experimental approach rather than a strictly methodological one to foster creativity in their workplace. Anticipating a Fuzzy vibe in their next project step, one participant suggested being more physically active in meetings [G3].

Key insight 8: Participants acknowledged their team's positive group mood dynamics.

During reflection, participants took the opportunity to acknowledge positive vibes in their team and appreciate their group dynamics in general. One participant acknowledged that *"We have quite a safe work environment…We generally are okay to dare to share our thoughts, even though it's different"* [G5]. This led to sense of pride [G3] as well as intentions *"to be more attentive"* to such moments (e.g., being in Chill Flow) [G3].

Sharing strategies for managing group mood

Key insight 9: Participants shared anecdotes, offering insights into group mood triggers and management strategies.

Participants highlighted the importance of group mood management at the workplace. One participant expressed that resolving confrontation at work is essential *"because you have to work with these people. You cannot just get away from them"* [G5].

The anecdotes included triggers of group moods. For instance, trust and familiarity were mentioned as catalyzers for the Chill Flow vibe [G3]. Another participant mentioned actions that fostered a Safe Haven vibe in a team meeting, stating, *"everybody was just sharing their thoughts which have been heard, and noted down to bring the reflection further. I think that created a lot of safe space¾'ok we can do this'"* [G5]. Such anecdotes brought up new ideas for stimulating desired vibes. For example, one participant proposed that *"setting an example"* creates a Safe Haven vibe in a team and suggested *"organizing meetings with colleagues where we're going to share just our failures […] and what we learned afterward"* [G5]**.**

Interestingly, participants often drew examples of negative vibes and strategies from their interactions with other work groups or social life. For example, one participant recalled their inability to turn around a Slack vibe in a client meeting, stating *"I tried to push her [the client], but it was not really working. So, then it [the vibe] went down and down and down"* [G2]. Another participant suggested using distraction to ease the Confrontational vibe, citing an example with their kids: *"when my kids are confrontational, trying to distract them with something else does lighten the mood"* [G5].

Additionally, participants gave each other suggestions on how to deal with vibes. One participant recommended breaking confrontational situations with laughter, noting that an unexpected, light-hearted reaction could dissolve the tension [G5]. Notably, while some of the strategies were aimed at facilitating the vibe (e.g., acting confrontational), others sought to resolve it (e.g., agreeing to disagree). The strategies mentioned for each vibe are listed in Table 6.4.

Table 6.4. Participants' strategies for stimulating or resolving vibes.

Vibe	Strategies
Safe Haven	Sharing personal details, sharing observations, active listening, leading by example, showing own mistakes and weaknesses [G5], balancing personal and professional content [G1].
Confrontational	Agreeing to disagree, positive framing, discussing a visual*, putting up physical barriers*, eye contact*, acting confrontational, making yourself look bigger*, ensuring it's not personal, listening, unexpected laughter [G5].
Fuzzy	Embracing and expressing fuzziness, questioning, offering perspectives [G3] a coffee, fresh air, change of location, breaking down the tasks, putting the ideas/ problem on the table, getting an outsider's view [G4].
Chill Flow	Listening to other people's input, building on each other's idea, open communication, creating trust, checking in with each other, taking over duties when someone else is not available, synchronizing in the way you document (taking notes, visualize), asking questions to draw the other in the task [G3].
Fiery	Clapping hands*, giving high-fives*, throwing a ball to each other*, motivational talk [G4].
Slack	Checking in with each other, stopping the task and resuming the next day, acknowledging the Slack vibe, swapping tasks, embracing the Slack vibe, recognizing and avoiding triggers, pushing each other to perform [G2].
Creative	Taking time to get in tune with each other and warm-up, reducing the pressure to deliver [G2].
Tense	– (no specific strategy mentioned)

*Strategies involving bodily expression and movement

Importantly, despite the strategy–containing anecdotes, the workshop did not provide participants with clear directions on how to regulate their vibes. Three participants in different groups [G1, G2, G4] mentioned that although the workshop raised awareness of their vibe-related behavior, they still did not know how to change it after the workshop.

Key insight 10: The participants were inspired to utilize embodiment as a strategy to regulate group mood in their team meetings.

The workshop *"reinforced the importance of reading the room by paying more attention to the unsaid [bodily expressions]"* [G5]. It raised awareness of the power of movement in regulating group mood, as participants realized that *"a little movement throughout the day could make such a big difference for the team dynamics"* [G5]. This inspired them to intentionally incorporate movement in their meetings. For instance, one participant suggested standing up once a while to *"shake off the fuzziness"* [G3]. Another one pondered on what could be an effective movement to release the tension radiated by a teammate rolling their eyes [G3]. They also discovered the possibility of *"creating a vibe by following the movements of another person"* [G1]. Additionally, some of the regulation strategies mentioned involved bodily expressions and movement (e.g., clapping hands or giving high-fives for the Fiery vibe, and eye contact for the Safe Haven vibe).

6.4.2. The Experience of the Workshop Format

In general, the steps, duration, and facilitation of the workshop were considered effective [G2, G3]. Although most participants were unfamiliar with the movement component, they did feel comfortable moving. A few participants reported feeling *"uneasy", "awkward",* and *"exposed"* when expressing themselves with their bodies at the beginning of the workshop, but they considered the overall experience *"enjoyable"* and *"fun"* [G1, G5, G4]. Below we report results relating to the workshop format, grouped into nine key insights. For suggestions and considerations with regard to the workshop format, see section 6.5.2 (discussion).

Selecting group moods to explore

Key insight 11: Some participants were hesitant to explore negative vibes.

Participants were encouraged to choose a group vibe they were familiar with. One participant expressed hesitation in selecting a negative vibe, stating, *"It feels uncomfortable to act negative in the group. We all want to be perceived as kind and friendly"* [G5]. This may explain why none of the groups choose to explore the Confrontational vibe, which forced us to assign it to the last group. Presenting keywords and vibe names helped frame the vibe.

Watching the videos before and during embodiment

Key insight 12: Watching the video before the embodiment sensitized participants to the movement steps.

Participants reported that watching the video before the embodiment *"helps define and understand the vibe"* [G5], *"sensitizes"* [G2], *"inspires"* [G3, G5], and *"puts you in the vibe"* [G4] for movement exploration. One participant noted that *"videos set the tone for what kind of movements are allowed"* [G2], i.e., the videos established a movement framework for expressing each vibe. Participants also used the videos as a source of inspiration, thinking *"What movement would I use to express this vibe?"* [G3]. They even incorporated some movement elements into their own embodiment exercise. For instance, seeing the dancers being *"quite closed [to the outside] and protective over each other"* in the Safe Haven video, one participant tried *"to bring everyone close to form a very small, closed group so that you can feel safe"* [G5]. Similar examples included looking in different directions in Fuzzy [G3], jumping over each other and running in circles in Fiery [G4], touching in Safe Haven [G5], and moving in a grid in Tense [G1].

Key insight 13: Videos provided participants with movement ingredients, which both enabled and restricted participants' movement repertoire during the embodiment step.

The movement ingredients provided by the videos made it easier to move for some who *"wouldn't be comfortable to move from scratch as a non-artist"* [G4]. However, others felt restricted by what they perceived as high expectations imposed by the videos. For instance, one participant reported feeling restrained while embodying the Creative vibe,

as the video displayed acrobatic movements with close physical contact, which they found uncomfortable to do with colleagues [G2]. Nonetheless, most groups adapted the movement ingredients to suit their preferences. For example, watching the Safe Haven video with intimate physical contact, one group creatively implemented touch by forming a circle while holding hands, a less intimate version of what was portrayed in the video [G5]. Some groups even created new movements to better express their understanding of group mood. For instance, one group expressed Chill Flow with wavy, full body movements, a deviation from the precise hand movements shown in the video, as they associated Chill Flow with being organic rather than precise [G3].

Key insight 14: Watching the video during the movement steps both supported and distracted participants.

Participants had mixed opinions about watching the video during movement steps. On the one hand, it helped them by serving as a visual reference that they could mimic as needed [G3]. On the other hand, some participants found it *"difficult to watch"* [G1], *"distracting"* [G1, G2, G4], *"influencing"* [G5, G4] or *"limiting"* [G5] while moving. The rhythm and pace of the music were used as a foundation for their movements. Importantly, Group 1 watched the video without knowing what vibes were being expressed, which caused uncertainty and unintended interpretations.

Embodying group mood

Key insight 15: The individual movement step helped participants prepare for group movement. Some felt uneasy moving on their own.

The individual step was found useful to practice for group movement [G1, G2, G4], as one participant stated *"it made it less scary to move"* [G3]. It allowed participants to discover their personal expressions of the vibe by stimulating questions such as *"what would I do with Fuzzy"* [G4]. By tapping into their daily expressions, they could create movement ingredients to use in the group exercise. One participant recalled *"When moving on my own, I already had faint ideas of what I would do. And then when we moved as a group, I could pick them [ideas] up and implement in the group. If I didn't have that [individual step], that might be more difficult [to move in group]"* [G1]. However, some participants felt "awkward and uneasy" moving on their own, especially at first, as they did not know exactly what to do. For some, the individual exploration step, which lasted one full video, felt too long.

Key insight 16: In the group movement step, participants synchronized naturally, adapting to each other's movements.

In the group movement step, participants made an effort to synchronize with each other. Not only did group members watch, mimic, adapt, and react to each other's movements [G4, G5], but some also introduced new movements to organically change the course of

ongoing group movements. For example, one participant started interacting with a coffee cup when embodying the Confrontational vibe and others took on the idea [G5].

Key insight 17: Embodying negative vibes in the absence of a real context was challenging for some.

Some participants found embodying negative vibes challenging, as they struggled to suspend disbelief and felt too strongly that they were 'acting' After a group movement for the Confrontational vibe, one participant remarked *"it's a mix with laughter in a way, because you're doing this together with your colleagues. I felt a little bit in and out of the character, during the exercise. And it felt more like you play something, because right now the confrontation is not real"* [G5].

Reflecting on group mood

Key insight 18: Starting with embodiment, contextualizing with real life examples, and comparing different vibes enriched the reflection.

Participants stated that embodying the vibe prior to reflection *"made the discussion more tangible"* [G2]. Real-life examples further contextualized the experience and *"made it a bit more concrete"* [G1]. Participants drew comparisons between the two vibes, whether at the movement level (*"Creative was dynamic and low, but in slack we were slower and lower"* [G2]) or the experience level (*"You cannot really plan Safe haven, it appears suddenly. But I think Tense is something that builds up"* [G1]).

Workshop room

Key insight 19: The size and features of the workshop room had an impact on the exploration process.

When the session was held in a small meeting room, participants mentioned feeling restricted and unable to make big movements (for the Creative vibe) or roll around on the 'dirty' floor (for the Slack vibe) [G2]. One participant expressed the desire to interact with soft objects such as carpet or cushions while exploring the Slack vibe [G2]. The prospect of being seen by an outsider made participants feel uncomfortable and *"self-conscious"* during the movement exercise: *"The only moment when it was weird when somebody opened the door and then suddenly you realize, 'oh God, I'm lying on the floor!' [G2]"*.

6

6.5. DISCUSSION

Group mood is a situated concept shaped by various situational factors that interact during group meetings, including activity-related aspects (e.g., task type, meeting goal), environmental factors (e.g., meeting type, room), group dynamics (e.g., roles, norms), and individual states (e.g., energy levels) (see Chapter 2, Sönmez et al., 2022a). As a result, regulation of group mood is contingent on the specific circumstances.

Our previous study in Chapter 5 revealed two primary challenges for groups to regulate group mood in their meetings: (1) group members do not always notice changes in group mood, and (2) even when they do, they may be unsure what how to respond, i.e., what actions to take. We propose that a solution lies in cultivating a group-specific understanding of group mood, which can be facilitated by reflecting on lived group mood experiences.

In this chapter we presented the Vibe Moves workshop as a means to facilitate effective reflection on lived group mood experiences. We conducted a study with five small work groups to explore the (1) impact of the workshop on group reflection on group mood, and (2) the experience of the workshop format. Below, we first conclude our findings, revisiting our research questions. Next, we discuss the implications of our findings, applications for the workshop, limitations of the study and ideas for future work.

6.5.1. What is the Impact of the Vibe Moves Workshop on Group Reflection on Group Mood?

The workshop was effective in stimulating reflection on the group mood experience. Participants engaged in multifaceted reflection, which encompassed:
- Facet 1. Expressing group mood through embodiment.
- Facet 2. Defining and describing the group mood using a new movement-based vocabulary.
- Facet 3. Analyzing and evaluating the dynamics of the group mood.
- Facet 4. Drawing conclusions about their team's group mood dynamics.
- Facet 5. Exchanging strategies for managing group moods.

Interestingly, the five facets facilitated by the Vibe Moves workshop align with the steps of Gibbs' Reflection Cycle[55]: descriptions, feelings, evaluation, analysis, conclusions, and an action plan (Gibbs, 1988; see Figure 6.6).

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55   Gibbs' Reflection Cycle is a renowned framework of reflection for structured examination of experiences. It is particularly suited to analyzing recurring situations and facilitating learning and planning from both successes and failures. The framework is widely used in helping professions (e.g., nursing, teaching).

STEP 1
Description
Objectively recounting
the experience

STEP 6
Action Plan
Developing a plan for how to approach
similar expriences in the future

STEP 2
Feelings
Capturing the emotional
response to the experience

Gibbs Reflective Cycle

STEP 5
Conclusions
Identifying key learnings from the experience and
actions that could have been done differently

STEP 3
Evaluation
Assessing the good and bad
aspects of the experience

STEP 4
Analysis
Making sense of the experience by delving into
the causes that contributed to it

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Figure 6.6. Gibbs' Reflective Cycle. Adapted from Gibbs (1988).

To start with, **defining and describing the group mood** (Facet 2) aligns with the first step of Gibbs' reflective cycle, which involves describing the situation in detail. The workshop encourages the group to come up with group-specific definitions for group moods and introduces a new movement-based vocabulary to describe the mood experience, thereby offering new perspectives.

Analyzing and evaluating the group mood (Facet 3) corresponds to steps 2 and 3 of the reflective cycle, involving the evaluation of what worked and an analysis of why. The workshop raises awareness of behavioral tendencies in specific group moods and highlights the value of negative ones.

Drawing conclusions about team's group mood dynamics (Facet 4) aligns with step 5 of the reflective cycle. The workshop fosters awareness of diverse group moods and motivates participants to acknowledge and cultivate the specific vibes they seek.

Exchanging strategies (Facet 5) partially aligns with step 6¾the last step of the reflective cycle, involving planning for similar future situations. While the Vibe Moves workshop emphasizes the importance of group mood management and facilitates the exchange of strategies, it does not provide explicit directions on how to change vibes. Nevertheless, the strategies discussed during reflection can serve as a repository of ideas to draw from when dealing with group moods in the future meetings.

Unlike Gibbs' Reflective Cycle, exploring feelings is not a separate component of the Vibe Moves workshop, as much as an integral part of every facet, as group mood is inherently an affective experience.

Lastly, *expressing the group mood through embodiment* (Facet 1) is a unique facet of the Vibe Moves workshop and is not found in Gibbs' Reflective Cycle. Through embodiment, participants expressed their understanding of group mood intuitively and are sensitized to the group mood at an experiential level. In 6.5.3. we discuss the value of embodiment for reflection in more detail.

To conclude, the workshop lays a useful foundation for effective group mood reflection, in a way that aligns with Gibbs' Reflective Cycle, by enabling participants to intuitively express and embody the group mood, articulate nuanced definitions using a new movement-based vocabulary, critically analyze and evaluate mood dynamics, draw meaningful conclusions about their team's group mood dynamics, and exchange strategies for managing group moods. One way to enhance the workshop's efficacy would be to facilitate more explicit reflection on regulation strategies (Facet 5).

6.5.2. How do Participants Experience the Format of the Vibe Moves Workshop?

Overall, participants considered the workshop format, including its steps, duration, and facilitation, effective. The majority of participants expressed feeling comfortable with embodiment, despite it being an unconventional activity for workshops at work. The individual movement step was considered a valuable precursor to group activities, although some participants initially felt uneasy moving alone. In group movements, synchronization occurred naturally, with participants adapting to each other and introducing new movements. Embodying negative group moods proved challenging without a realistic context. A few participants were reluctant to select negative group moods to explore, likely driven by a desire to uphold a positive group perception.

The videos played a pivotal role in the workshop. They aided embodiment by helping participants define the vibe and offering movement inspiration. However, the videos also

introduced challenges by setting high expectations for the quality of bodily expression and by distracting participants when they were moving.

Notably, the features of the workshop room, such as size, flooring, and equipment & furnishing influenced the overall experience, as they affected freedom of movement, general safety for self-expression, and interaction possibilities. The sensation of being observed (by outsiders, or by the facilitator) during movement exercises heightened self-consciousness, potentially compromising the workshop experience.

In conclusion, the participants experienced the workshop format positively. Recommendations for format improvements are presented in 6.5.4.

6.5.3. Implications of Findings

Our study demonstrated that the Vibe Moves workshop is effective in facilitating group reflection on groups' lived group mood experiences. This has important implications for group mood management and can contribute to discourse of reflective practices.

Implications for group mood management

Reflection is crucial for professional development. It can enhance people's understandings of their own experience, thereby enriching their repertoire of actions (Leigh & Bailey, 2013). In his book The Fifth Discipline, Peter Senge highlights that reflection during dialogue sessions allows teams to share insights and learn from one another's experiences, which he considers essential for aligning people's efforts (Flood, 1998). Additionally, reflection can be a strategic way to improve a team's ability to manage group moods, as higher levels of self-reflection and emotional awareness are linked to greater competency in regulating emotions (Barrett et al., 2001; Brown et al., 2007).

When teams have little to no time for dedicated conversations about their group moods in their work context, the Vibe Moves workshop can serve as a platform for facilitating reflection on lived group mood experiences. The workshop supports group mood management by contributing to two key aspects: (1) fostering a personal and shared understanding of group mood, and (2) developing know-how for regulating group mood. Below, we elaborate on each aspect and, in parentheses, indicate the steps they correspond to in the Group Mood Management Cycle (Figure 6.7), which outlines five essential actions involved in managing group moods. For detailed descriptions of these cycle steps, see 5.4.4.

Contribution to personal and shared understanding of group mood: Firstly, the workshop can foster personal understanding of group mood. Through intuitive exploration of authentic expressions and reflection on their own and others' movements, participants

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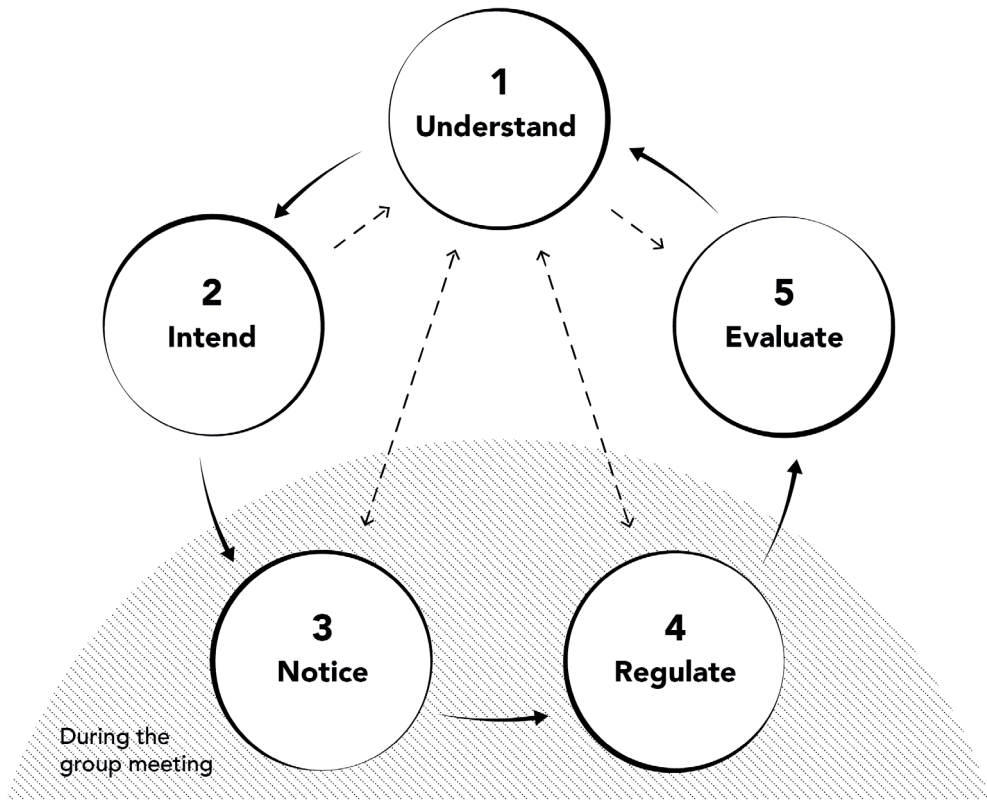
Figure 6.7. Group Mood Management Cycle (as presented in Chapter 5)

gain insights into their behavioral patterns and those of their teammates *(Understand)*. This heightened self-awareness can enable them to recognize group mood shifts during meetings, serving as a catalyst for initiating regulatory actions (*Notice*). Moreover, by pinpointing specific behavioral patterns, participants can develop long-term strategies to address undesirable group moods within their team *(Regulate)*.

Secondly, the workshop can facilitate a shared understanding of group mood. Discussing personal experiences unveils different facets of each vibe, which leads to a shared definition of what the vibe entails and how it is experienced within the group *(Understand)*. This shared understanding aids in identifying common triggers and manifestations of group moods that are preferred or disliked within the specific group (*Evaluate*). Such insights are valuable for group mood management, as they can drive shared intentions and efforts to either promote or prevent certain group moods (*Intend*). For example, a group that collectively recognizes a lack of creative vibes might decide to incorporate creativity-boosting activities at the start of their meetings.

Contribution to group mood regulation know-how: Drawing on Reckwitz's (2002) work on practice theory, 'know-how' can be defined as practical knowledge concerning how to carry out effective and contextually appropriate actions. The workshop provides a platform for exchanging ways to regulate group mood, which we consider examples of regulation strategies. These strategies encompass both personal tactics developed through experience (e.g., *making oneself appear more prominent*) and behavioral tendencies discovered during the workshop (e.g., *engaging in visual discussions*). While the effectiveness of these strategies may be subject to debate, they can broaden the spectrum of actions available for regulating group mood *(Regulate)*. For instance, a group member seeking to uplift a sluggish group mood can experiment with the diverse strategies introduced in the workshop.

Interestingly, the strategies shared in the workshop were not solely aimed at preventing or resolving negative group moods; some were intended to stimulate or amplify them. For example, *adopting a confrontational demeanor* or *maintaining direct eye contact* could intensify the confrontational vibe. Additionally, the value that 'negative' vibes can bring to group work was acknowledged in the workshop, with participants remarking that a Confrontational vibe can foster honesty and that a Slack vibe may signal underlying problems.

In fact, research indicates that negative group moods can potentially benefit specific group activities involving analytical tasks (Klep et al., 2011), systematic and critical information examination (Forgas, 1990), and higher quality decision making (Kooij-de Bode et al., 2010). Recognizing the potential benefits of negative vibes can lead to the establishment of more realistic and effective group mood goals for meetings (*Intend*). Moreover, it can offer a perspective that goes beyond the positive-negative dichotomy, in which what constitutes a good vibe depends on the context.

Furthermore, it is noteworthy that some of these strategies align with both intrapersonal and interpersonal mood regulation strategies identified in design research literature. Strategies such as *stopping the task and resuming the next day* and *embracing being slack* mirror approaches used to regulate one's own mood by reducing demands and embracing a relaxed mindset (Desmet, 2015). Similarly, techniques such as *active listening* and *motivational talk* resemble strategies employed to understand and encourage clients in service encounters (Uslu et al., 2022). This indicates that possessing skills for regulating one's own or others' group mood may be advantageous for effective group mood regulation.

Implication for Reflective Practices

Contribution to embodied reflection practices: The Vibe Moves workshop contributes to reflective practices by showcasing the power of embodiment for facilitating fruitful reflection on subjective experiences. Embodiment theories propose that the body

contains a unique form of knowledge often suppressed by cognitive processes and societal conventions (Block & Kissell, 2001). Through bodily improvisation, individuals can unlock this knowledge and gain new insights into their experiences. The efficacy of Vibe Moves workshops underscores how embodiment can enrich reflection on subjective experiences in two ways.

First, bodily experience can provide a solid base for reflecting on subjective experiences. Reflection becomes meaningful when it is directed toward something specific (Leigh & Bailey, 2013). In the workshop, participants direct their focus not only on their thoughts but also on the physical sensations, movements, and emotions experienced during embodiment. Taking the bodily experience as a concrete starting point (and referring back to it) in reflection appeared to help participants tap into their lived experience, thereby minimizing the tendency to resort to generalized judgements (Leigh & Bailey, 2013).

Secondly, embodiment can facilitate the use of movement-based metaphors to articulate subjective experiences. Using such metaphors can enrich reflection because they aid in making sense of abstract concepts (Zaltman, 1997) and communicating human experience in a multi-layered, memorable, and relatable way (Holm et al., 2018). For example, in the workshop, *passing on* served as a metaphor for the collaborative, smooth and constructive interaction experienced in Chill Flow. Moreover, introducing such novel metaphors can provide a new perspective through which to understand group mood experiences (Lackoff & Johnson, 1980). Framing Fiery as a *reactive* group mood, for example, can unveil previously unnoticed details of the experience (e.g., being active, eager, collaborative, or hasty). Additionally, these metaphors can make it easier to have a dialogue about negative group experiences. For instance, describing a group member's "slacking" behavior as "melting on the table" can be less intimidating in a group reflection session.

Contribution to personal informatics: Personal informatics (PI) is a domain of reflective practice facilitated by designed products. Thus, discussing the Vibe Moves workshop from a PI perspective reveals opportunities for developing tracking tools for the collective self.[56] Similar to PI systems, the workshop aided group members in collecting, exploring, and reflecting on their personal (and shared) information. The information gathered (and generated) during the embodiment step was later explored and interpreted in the group reflection step. However, unlike traditional PI systems, the workshop process neither involved technological assistance nor did it quantify, store, monitor, or visualize the collected information.

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56   The term *collective self* typically refers to the idea that individuals can identify themselves not only as separate, distinct entities but also as part of a larger group or community.

We anticipate that monitoring group mood over time could be a valuable approach for fostering a group-specific understanding. Developing tools for tracking shared subjective experiences poses a unique challenge in personal informatics. The field typically focuses on personal quantifiable data generated by an individual for health management. At most, the personal data are shared with healthcare providers, caregivers, peers, family members, and other patients to support monitoring, sense-making, and peer support (e.g., Murnane et al., 2018; Mishra et al., 2018; Pina et al.,2017; Epstein et al., 2015). Even in collaborative tracking, where multiple stakeholders track and share their personal data to support their care network (e.g., Zou, 2022), it does not extend to collectively generated data or the improvement of a collective experience. Nevertheless, researchers and designers can draw upon existing models, barriers and suggestions outlined in the literature (e.g., Epstein et al., 2015; Li et al., 2010, Pina et al., 2017) when designing PI systems for groups. Such efforts, in turn, have the potential to broaden the knowledge of personal informatics into collective subjective experiences, and to facilitate behavior change at the group level.

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6.5.4. Applications of the Workshop

In this section, we discuss the workshop's possible applications for work groups, designers and design researchers, and considerations regarding the workshop format.

Applications for work groups

In line with its original purpose, we foresee that the workshop can be used to equip workgroups with the group-specific understanding and know-how needed for group mood management. The format can be customized to the needs at hand, either as a series of sessions facilitating a thorough exploration of the eight group moods or as a single session in which participants choose specific moods for in-depth study. For groups that are not functioning optimally, the workshop could offer a gateway for exploring underlying issues. In larger groups such as departments or sections, integrating segments of the workshop into periodic meetings or company events could help creating awareness of group moods at the organizational level. Encouraging a dialogue on group mood would represent a progressive step towards embracing emotions in the workplace—a subject that until recently has generally been considered taboo in organizational practice[57] and ignored in organizational theory (Lok et al., 2017).

On a more general level, the workshop can be used to enhance group dynamics through physical activity (Blake et al., 2023). The embodiment steps can be designated to perform synchronized movements, which can foster ability to bond as a group (Lee et al., 2020).

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57   This reduced sensitivity to emotions in Western workplaces is attributed to a Protestant-influenced work ethos (Sanchez-Burks & Huy, 2009) that views social and emotional matters as potential hindrances to work effectiveness (Weber, 1930 as cited in Sanchez-Burks & Huy, 2009, p.26).

Directing the reflection to the group's positive vibes can facilitate an appreciative dialogue[58] on group dynamics, which may ultimately enhance group communication and group performance (e.g., Mandal, 2022). Additionally, the workshop can inspire other embodied activities aimed at facilitating employee interaction, offering an engaging alternative to conventional company outings.

Applications for designers and design researchers

The Vibe Moves workshop can be used as a resource for design inspiration in developing products and services focused on group mood management. Design researchers can employ the workshop as a user research activity to gain insights into the specific needs, desires, and opportunities related to different group mood types or professional contexts.

Design teams can also actively participate in the workshop to build empathy for their target users, acknowledged as a necessary quality of designing user-centered products (Kouprie & Sleeswijk Visser, 2009; Suri, 2003, Koskinen & Battarbee, 2003; Mattelmäki & Batterbee, 2002). An example is the *Mood-Empathy Game for Designers,* which utilizes embodiment to stimulate designers' empathy for various individual mood states (Desmet et al., 2019). When guided by embodiment experts, the Vibe Moves workshop can serve as a facilitator to enhance designers' somatic sensibilities, which arguably make a valuable contribution to the design of interactive technologies (Schiphorst, 2011). Additionally, the workshop can serve as a teambuilding activity to improve design teams' group dynamics.

Designers can also guide the workshop to gather inspiration for regulation strategies. The regulatory actions shared in the workshops, especially those involving bodily expressions, can be intriguing starting points for design explorations. For example, a participant reflecting on their past experiences with the Confrontational group mood found that visualizing the problem on paper prevented it from becoming personal. Inspired by this insight, designers could create a visual template to help teams highlight confronting ideas and resolve them step by step. Similarly, designers could draw inspiration from the strategy of using laughter to defuse the Confrontational group mood. Picture, for example, a device that randomly plays laughter when a conflict arises in a group. Would it defuse the tension? — or perhaps fuel it? In design research, such design concepts can be used as research tools to explore effective methods for regulating group mood.

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58   This aligns with the discovery stage in the Appreciative Inquiry process (Watkins et al., 2011). Appreciative Inquiry (AI) is a strengths-based approach to organizational development that seeks to create new, generative images for individuals and groups based on an affirmative understanding of their past (Bushe, 1998). During the discovery stage, the group concentrates on identifying strengths, potentials, achievements, and peak experience.

Considerations regarding the workshop format

Participant feedback included suggestions for improving the workshop format. Additionally, leveraging expertise from embodied practices, such as Dance Movement Therapy[59], could enhance the experience and impact of the workshop.

Vibe selection: Asking participants to pick a vibe they are unfamiliar with could mitigate their reluctance to choosing negative vibes, which in turn can help discover unnoticed group dynamics. Investigating similar or contrasting vibes can be valuable, as participants could discuss them in comparison. For half-day sessions, exploring two vibes is ideal.

Exploration sequence: The sequence of the vibes should be decided carefully. Typically, participants became more at ease after exploring the first vibe. Adding a warm-up step specifically focused on group mood expressions can be helpful. The physical effort required for embodying each vibe is also important (e.g., Fiery is more physically demanding than Fuzzy). Participants' preference matters too. While "getting into the act" of the Confrontational vibe can be challenging without an actual cause, beginning with the Safe Haven vibe might be deemed too "touchy" by some groups.

Preparation: Showing snippets of the videos at the beginning of the workshop is highly recommended as it gives a quick impression of the dance style and defining features of the vibes. It is important to take plenty of time for warm-up exercises to create a safe and enabling atmosphere. The facilitator can contribute to this by joining the warm-up exercises.

Workshop space: The ideal workshop space offers privacy and has a clean, uncluttered floor with empty corners. It should be spacious enough to allow freedom of movement yet small enough to encourage group interaction. Everyday objects of varying softness, weight, and size can serve as effective props for the workshop (e.g., chairs, pillows).

Facilitating movement: Participants should be supported when transitioning from watching movie clips to engaging in movement. The individual movement step could be shortened or merged with group embodiment steps. A smoother transition from individual to group movement could be more comfortable. The workshop accommodates diverse movement levels: seated, standing, and using the walls and floor. For individuals with disabilities or less artistically inclined groups, the embodiment step could be done seated.

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59   Dance movement therapy involves utilizing movement as a form of psychotherapy to enhance the overall well-being of individuals by fostering emotional, social, cognitive, and physical integration (American Dance Therapy Association, 2020).

In this case, it is important to embody all vibes at the same level, e.g. sitting on a chair, on the floor, or standing up, to allow fair comparison.

Introducing props can help participants express themselves especially in situations where direct interaction with others might be uncomfortable. For example, expressing negative group moods like confrontational through objects can feel less intimidating than doing so directly with another person.

Facilitating reflection: In general, Gibb's Reflective Cycle can be a valuable guide for improving the facilitation of the reflection stage. Consider initiating the reflection with a focus on movements. Encourage participants to describe their movements and explain if and why these movements represent the vibe before delving into the experience of group mood in real life. Additionally, reintroducing the movement descriptions into the discussion can minimize generalized statements about the group mood. As discussed in section 6.5.1, we recommend steering the reflection toward an action plan (step 5 in Gibbs' reflection cycle). This can be achieved by actively prompting the group to share anecdotes about efforts to regulate group mood, and to generate practical ideas on achieving desired vibes in future meetings. It is also advisable to allocate more time for reflection.

Video Usage: The Vibe Videos serve a dual purpose in the workshop. They support an intuitive understanding of group mood and provide movement inspiration for the embodiment step. However, the video content poses challenges in terms of authenticity and guidance. While the showcased movements serve as a foundation, they may somewhat limit participants' interpretations. The high aesthetic quality of the videos enhances engagement but might set unrealistic expectations. Decisions on video use should align with participants' embodiment experiences and workshop objectives. Alternatively, creating new videos with simpler movements and a rawer performance may benefit less artistically inclined groups. Exploring options such as using only music during embodiment or introducing a guided embodiment exercise could be considered as alternatives to video usage.

In summary, the Vibe Moves Workshop offers versatile applications. The workshop can serve as a source of building blocks for organizations to design reflective activities aimed at enhancing group dynamics of work groups. For designers and design researchers, the workshop can be a rich resource of insights and inspiration for creating products and services related to group mood. The considerations outlined for the workshop format provide practical insights for those looking to improve the overall workshop experience or design alternative reflective workshops.

6.5.5. Limitations of the study and future work

In this section, we discuss the limitations of our study and propose directions for future research.

Limitations

It is worth noting that our participant groups were predominantly composed of long-standing design professionals, characterized by positive group dynamics and an informal corporate culture. This may raise questions about the universal applicability of the workshop: the format might not be suitable for all workgroups. Newly formed, short-term groups, for example, might lack the shared experience conducive to fruitful discussions, potentially feeling uncomfortable with close physical interactions. Similarly, teams in more formal sectors or conforming to conventional company cultures might find the improvised dance moves unsettling. It is important to explore whether teams with problematic group dynamics find the workshop format comfortable, or whether they need another approach to open up. To ensure broader applicability, the workshop should be tested across various sectors (e.g., finance, education), professions (e.g., businesspeople, engineers), and group development stages (e.g., forming, storming, norming, performing, adjourning by Tuckman and Jensen (1977). Such evaluations can inform necessary format adjustments to tailor the workshop to different target groups.

Moreover, our results are derived from a one-off workshop, limiting insights into its long-term effects on group mood management. A longitudinal follow-up study is essential to assess how groups leverage workshop learnings over time. Additionally, examining the impact of separate workshop steps and the videos could offer valuable insights for designing alternative workshop formats.

Future Research

Our findings open up at least two intriguing research directions. First, exploring the workshop's potential to inspire design directions for supporting group mood is promising. As Höök's (2018) soma design approach suggests, the body can be an inspiration for designing unique interactions. Thus, the embodied aspect of the workshop could offer a new design perspective to stimulate desired group moods. Secondly, strategies emerged during the workshop that could inspire group mood regulation efforts. Future studies can specifically utilize the workshop to gather everyday tactics that groups employ to regulate their mood. Investigating their effectiveness and relationship to interpersonal and intrapersonal mood regulation strategies can contribute to know-how on group mood regulation.

6.7. CONCLUSIONS

This chapter introduces the Vibe Moves workshop as a platform for facilitating meaningful reflection on lived group mood experiences within small work groups. The workshop is designed to enable participants to embody group moods though dance movements and to discuss their lived vibe experience in relation to their movements. The Vibe Video Set serves as a source of inspiration for the embodiment process. The study, conducted with five professional work groups, demonstrated the workshop's efficacy in promoting reflection on real-life vibe experiences, and offered valuable insights for refining the workshop format. Our findings contribute to the field of group mood management by expanding knowledge on fostering group-specific understanding and know-how of group mood regulation. Furthermore, our contribution extends to reflective practice, underscoring the potency of embodiment in facilitating meaningful reflection on subjective experiences. As a facilitator of collective data collection and reflection, the workshop can contribute to the discourse on personal informatics at the collective level.

6

GENERAL DISCUSSION

The various chapters of this thesis have reported discussions on the studies they present. In the current chapter, we expand the scope of our discussion beyond the separate studies to cover the project as a whole and its broader implications. First, we revisit the main research objectives/questions, while referring to the related chapters (7.1). Following this, we engage in a discussion on three themes that have emerged throughout the project, which are the contribution of the project to design research (7.2), a reflection on the embodied approach to communicating group mood (7.3), and the contribution of the project to group management (7.4), while also addressing limitations and avenues for future research.

7.1. DEVELOPING A GRANULAR UNDERSTANDING OF GROUP MOOD

In this thesis, group mood is defined as a global affective atmosphere experienced by group members at a certain point in time during a group activity. Below, we address the research questions representing the three main project objectives that were introduced in Chapter 1. Our research started with RQ1, which laid the groundwork for our subsequent investigations into RQ2 and RQ3.

7.1.1. RQ1: What types of group moods are experienced in small work groups?

In this thesis, we identified, explored, and described eight distinct types of group moods that can be experienced in small work groups: Chill Flow, Fiery, Creative, Safe Haven,[60] Slack, Tense, Confrontational, and Fuzzy.

In organizational sciences and psychology, group mood is traditionally conceptualized as an aggregation of individual moods. It is often operationalized with a general valence dimension (positive-negative) and, in some cases, an additional activation dimension (high energy-low energy) (Chapter 2). While this dimensional approach is useful for studying the impact of group mood on other phenomena, it lacks the level of contextual and experiential detail relevant to the field of experience design.

Addressing this gap, this thesis conceptualized group mood as an emergent concept with unique qualities and took the first step towards developing a dedicated typology. Through a

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60   In the final overview, Safe Haven is replaced by a new group mood type, called Jolly. This change was based on the revisions of the paper presented in Chapter 2, which led to a reevaluation of the typology. The main reason was its overlap with the interpersonal aspect captured by the Creative and Chill Flow group moods, rather than representing a distinct, multi-component group mood. Despite this modification to the typology, this thesis retains the use of Safe Haven. This decision stems from the timing of the development of materials in Chapters 3 and 4, conducted prior to the publication of the revised typology. Maintaining Safe Haven in the typology ensured the coherence and consistency of the thesis.

phenomenological study, we developed the first descriptive overview of eight group moods, which served as a foundational framework for the subsequent research activities outlined in the thesis. This descriptive overview offers a rich vocabulary for understanding and distinguishing group moods. Recognizing the importance of a granular understanding in group mood management, we propose that the eight group moods can serve as a foundation for developing further knowledge, methods, tools, products, and services aimed at fostering positive group dynamics and facilitating *good office vibes*.

It is important to note that we do not present the eight group moods as a definitive typology, but rather an initial categorization of group moods that we observed in small work groups. In fact, correspondence analyses conducted on the two sets of vibe-expressing materials (Chapter 4) revealed that certain group moods are less distinct from each other in terms of the qualities they represent compared to others. This indicates that there is still room to improve the initial eight group moods. It is also worth noting that the types are based on 36 qualities derived from descriptions gathered from a small number of project teams, primarily composed of design students. Extending our study to diverse groups of professionals across various sectors and hierarchical dynamics may reveal new qualities and aspects of group mood, leading to the discovery of additional group mood types.

7.1.2. RQ2: How can nuanced group moods be communicated effectively?

In this thesis, we have developed two sets of embodied visual representations as a way to explore effective ways to communicate eight group moods in a holistic, distinctive, and relatable manner.

Previous studies have predominantly relied on verbal labels to communicate group moods. While this approach, common in psychology, proves practical for questionnaire-based studies, it fails to capture the richness necessary for a comprehensive understanding of the group mood experience. Verbal descriptions, although more able to capture nuance, still remain confined to the boundaries of language, requiring a translation from cognitive constructs to experiential realities. Visual representations, however, can offer emotionally rich, holistic, and intuitive insights into experiences. Design researchers have used various visual mediums, such as pictograms, facial expressions, collages, and videos, to depict subjective phenomena such as moods and emotions (Chapter 3 & 4). However, to our knowledge, this approach had not yet been applied to collective subjective experience such as group moods (Chapter 3).

To address this gap, we developed embodied representations of group mood. Adopting an artistic approach, we used the human body and movement as mediums of expression. This resulted in two sets of rich and artistic visual communications: The Vibe Image Set, which consists of eight images each portraying a group pose expressing a group mood,

and the Vibe Video Set, which comprises eight short video clips each showcasing a dance choreography expressing a group mood.

Our evaluation study demonstrated that both sets effectively communicate the eight group moods in a holistic, distinctive, and relatable manner. However, we observed variations in the performance (the extent to which they communicate the intended group mood) across different group moods for both the images and videos. In addition, we found some interesting differences between the videos and images. For instance, the Tense group mood was expressed differently between mediums. Nevertheless, representation of some group moods, such as Safe Haven, Chill Flow, and Fuzzy, remained consistent between images and videos, possibly due to invariant qualities of expression (Chapter 4). Further investigation into these shared embodied qualities could yield new insights or guidelines for communicating group moods. We advocate for a dedicated validation study with a larger sample size and subsequent revisions before integrating these representations into dedicated tools for research or practice.

The visual representations developed in this thesis are the first of their kind in group mood research. They extend the palette of experience typologies available in design to the collective level, showcasing the potential of embodiment and artistic approaches in generating rich and effective communications for group mood and other collective affective experiences. The detailed report of the development process offers insights into how to create such mediums and hopefully inspire new embodied mediums in research and practice.

The sets in their current state can serve as research materials for the ongoing study of group mood phenomena (see the research opportunities in 4.3.4). For example, our combined factor analysis on images and videos (Chapter 4) offers four dimensions for describing group mood. In alignment with the RQ3, we employed each set to operationalize the typology. The images were incorporated into a card set, which is used as a communication material in the intervention study (Chapter 5). The videos were used as inspirational material to support embodiment in the Vibe Moves workshop (Chapter 6). Serving as examples of potential applications, these two studies offer insights into how to utilize these materials as tools to support group mood management.

7.1.3. RQ3: How can group mood management be facilitated?

In this thesis, we developed a group mood typology as a basis for exploring how groups can be supported in managing their group moods.

Group mood emerges within dynamic group interactions and is influenced by various situational factors. Accordingly, what constitutes a beneficial group mood and how it can be achieved depends on the situation at hand. Prescribing a set of actions to achieve desired group moods is challenging, if not impossible, as an action that fosters a positive group mood in one meeting may elicit a different one in another setting. We therefore proposed that supporting effective group mood management should consist of enabling groups to understand and regulate their own group mood. Existing literature on group mood management primarily targets leaders, offering standardized recommendations that lack contextual relevance and group-specific strategies (Chapter 5). To complement this approach, our thesis introduced a group-centric approach to group mood management.

The intervention study (Chapter 5) conducted with project teams shed light on how awareness, a granular understanding, and regulation of group mood can be supported. We identified five action-oriented steps, which provide an initial understanding of the group mood management process, offering entry points for designers, managers, and group members. As a concluding exploration, we utilized reflection to cultivate a group-specific understanding of group mood (Chapter 6). The resulting Vibe Moves workshop serves as a platform for facilitating reflection on lived group mood experiences. An evaluation study provided insights into facilitating effective group mood reflection and highlighted the potential of embodiment in enabling a fresh perspective for understanding and describing group mood experiences.

It is important to note that we did not measure the long-term effectiveness of our intervention or workshop on the impact of group mood management; our conclusions are limited to the short-term experiences of participants. In addition, our participants were predominantly design professionals. To obtain a more comprehensive understanding of how to facilitate group mood management, it is crucial to incorporate insights from various professionals across sectors into long-term studies.

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7.2. CONTRIBUTION TO DESIGN RESEARCH

This thesis contributes to design research as the first systematic study of group mood, an affective phenomenon that has been primarily studied in organizational sciences and psychology. Upon embarking on this research journey, our original intention was to develop explicit design knowledge, such as design tools or guidelines, to design for group mood. However, given the underexplored nature of the phenomenon, we found it necessary to first develop foundational knowledge in the form of the group mood typology and related embodied representations. Nonetheless, we are confident in presenting this as a design research thesis because of its starting points, research focus, and approach. We used various design research methods and engaged in design activities when developing research materials, sessions, and formats, as well as disseminating our findings. Moreover, we do foresee the applicability of the results in both design practice and research. We envision this thesis to serve as a foundational step towards understanding and shaping group moods within the design domain, offering insights and starting points for future research and practice in design for group mood.

At its core, this thesis was motivated by the premise that designed products and services could foster beneficial group moods, thereby opening new opportunities within the design field (Chapter 2). The project initially aimed to support designers in *designing for group mood*. However, as the research journey progressed, it became evident that facilitating beneficial group moods requires a nuanced, experience-oriented understanding of the phenomenon. Consequently, the thesis focus shifted towards developing a granular understanding of group mood.

Reflecting on our initial goal, this thesis contributes to design for group mood in three ways, ranging from fundamental to applied domains. First, the descriptive overview of eight group moods serves as a foundational contribution, providing designers with a detailed understanding of group moods experienced within small work groups. This preliminary typology equips designers with a conceptual framework and a rich vocabulary to navigate and address group mood effectively. Such knowledge can help designers to pinpoint and articulate different group moods relating to the design context, make informed decisions, discover new design opportunities, tailor their concept to specific user groups and communicate effectively with stakeholders throughout the design process.

Second, the images and videos developed in this thesis are the first embodied representations of distinct group moods, offering a novel approach to communicating collective affective phenomena. These representations can be integrated into design and user research tools, serving as inspirational resources for designing products that express and influence group moods. For instance, the bodily expressions depicted in the images and videos can serve as

a source of inspiration for designing products that support specific group mood experiences (for examples see 4.4.5).

Third, while this thesis may not provide explicit design knowledge for facilitating group moods, it offers preliminary insights into facilitating group mood management (see Section 7.4). The proposed five-step approach offers actionable entry points for design interventions aimed at enabling groups to manage their group moods. Additionally, the Vibe Moves workshop format offers an embodied approach to facilitating effective reflection on group mood. Designers can use the workshop to gather insights into the experience and manifestations of group mood, as well as strategies to regulate them, all of which can inspire design interventions to influence group moods.

7.3. REFLECTION ON THE EMBODIED APPROACH

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Previous work in design research has demonstrated that individual moods and emotions can be effectively communicated through various static and dynamic expressive representations (Chapter 3 & 4). The current work pioneers the communication of *collective* experiences using the human body and movement as mediums of expression. The vibe images and videos demonstrate that it is possible to embody nuances of group moods. Our evaluation study confirmed that both the Vibe Images and Vibe Videos effectively communicate the typology of group moods in a holistic, distinctive, and relatable manner. This suggests that such embodiments can effectively contribute to communicating complex collective phenomena, especially when used to complement verbal labels and descriptions. It should be noted that some differences were found between group moods. For example, both the Fuzzy image and video are less clearly recognizable than those for the other group moods. This finding implies that while embodiments can communicate some nuances of group moods, they may not communicate all nuances or all types of group moods. In addition, we need to acknowledge the considerable resources required to develop these materials, which represents a pragmatic limitation for developing new or additional embodied representations.

Remarkably, despite being created independently by different artistic teams, the image and video sets show a consistent average performance in expressing the intended qualities, as well as a similar intra-set distribution of the eight group moods (Chapter 4). This observation suggests a promising potential for consistent embodiment across different styles, processes, and creators' interpretations. Nonetheless, closer examination reveals variability in how individual materials represent group moods. While some images and videos express a consistent set of intended qualities (Chill Flow, Safe Haven, Fiery, and Fuzzy), others do not align as closely (e.g., Tense is expressed with no common qualities).

Despite this inconsistency, interestingly, the overall effectiveness of the two sets remains similar. The variability in how individual materials represent group moods prompts questions about what influences their effectiveness. Possible causes could have been the creative team's expertise, embodiment style, or compatibility with the group mood.

We argue that the artistic approach used to develop of our materials was key to their effectiveness. Collaborating with artists skilled in embodying subjective phenomena with the human body has been instrumental for authentically capturing group moods — a task we would not have been able to achieve by relying solely on our design research repertoire. This experience underscores the value of artistic collaborations for design research, particularly when exploring subjective experiences.

Drawing from our collaborative journey with artists, we have distilled some insights and recommendations that may be beneficial for design researchers seeking to embark on similar artistic collaborations. The first step is to select an art genre that aligns with the research goals. There is a wide variety of art forms to choose from, including visual arts, performing arts, media arts, and art crafts. In our case, we were drawn to tableau vivant and dance, both types of performance arts, because we envisioned that they would effectively communicate the non-verbal aspects of group mood through interpersonal interaction. A second critical step is finding the right artistic team; their background, expertise, and style should resonate with the research objectives. Moreover, they should be able and willing to apply their artistic process to the research goals. The artists we collaborated with were adept in their mediums and experienced in depicting group dynamics. Some had previously worked with researchers and were designers themselves, which likely facilitated a smoother integration of our objectives into their creative processes. In any case, it is crucial to invest sufficient time and effort in establishing a mutual understanding of the project's purpose, expected outcomes, and the phenomenon under investigation. One should acknowledge that this may take more time than other types of research collaborations, given the fundamental differences in values and approaches. In our case, the Eight Vibes booklet (Sonmez et al., 2022b) served as a valuable communication tool with the artists responsible for the videos; the descriptions helped artists arrive at a shared understanding of diverse group moods and provided inspirational starting points for exploring the phenomenon from their unique perspectives. Lastly, flexibility and open-mindedness throughout the collaboration are essential. Artistic processes involve approaches that may be unfamiliar to design researchers (Chapter 4). Our experience has been that this brought unique value, while also requiring us to accept a level of uncertainty by letting go of control over the process and suspending judgment. Artistic collaborations require the design researcher to be open to adapting their roles and procedures to accommodate artistic methods and practices. In our collaboration, being the design researcher, I (the author) played multiple roles: initially as an orchestrator, facilitating the creation process and curating the outcomes, and later as a client and passive

observer. Both roles required me to set aside typical preconditions used in study setups, venturing into uncharted territory.

An over-arching challenge we encountered in the collaboration was to reconcile our intention to accommodate authentic artistic approaches with our desire to ensure scientific rigor and accountability. Addressing this challenge without compromise was difficult. A key issue lies in our repertoire of evaluation methods, which, aimed at objectivity and reproducibility, tend to overlook the rich, intuitive essence of artistic work. We felt a need for new evaluation methods that do justice to the depth and complexity of artistic contributions, allowing fresh perspectives on complex human experiences and thereby designing more nuanced, empathetic, and innovative design solutions[61].

7.4. CONTRIBUTION TO GROUP MOOD MANAGEMENT

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The impact of group mood on group performance and outcomes is well-recognized in organizational studies (e.g., Barsade & Knight, 2015; Bartel & Saavedra, 2000). Yet, cultivating a 'good office vibe' remains a challenge. Current knowledge on group mood management mainly targets leaders and managers, offering generic recommendations that lack contextual relevance to group work and overlook the essential role of group interactions (Chapter 5). These recommendations fail to address the challenge that there is no one-size-fits-all prescription for fostering good vibes. Group moods are much more nuanced than can be captured by the positive-negative duality. What constitutes a beneficial group mood and how to achieve it depends on the situation at hand, which is influenced by multiple factors such as the task, meeting type, and moods of the individual group members (Chapter 2).

Recognizing this complexity, this thesis proposes that a granular understanding of group mood can make a significant contribution to the development of effective group mood management interventions. It introduced the first descriptive overview of eight group moods observed in small workgroups: Chill Flow, Fiery, Creative, Save Haven, Slack, Tense, Confrontational, and Fuzzy (Chapter 2). We developed detailed descriptions and visual representations that convey these group moods in a holistic, distinctive, and relatable way (Chapter 3 & 4). Taking a group-centric approach to group mood management, we explored ways to support groups in managing their moods (Chapter 5 & 6).

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61   This idea aligns with Höök (2018), who advocates for new ways to evaluate the success of soma designs, which requires breaking free from traditional, language-based and hypothesis-driven approaches and the strong objectivist (reductionist) ideals in design and research.

An intriguing question that was raised during our explorations is the extent to which group mood management activities should be conducted explicitly. Given that group meetings primarily aim to accomplish tasks, a fully conscious approach to group mood regulation that draws attention away from the task at hand might not be practical or desirable (Chapter 5). Hence, integrating regulation into group interactions could allow group members to manage their group mood intuitively, with minimal explicit effort. This would involve intuitively *reacting* to group mood shifts rather than deliberately *applying strategies* to regulate them. Such an approach requires group members to develop a tacit ability to regulate group mood effectively; to have a flexible regulation repertoire. These skills are often developed through personal experiences, which can be time-consuming and challenging, and not everyone achieves success. We therefore envision the value of dedicated training sessions to develop group mood management competences, akin to other leadership and coaching competencies in professional life, with the hope that this thesis can serve as a resource for such training programs.

The insights and materials developed in this thesis can be used to design interventions, training tools and programs, self-assessment tools, and workshops to train group mood management skills. The typology of eight group moods (Chapter 2) provides teams, managers, and organizations with a nuanced understanding of group mood and a rich vocabulary for discussing them. Incorporating these descriptions into profession-specific communications can help groups better recognize, articulate, and address their recurring group moods, so as to improve or sustain them. The Vibe Image and the Vibe Video Sets, and Vibe Moves workshop (Chapter 3, 4 & 6) facilitate an intuitive approach to group mood management, serving as inspirational tools to heighten awareness of group mood expressions and regulate them through embodied practices. At the managerial level, the cycle of group mood management (Chapter 5) presents a practical framework for developing interventions and training programs that enhance group mood management competencies. At the organizational level, this thesis highlights the significance of emotional aspects of teamwork and can create mood awareness across the organization, paving the way for healthy and productive work teams and contributing to an emotionally intelligent work culture.

In conclusion, moving beyond the traditional leader-centric approach, this thesis introduces a group-centric approach to the management of group mood. In today's professional landscape, where collaboration is increasingly required and valued, skills related to group dynamics—such as effective meeting strategies, emotional intelligence, and team building—are among the most sought-after in leadership and management (Udemy Business, 2024). Aligning with these developments, managing group moods becomes a relevant and valuable competence for both teams and managers. This thesis provides several resources that we envision will be useful for developing group mood management skills on the way towards healthy, enjoyable, and productive group dynamics.

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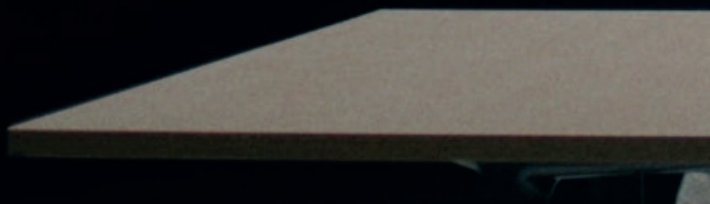
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APPENDICES

APPENDIX A

A1. Selected images

SLACK

FUZZY

TENSE

FIIERY
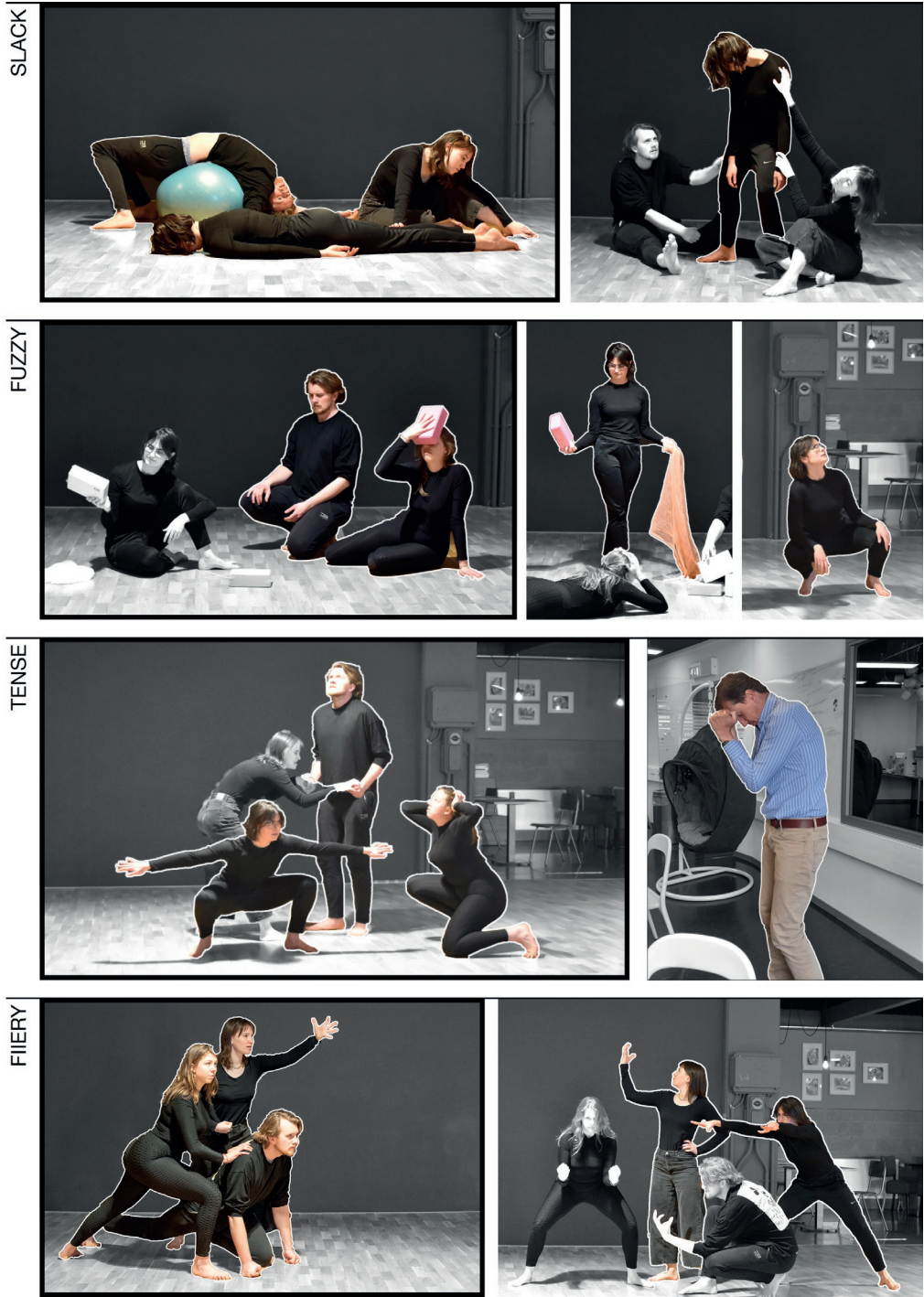
CONFRONTATIONAL

SAFE HAVEN

CHILL FLOW

A

(Bold frame)	Base pose
(Thin frame)	Supplementary figures

A2. Free descriptions full list

Full list of words that participants used to describe each image.

	20-50	10-19	5-9	2-4	1
SLACK IMAGE	Tired (32) [tired (16) exhausted (8) burnt-out (1) drained (5) draining (1) no energy (1) little energy (1) comaose (1) dead (1) passive (1) inactive (1)] Lethargic (22) [lethargic (16) lazy (4) Sleepy (2)] Depressed (21) [depressed (8) dejected (1) sad (3) down (3) downcast (1) downhearted (1) sad (3) lackluster (1)]	Unmotivated (14) [unmotivated (11) demotivated (1) no ambition (1)] Defeated (12) [defeated (5) downtrodden (1) lost (2) loss (1) giving up (1) given up (1) resigned (1)] Bored (10) [bored (8) fed-up (2)]	Unenthusiastic (9) [unenthusiastic (4) unwiling (3) half-hearted (1) begrudging (1)] Disconnected (8) [disconnected (3) unconnected (1) disjointed (1) unattached (1) unengaged (1) non-engagement (1)] Uninterested (5) [uninterested (3) disinterested (1) lost interest (1)] Deflated (5) [Deflated (3) flat (1) lay flat (1)] Self-focussed (5) [self-focussed (2) segregated (1) alone (1) individual(1)]	Weak (4) [weak (2) flaccid (1) wasted (1)] Despair (3) [despair (1) hopeless (1) despondence (1)] Distracted (3) Unbothered (3) [unresponsive (1) unbothered (2)]	Stuck, never-ending, uneventful, ineffective, reflective, pained, awkward, heavy.
CHILL IMAGE		Calm (19) [calm (10) calmly (1) peaceful (5) serene (2) collected (1)] Collaborative (11) [collaborative (4) teamwork (2) team orientated (1) team (1) team effort (1) cooperative (2)] Together (10) [together (2) communal (1) collective (1) integrated (1) as one (1) synergy (1) harmonious (1) complementary (1) shared goal/ vision(1)]	Supportive (8) Flowing (8) [flowing (5) flowy (1)smooth (2)] Coordinated (7) [coordinated (5) synchronised (1) timing (11)] Enegetic (7) [enegetic (5) energized (1) active(1)] Relaxed (6) Focused (5) Expressive (5)	Free (4) Happy (4) Creative (4) Connected (4) [connected (3) cohesive(1)] introspective (4) [introspective (1) self-absorbed (1) thoughtful (1) meditative (1)] Playful (3) Friendly (3) [friendly (2) approachable (1)] Graceful (3) [graceful (2) artistic (1)] Fun (3) [fun (2) enjoyment(1)] Uplifting (3) [uplifting (2) inspired (1)] Leading (3) [team leader (1) leading (1) guiding (1)] Organised (3) [organised(1)process (1) step-by-step(1)] Considerate (3) [considerate (1) gentle (1) caring (11)] Yoga (2) Dance (2)	Following, imitating, planned, comfortable controlled, thorough, flexible, easy posing, no leader, equally, spiritual, tai chi, aerobic, motion, mobile, respecting, not together, flimsy, dedicated, results, explorative.
TENSE IMAGE	Stressed (19) [stressed (13) distressed (4) stress (1) stressful (1)] Defensive (15) [defensive (8) ready to defend(1) protective (3) guarded (1)] Worried (11) [worried (3) worrying (1) anxious (3) agitated (2) upset (1) distraught (1)] Frustrated (10) [frustrated (5) frustration (4) overwhelmed (1)]		Disjointed (9) [disjointed (4) disconnected (2) unconnected (1) un-unified (1) divided (2)] Annoyed (8) [annoyed (5) anger (2) angry (2) angst (1)] Scared (7) [scared (3) scary (2) fear (2)] Focused (5) [Focused (4) concentrating (1)]	Confused (4) [confused (3) confusing (1)] Chaotic (4) [chaotic (3) disorganised (1)] Unsure (3) [unsure (3) [unsure disorganised(1)] Despair (3) [despair (2) hopeless (1)] Individual (3) [individual (2) individaully focussed (1)] Intense (2) Dramatic (2) Challanging (2) Expressive (2)	Contradictory, confrontational, reserved uncommunicative, help, needing outside help, preparedness, ready for action, reflective, thoughtful, inefficient, non-productive, eager, ambitious, pain, tortured, defeated, wound up, provocative, intimidating, searching, questioning, lonesome, determined, internalising, cornered, regret, losing the plot, strange, aware, unreliable, united, direct, sharp, deliberate, headache uncooperative, discordant, depressed.

FIERY IMAGE	Focused (19) [focused (17) focus(1) concentration(1)]	Together (13) [together (2) togetherness (2) united (2) unified (1) aligned to one goal (1) shared vision(1) synergy(1) collective (1) no I in team(1) one team one dream (1)] Determined (12) [determined (10) determination(1) confidently(1)]	Connected (9) [connected (6) connected but different approaches (1) bonded (1) cohesive (1)] Team work (9) [team work (5) team (1) team focused (1) collaborative (1) cooperative (1)] Energetic (7) [energetic (4) dynamic(2) active(1)] Motivated (7) [motivated (3) motovation (1) driven(1)] Serious (5) Supportive (5) Ambitious (5) [ambitious (2) ambitions(1) assertive (2)] Strong (2) [strong (2) strenght(1) empowered (1) powerful (1)]	Ready (4) [ready (3) ready to go (1)] Eager (3) [eager (2) enthusiastic (1)] Defensive (3) [defensive (2) protective (1)] Progressive (2) Helpful (2)	Productive, effective, hope, optimistic, reserved, close, dramatic, expression, reliably, loyalty, searching, wonder, coordinated, result-driven, friendship forward-looking, open-minded, playful, fun, confronting, attacking, fluid, supple moving, watching, single-minded, proud, creative, cautious, organised, communicative, adventurous, free, on point, exercise, healthy, orangutans, dedicated, intent, poised.
SAFE IMAGE	Calm (17) [peaceful (3) calming (2) peace (1) serene (1)] Relaxed (14) [relaxed (12) at ease (2)] Together (13) [together (4) togetherness (1) one unit (1) one mind (1) one goal (1) synergy (1) synergistic(1) harmonious (2) harmony (1)] Loving (12) [loving (11) loved (1)] Connected (12) [connected (8) connection (2) bonded (1) bonding(1)] Supportive (11) Friendly (10) Collaborative (10) [collaborative (6)cooperative (2) collaboratively (1) collective (1)]	Caring (9) [caring (7) care (1) nurturing (1)] Happy (7) [happy (5) content (1) joy (1)] Intimate (7) [intimate (3) close (3) snug (1)] Family (5)	Safe (4) [safe (3) sheltered (1)] Comfortable (4) [comfortable (2) comforting (2)] Warm (4) [warm (2) warmth (1) cosy (1)] Playful (3) Open (3) [Open(1) Open-minded (1) non-judgemental (1)] Trust (2)		Appreciative, positive, gentle, kind, tactile, touchy-feely, protective, helpful respect, intertwined, attentive, thoughtful, reflective, confident, personal, slow, smooth, creepy, creative, story, free, passionate, balanced, spiritual, sweet, committed.
FUZZY IMAGE	Contemplative (12) [contemplative (3) contemplation (1) pondering (1) thoughtful (3) thinking (1) preoccupied (1) introspective (1) Reflective(1)] Disconnected (10) [disconnected (4) unconnected(2) disjointed (3) unrelated (1)]	Stressed (9) [stressed (3) stress (1) stressful (1) anxious (2) uneasy (2)] Distracted (8) [distracted (6) Unfocused (2)] Tired (7) [tired (4) mentally drained (1) drained (1) burnout(1)] Uncollaborative (6) [uncollaborative (1) no teamwork(2) lacking team(1) un-collaborative (1) Uncooperative (1)] Confused (6)[confused (5) puzzled (1)] Self focused (5) [self focused (2) singular(1) solo agendas (1) different motivations (1) independent (1)] Slow (5) [slow (3) lethargic (2)]	Frustrated (4) [frustrated (2) frustration(2)] Hierarchical (4) [hierarchical (1) superiority (1) domineering (1) control (1)] Annoyed (3) Bored (3)[bored (2) fed up(1)] Calm (3) [calm (2) relaxed (1)] critical (3) [critical(1) Judgemental(1) self critique(1)]		Mixed vibes, mixed feelings, uninterested, disinterested, disorganised, angles, absorbed, focused, inattentive, unsure, students teacher, guiding, management, unwilling, artistic, expressive, drama, hopeless, sad, fallen out, dissatisfied, push, forced, labouring, critical, judgemental, self critique, serious, daydream, meditative, interested, creativity, non-confrontational, looking at the future, familial, ignoring.

CONFRONTATIONAL IMAGE	**Angry (27)** [angry (9) anger(6) rage(1) Aggressive(6) argumentative (2) annoyed (1) annoyance (1) worked up (1)]	**Confrontational (13)** [confrontational (9) confrontation (3) confronting (1)]	**Combative (8)** [combative (3) fighting (3) fight (1)war (1)] **Frustrated (6)** [frustrated (4) frustration(2)] **Stressed (6)** [stressed (2) on edge (2) worried (1) tense (1)] **Competitive (5)** **Chaotic (5)** [chaotic (3) disorganized (2)] **Focused (5)** [focused (4) concenrating (1)]	**Discordant (4)** [discordant (1) incoherent(1) misaligned(1) disharmony (1)] **Attacking (4)** [attacking (1) blaming (1) bullying (1) threatening (1)] **Determined (3) Conflicting (3)** [conflicting (2) conflict (1)] **Disconnected (3)** [disconnected (2) disjointed (1)] **Injury (3)** [injury (2) pain (1)] Calm (3) [calm (2) stress-free (1)] **Bold (3)** [Bold (1) harsh (1) stern (1)] **getting ready (3)** [getting ready (1) preparing (1) warming up (1)] **Indivualistic (2)**	Ready, prepared, agitated, irritated, unproductive, low-impact, unhappy, unpleasant, contemplative, thoughtful, rage, distrust, selfish, fractious, closed, narrow-minded, defensive, un-collaborative, unsupportive, purposeful, driven, poised, scared, stubborn, collaborative, dynamic, powerful, hierarchical, serious, creative, tired, meditative, athletic, sporty, exercise, yoga, methodical, harmonious, gentle, middle, wrong, retaliation, provocative, resenting.
CREATIVE IMAGE	**Energetic (25)** [energetic (17) active (7) dynamic (1)]	**Playful (17)** [playful (15) playfulness(1) game(1)] **Fun (11)** [fun (7) joy (1) Joyous (1) Jovial (1) happy (1)]	**Creative (8)** [creative (6) imaginative (1) inventive (1)] **Flexible (7)** [flexible (5) limber (1) adaptable (1)] **Individual (6)** [Individual (3) individualist (1) Solo (1) independent (1)] **Strange (6)** [strange (1) wacky (1) quirky (1) unorthodox (1) alternative (1) unique (1)] **Lively (5)** [lively (3) vibrant (1) colourful (1)] **Focused (5)** [focused (4) concentrated (1)]	**Determined (4)** [determined (2) confident (2)] **Chaotic (4)** [chaotic (2) disorganised (1) messy (1)] **Competitive (3) Enthusiastic (3)** [enthusiastic (2) excited (1)] **Ambitious (3)** [ambitious (1) Extra effort (1) striving (1)]	sharp-minded, poised, lighthearted, carefree, free-spirited, free, agile, varied*, together*, united, silly, dedicated, uncoordinated, collaborative, interactive, uncollaborative, disjointed, uncommunicative, acrobatic, exercise, athletic, yoga, open-minded, outside the box, forward-thinking, big picture*, balanced, overwhelming, stressed, direct results, impressive, cool, controlled, unfocused, tired, difficult, trying, show off on the go, friendly, abstract.

Words in **bold** are the category titles.
Numbers represent the frequency (number of people reporting the word).

A3. Free descriptions codes

Top 9 to 11 most frequently used words to describe the eight images coded with group mood qualities

SLACK (N= 23)	n:	Corresponding qualities [codes]	CHILL FLOW (N= 43)	n:	Corresponding qualities [codes]
Tired	38	Drained	Calm	19	Calm
Lethargic	22	Drained	Collaborative	11	Collaborative
Depressed*	21	– (close to Drained)	Together*	10	Connected
Unmotivated	14	Reluctant	Supportive	8	Supportive
Defeated	11	Drained	Flowing	8	Smooth
Bored	10	Frustrated	Coordinated	7	– (Smooth and connected)
Unenthusiastic	9	Reluctant	Energetic*	7	Active
Disconnected	8	Reserved	Relaxed	6	Chill
Uninterested	5	Reluctant	Focused	5	Serious
Defeated	5	Drained	Expressive	5	Receptive
Self-focused	5	Reserved			

CONFRONTIONAL (N= 58)	n:	Corresponding qualities [codes]	SAFE HAVEN (N=41)	n:	Corresponding qualities [codes]
Angry	27	Frustrated	Calm	17	Calm
Confrontational	13	Confronting	Relaxed	14	Chill
Combative	8	Confronting	Together	13	Connected
Frustrated	6	Frustrated	Loving	12	Friendly
Stressed*	6	Stressed	Connected	12	Connected
Competitive	5	Competitive	Supportive	11	Supportive
Chaotic	5	Chaotic	Collaborative	10	Collaborative
Focused	5	Serious	Friendly	10	Friendly
Discordant	4	Chaotic	Caring	9	Supportive
Attacking	4	Confronting	Happy*	7	– (close to Chill)
			Intimate	7	Friendly

TENSE (N= 45)	n:	Corresponding qualities [codes]	FIERY (N=49)	n:	Corresponding qualities [codes]
Stressed	19	Stressed	Focused	19	Serious
Defensive *	15	Confronting	Together	13	Connected
Worried	11	Stressed	Determined	12	Eager
Frustrated	10	Frustrated	Connected	9	Connected
Disjointed*	9	Reserved	Teamwork	9	Collaborative
Annoyed	8	Frustrated	Energetic	7	Active
Scared	7	Stressed	Motivated	5	Enthusiastic
Focused	5	Serious	Ambitious	5	Vigorous
Confused*	4	Uncertain	Serious	5	Serious
Chaotic*	4	Chaotic	Strong	5	Vigorous
			Supportive*	5	Supportive

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FUZZY (N= 45)	n:	Corresponding qualities [codes]	CREATIVE (N= 51)	n:	Corresponding qualities [codes]
<u>Contemplative</u>	12	– (Cautious and reserved)	Energetic	25	Active
Disconnected	10	Reserved	Playful	17	Playful
Stressed*	9	Stressed	Fun	11	Playful
Distracted*	8	Distracted	Creative	8	Explorative
Tired*	7	Drained	Flexible	7	Receptive
Uncollaborative**	6	Competitive	**Individual****	6	Competitive
Confused	6	Uncertain	<u>Strange*</u>	6	– (close to Explorative)
Solo agendas**	5	Competitive	Lively	5	Active
Slow*	5	Drained	**Focused****	5	Serious
Frustrated*	4	Frustrated	Determined*	4	Eager
Hierarchical*	4	Directive	Chaotic	4	Chaotic

N: Number of different word groupings used to describe the image
n: number of people reported the word (frequency)
Unmatching words: * Tolerable, **Incompatible
Codes: Corresponding qualities

APPENDIX B

B1. Free descriptions full list

	20-50	10-19	5-9	2-4	1
SLACK VIDEO	**Lethargic (35)** [lethargic (10) lazy (5) sleepy(5) slow (8) heavy (3) sluggish (1) sloppy (1) floppy (1) slovenly (1)] **Tired (27)** [tired (11) tiring (1) fatigued (1) exhausted (3) drained (6) low energy (3) weary (1) inactive (1)]	**Unmotivated (10)** [unmotivated (6) Demotivated (1) reluctant (3)]	**Controlling (9)** [controlling (4) controllable (1) manipulative (1)directive (2) direct (1)] **Serious (6) Repetitive (6)** [repetitive (5) monotonous (1)] **Robotic (5)** [robotic (3) mechanical (1) clocks (1)] **Depressed (5)** [depressed (1)unhappy (1) lacklustre (1) apathetic (1) blank (1)] **Struggling (5)** [struggling (2) struggles (1) collective suffering (1) excruciating (1)]	**Bored (4) Unbothered (4)** [unbothered (2) uncaring (2)] **Uninspired(4)** [uninspired (2) unenthused (1) no enthusiasm (1)] **Worrying (4)** [worrying (1) concerning (1) tense (1) agitated (1)] **Methodical (4)** [methodical (2) structured (1) system (1)] **Disjointed (4)** [Disjointed (2) divided (1) disengaged (1)] **Unfocused (3) Calm (3)** calm(2) composed (1)] **Teamwork (3)** [teamwork (2) collaborative (1)] **Laboured (3)** [laboured(1) production line (1) assembly[1)] **Confused (3)** [confused (1) dazed (1) foggy (1)] **Chaos (3)** [chaos (1) unorganised (1) mess (1)] **Unified (3)** [unified (1) togetherness (1) shared (1)] **Alarming (2) Process-oriented (2)**	Forceful, forced, authoritative, domineering, unwell, drugged, menacing, scary, perfection-oriented, precise, reviving, waking, rigid, rough, victimised, traumatised, creative, creation, helpful, assisting, submissive, docile, discouraged, encouraging, constructive, professional focused, working, uncomfortable, in a trance, inspective, trust, reliant, smooth, fixed, inefficient, carrying group members, unbalanced, contribution, prison, medical, patient, relaxed, strange.
CHILL FLOW VIDEO	**Collaborative (27)** [collaborative (13) teamwork (8) team(2) cooperative(3) collaboration (1)] **Synchronised (21)** [synchronised (10) syncronicity (1) synchronization (1) in sync (3) co-ordinated (3) coordinated (1) simultaneous (1) sequence (1)] **Calm (20)** [calm (15) calming (1) quiet (1) peaceful (2) serene (1)]	**Creative (14)** [creative (8) create (1) creating (1) developing an idea (1) idea (1) imaginative (1) imagination (1)]	**Focused (9)** [focused(4) concentration (2) concentrated (1) focus (1) attentive (1)] **Togetherness (9)** [togetherness (2) together (1) harmonious (1) compatibility (1) unity (1) synergetic (1) symbiotic (1) agreement (1)] **Precise (5)** [precise (5) accurate (2) attention to detail (1) detailed (1)] **Smooth (8)** [smooth (5) fluid (1) flowing (2)] **Structured (7)** [structured (2) methodical (1) well managed (1) organised (2) tidy (1)] **Connected (6)** [connected (5) cohesive (1)] **Careful (5)** [careful (4) cautiousness (1)] **Artistic (5)** [artistic (4) artsy (1)]	**Supportive (4) Caring (3)** [caring (2)care (1)] **Relaxing (3)** [relaxing (2) relaxed (1)] **Graceful (3)** [graceful (2) agile (1)] **Empathetic (3)** [empathetic (1) empathy (1) understanding (1)]	Inquisitive, curious, egimented, measured, consistant, steady, gentle, Soothing, delicate, fragility, passing, sharing, academic, serious, intelligent, skilful, interested, explorative, friendly, adventurous, playful, drive, problem solving, capability, intrinsic, dynamic, complex, productive, responsibility, natural, confusion, goal-focused, equal, individual, contemporary, slow complimentary, idealistic, confidence, patience, investe, quirky, deep thinking, accepting, communication, responsive, thoughtful, constructive, trusting, articulate, refined.

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TENSE VIDEO	Energetic (33) [energetic (21) active (6) energy (4) dynamic (2)]	Collaborative (18) [collaborative (11) teamwork (6) collaboration(1)] Organised (16) [organised (8) structured (1) methodical (3) orderly (1) order(2) deciding the order of things(1)] Energetic (13) [energetic (5) high energy (2) energised (1) active (2) dynamic (3)] Rushed (12) [rushed (4) hurried (3) rushing (2) hasty (2) urgent (1)] Directive (10) [directive (2) controlling(2) commanding (2) direct (2) instructive(2)] Stressed (10) [stressed (3) panicky (1) anxious (1) agitated (2) frantic (2) frenetic (1)]	Unsure (8) [unsure (4) uncertain (1) indecisive (2) hesitant (1)] Fast (8) [fast (4) fast-paced (2) quick (1) snappy (1)] Synchronised (8) [synchronised (4) timely (1) timing (1) coordinated (2)] Focused (7) Leadership (6) [leadership (3) leaders (1) leader (1) leading (1)] Precise (6) [precise (3) strict (2) meticulous (1)] Busy (5) [busy (4) hardworking (1)] Bossy (5) [bossy (2) hierarchy (2) domineering (1)] Unsettled (5) [unsettled (2) changeable (1) changing (1) moving (1)]	Fluid (4) [fluid (2) seamless (1) flowing (1)] Productive (4) [Productive (2) effective (1) efficient (1)] Aggressive (4) [aggressive (1) assertive (1) forceful (1) combative (1)] Fun (3) [fun (1) joyful (1) happy (1)] Restless (3) [restless (2) unrest (1)] Messy (3) [messy (2) chaotic (1)] Determined (3) [determined (2) confident (1)]	Motivated, driven, prepared, proactive, excitement, eager, mechanical, frustrated, frustration, innovative, creative, connected, cohesive, explorative, brainstorming, awkward, out of place, purpose-led, stealth, supportive, flexible, trying to escape, direction, obtuse, working out what fits, friendly, routine, dedicated, planning, competitive, telepathic, demanding, rude, processed-oriented, presenting, mistaken, mirroring, impatient.
FIERY VIDEO		Competitive (14) [competitive (13) race (1)] Fast (12) [fast (6) fast-paced (5) ruhsed (1)] collaborative (12) [collaborative (4) cooperative (4) teamwork (3) team (1)] Coordinated (12) [coordinated (6) synchronised (5) co-ordination (1)] Structured (10) [structure (1) structured (3) orderly (2) ordered (1) organised (2)] systematic(1)	Together (6) [together (2) togetherness (1) unity (1) uniformity (1) complementary(1)] Vigorous (5) [vigorous (2) powerful (1) strong (1) empowered (1)] Busy (5) [busy (4) vibrant (1)] Fluid (5) [fluid (2) fluidity (1) flowing (1) fluent (1)] Eager (5) [eager (2) exciting (1) enthusiastic (1) exuberant (1)] Focused (5) [focused (4) attention (1)]	Planned (4) [planned (2) planning (1) choreographed (1)] Chaotic (4) [chaos (1) chaotic (2) messy (1)] Regimental (4) [regimental (1) regimented(1) controlled (1)] Playful (3) Supportive (3) Motivated (2) [motivated (2) driven (1)] Random (3) [random (2) erratic (1)] Determined (3) [determined (2) determination (1)] Independent (3) [Independent (1) free (1) individuality (1)] Fun (2) Ready (2) Intense (2) Challenge (2) Agile (2) Serious (2) Balance (2)	Jumpy, hyper, impactful, effective, wild, crazy, wild, crazy, obedient, conforming, urgent, friendly, uncooperative, skill, physical, careful, process, sporty, loud, impressive, stunty, adaptive, direct, collected, cool, complementary, assertiveness, mentality, trust, stable, reflective, care, free, symmetrical, understanding, expressive, rythmic, lively, experimental, innovative, accomplished, acrobatic, unconventional.

SAFE HAVEN VIDEO	**Caring (22)** [caring(13) care(3) cared for(1) nurturing (5)] **Supportive (22)** [supportive (19) supporting (1) supported (1) support (1)] **Connected (22)**[connected (9) connection (2) interconnected (1) bond (2) bonded (1) bonding (1) close(2) closeness(1) embracing (1)] **Collaborative (20)** [collaborative (7) collaboration (1) cooperation (1) cooperative (4) team (2) teamwork (5)]	**Togetherness (16)** [togetherness (6) together (3) unison (2) unity (2) harmony (1) All as one (1) one (1) community (1)] **Trusting (16)** [trusting (10) trustworthy (1) trust (5)] **Calm (14)** [calm (8) peaceful (3) at peace (1) serene (1) composure (1)]	**Gentle (9)** [gentle (7) compassionate (1) sensitive (1)] **Careful (8)** [careful (6) cautious (1) meticulous (1)] **Loving (7)** [loving (6) affectionate (1)] **Friendship (7)** [friendship (2)friendly (1) gregarious (1) warmth (1) warm (1) welcoming (1)] **Relaxed (5)** [relaxed (4) at ease(1)] **Helpful (5)** [helpful (3) helping (2)] **Synchronised (5)** [synchronised (4) coordinated (1)] **Uplifting (3)** [uplifting (2) inspiring (1)] **Tactile (3)** [tactile (2) touchy (1)] **Warm (3)** [warmth (1) warm (1) welcoming (1)] **Slow (3)** [slow (2) lethargic (1)] **Encouraging(2) Focused (2) dedicated (2) Protective (2) Respect (2)**	**Uplifting (3)** [uplifting (2) inspiring (1)] **Tactile (3)** [tactile (2) touchy (1)] **Warm (3)** [warmth (1) warm (1) welcoming (1)] **Slow (3)** [slow (2) lethargic (1)] **Encouraging(2) Focused (2) Dedicated (2) Protective (2) Respect (2)**	Well managed, planned, comforting, guided faithful, aware, purposeful, cleansing, process-oriented, growth, energy, hopeful, restorative, entwined, fragile, spiritual, patient, fluent, interaction, emotional, enduring, passion, thoughtful, seen, understood, direction, reliant, controlled, graceful, companions, family.
FUZZY VIDEO	**Confused (33)** [confused (18) confusion (6) confusing (2) bewilderment (1) dazed (1) puzzled (1) unclear (1)]	**Uncertain (19)** [uncertain (7) doubtful (2) unsure(5) indecisive(3) uncertainty(2)] **Scared (13)** [scared (6) afraid(4) frightened (1) fearful (1) spooked (1)] **Lost (11) Nervous (10)** [nervous (4) anxious (2) anxiety(1) on edge (2) worried (1)]	**Awkward (9)** [awkward (3) weird (2) odd(1) eccentric (1) strange(1)] **Disjointed (8)** [disjointed (4) unconnected (1) disconnected (1) distant(1) disassociated (1)] **Curious (7)** [curious (5) inquisitive(1) questioning (1)] **Unfocused (6)** [unfocused (3) scattered (1) scatterbrained (1) distracted (1)] **Chaotic (6)** [chaotic (4) unstructured(1) structure-less(1)] **Lonely (6)** [lonely (2) isolated(1) isolation(1) Individual (1) separate(1)] **Collaborative(6)** [collaborative(4) team(1) teamwork(1)] **Slow (6)** [low energy (2) tired (1) Lethargic (1) slow (2)] **Cautious (5)** [cautious (3) wary (2)] **Together (5)** [together (1) joined (1) connected (1) collective (1) unity (1)]	**Uncoordinated (4)** [uncoordinated (2) no direction (1) disorientating (1)] **Interrupted (4)** [interrupted (2) unfinished (1) incomplete (1)] **Exploratory (4)**[explorative (1) exploratory (2) exploring (1)] **Close (4)** [intimate (1) closeness (1) close (2)] **Unmotivated (3)** [unmotivated (2) reluctant (1)] **Searching (3)** Problem Solving (1) brainstorming (1) Searching(1)] **Contemplation (3)** [contemplation (1) overthinking (1) thinking (1)] **Unfamiliarity (3)** [unfamiliarity (1) ignorance (1) unaware (1)] **Possessed (3)** [brain washed (1) possessed (1) zombie-fied (1)] **Uncomfortable (2) Stuck (2)**	Wonder, awe, intimidating, unsettling, vacant, emptiness, uncollaborative, bored, surprise, unbothered, too many cooks, unproductive, unsupportive, unhelpful, challenges, pressure, supportive, fluid, engaged, playful, artistic, voices, intense, stilled, memories, primitive, determined, eager, effort, trying, experimentation, timid, unconfident.

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CONFRONTA-TIONAL VIDEO	**Aggressive (28)** [aggressive (15) angry (10) assertive (2) argumentative (1)] **Competitive (20)** [competitive (17) competition (3)]	**Confrontational (19)** [confrontational (15) confronting (3) confrontation (1)] **Tense (10)** [tense (7) tension (1) stressful (1) anxious (1)]	**Distrusting (9)** [distrusting (2) untrustworthy (2) un-trusting (1) untrusting (1) lack of trust (1) mistrusting (1) mistrustful (1)] **Hostile (9)** [hostile (6) hostility(1) bitterness(1) antagonistic (1)] **Suspicious (9)** [suspicious (6) skeptical (2) unsure (1)] **Conflict (8)** [conflictive (1) conflict (4) clashing (1) disagreement (2)] **Rushed (8)** [rushed (3) fast paced (2) quick (1) fast (1) rapid (1)] **Intense (7)** [intense (5) fierce (2)] **Struggle (6)** [struggle (3) challenging (1) challenge (1) grappling (1)] **Intimidating (5)** [intimidating (2) intimidated (1) intimidation (1) threatening (1)] **Combative (5)** [combative (2) fighting (2) battling (1)] **Critical (5)** [critical (2) judgemental (2) accusatory (1)] **Controlling (5)**[dictatorship (1) overpowering (1) power-driven (1) power hungry (1) controlling(1)]	**Energetic (4)** [energised (1) energetic (1) energy (1) hyperactive (1)] **Togetherness (3)** [togetherness (1) connected (1) united (1)] **Scary (3)** [scary (1) scared (1) fearing (1)] **Dramatic (3)** [dramatic (1) heightened emotions (1) escalating (1)] **Contemplative (3)** [pensive (1) contemplative (1) deliberative (1)] **Confident (3)** [bullish (1) confident (1) decisive (1)]	Greedy, selfish, reality, truth, development, progress, not together, uncollaborative, closed, petty, powerful, teamwork, distant, co-ordinated, uncoordinated, chaos, joining, jealous, problematic, focused, engaged, curious, verification, learning, distracted, independent, damaged, resolution, defiant, direct, defensive, serious, unpredictable, mysterious, uncomfortable, cautious, physical, reactive, forceful, frustrating, provocative, communication, understanding, charismatic, manic.
CREATIVE VIDEO	**Curious (12)** [curious (7) inquisitive (5)] **Chaotic (12)** [chaotic (6) unorganised (1) disorganised (2) cluttered (1) messy (2)] **Playful (11)** [playful (9) mischievous (2)]	**Energetic (9)** [energetic (5) energised (2) active (2)] **Strange (9)** [strange (2) odd (2) wierd (1) awkward (1) clumsy (1) quirky (1) unusual (1)] **Fun (8)** [fun (5) funny (2) enjoyment (1)] **Friendly (8)** [friendly (7) gregarious (1)] **Close (7)** [close (4) connected(2) intimate(1)] **Collaborative (6)** [collaborative (3) co-operative (1) teamwork (2)] **Explorative (6)** [explorative(3) exploratory (2) experimental (1)] **Confused (6)** [confused (2) confusion(2) confusing(2)] **Unconventional (6)** [unconventional (3) unpredictable (1) spontaneous (1) unexpected (1)] **Calm (5)** [calm (3) peaceful (2)] **Silly (5)** [silly (3) tomfoolery (1) stupid (1)] **Co-ordinated (5)** [in sync (2) synchronized (1) co-ordinated (2)]	**Random (4)** [random (3) erratic (1)] **Distracted (4)** [distracted(2) unfocussed (2)] **Copying (4)** [copying (2) replicate(1) mimic(1)] **Smooth (4)** [smooth (2) flowing (1) fluid (1)] **Slow (4)** [slow (2) lazy (1) lethargic (1)] **Restless (3)** [restless (2) adhd (1)] **Unproductive (3)** [ineffective (1) inefficient (1) unproductive (1)] **Controlled (3)** [bossy (1) controlled (1) watched (1)] **Childish (2)** [juvenile (1) childish (1)] **Interested (2)** **Thoughtful (2)** [thoughtful (1) thinking(1)] **Supportive (2)** **Together(2)** **Cheerful (2)** [cheerful (1) happy (1)] **Bored (2)** **Cautious (2)** **Smooth (2)**	Unmotivated, positive, busy, crowded, intrusive, fierce, influence, uncomfortable, manic, aimless, rehearsed, modelling, observant, receptive, clueless, aware, methodical, inventive, compact, work, lively, confined, conformity, loose, low, relaxed, carefree.	

Full list of words that participants used to describe each video.
Words in **bold** are the category titles.
Numbers represent the frequency (number of people reporting the word).

B2. Free descriptions codes

Top 10 most frequently used words to describe the eight videos coded with group mood qualities

SLACK VIDEO (N= 54)	n:	Corresponding qualities [codes]	CHILL FLOW VIDEO (N= 62)	n:	Corresponding qualities [codes]
Lethargic	35	Drained	Collaborative	27	Collaborative
Tired	27	Drained	Calm	20	Calm
Unmotivated	10	Reluctant	Synchronised	21	– (Smooth and connected)
Controlling*	9	Directive	Creative*	14	Explorative
Serious*	6	Serious	Precise	9	Clear-minded
Repetitive*	6	– (close to Drained)	Focused	9	Serious
Clinical	6	Reserved	Togetherness*	9	Connected
Robotic*	5	– (close to Drained)	Smooth	8	Smooth
Struggling	5	Struggling	Structured*	7	– (not chaotic)
Depressed*	5	– (close to Drained)	Connected*	6	Connected

CONFRONTATIONAL VIDEO (N= 61)	n:	Corresponding qualities [codes]	SAFE HAVEN VIDEO (N=52)	n:	Corresponding qualities [codes]
Aggressive	28	Frustrated	Caring	22	Supportive
Competitive	20	Competitive	Supportive	22	Supportive
Confrontational	19	Confronting	Connected	20	Connected
Tense*	10	Stressed	Collaborative	20	Collaborative
Suspicious	9	Critical	Togetherness	17	Connected
Hostile	9	Confronting	Trusting	16	Connected
Distrusting	9	Critical	Calm	14	Calm
Conflict	8	Confronting	Gentle	9	Friendly
Rushed*	8	Hasty	Careful*	8	Cautious
Intense	7	Vigorous	Loving	7	Friendly
			Friendship	7	Friendly

TENSE VIDEO (N= 54)	n:	Corresponding qualities [codes]	FIERY VIDEO (N=65)	n:	Corresponding qualities [codes]
Collaborative	18	Collaborative	Energetic	33	Active
Organised*	16	– (not chaotic)	Competitive**	14	Competitive
Energetic	13	Active	Fast	12	Hasty
Rushed	12	Hasty	Coordinated	12	Connected
Stressed	10	Stressed	Collaborative	12	Collaborative
Directive	10	Directive	Structured*	10	– (not chaotic)
Unsure*	8	Uncertain	Together	6	Connected
Fast	8	Hasty	Focused	5	Serious
Synchronised*	8	– (Smooth and connected)	Busy	5	Active
Focused	7	Serious	Vigorous	5	Vigorous
			Fluid	5	Smooth
			Eager	5	Eager

A

FUZZY VIDEO (N= 56)	n:	Corresponding qualities [codes]	CREATIVE VIDEO (N= 58)	n:	Corresponding qualities [codes]
Confused	30	Uncertain	Curious	12	Explorative
Uncertain	19	Uncertain	Chaotic	12	Chaotic
Scared *	13	Stressed	Playful	11	Playful
Lost	11	Uncertain	Energetic	9	Active
Nervous*	10	Stressed	Strange*	9	– (close to Explorative)
Awkward*	9	– (close to Explorative)	Friendly	8	Friendly
Disjointed	8	Reserved	Fun	8	Playful
Curious*	7	Explorative	Confused	6	Uncertain
Chaotic	6	Chaotic	Explorative	6	Explorative
Collaborative*	6	Collaborative	Collaborative	6	Collaborative
Unfocused*	6	Distracted	Unconventional	6	Receptive
Low energy*	6	Drained			
Lonely*	6	– (close to Reserved)			

N: Number of different word groupings used to describe the image
n: number of people reported the word (frequency)
Unmatching words: * Tolerable, **Incompatible
Codes: Corresponding qualities

B3. Visual comparison of the HIT rates of the images and videos

The visual overview of the HIT rates of the images and videos based on Table 3.8 and Table 4.4.
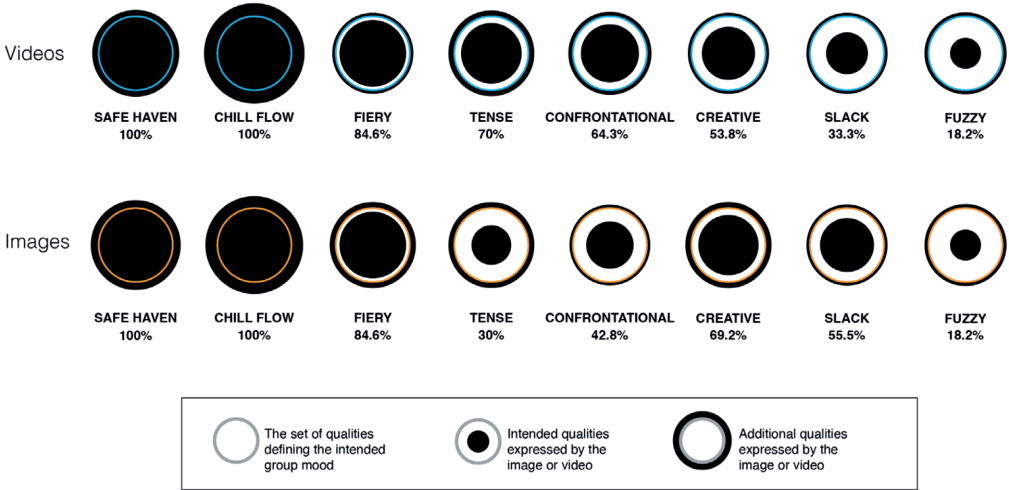
APPENDIX C

The full set of Vibe Cards (front and back)

CHILL FLOW
Smooth, consistent, fluent, at ease

The group members feel like moving forward to a clear direction in a calm and productive manner. The work proceeds smoothly, and challenges are overcome effortlessly. The group members are in the flow of doing, producing and enjoying the process. They are active, yet they spend their energy in a controlled and relaxed manner. They interact harmoniously. Everyone responds to each other in a tolerant, kind and agreeing way. The group feels optimistic about the next steps.

A

FIERY

Vigorous, avid, high-spirited, pumped, go-getter
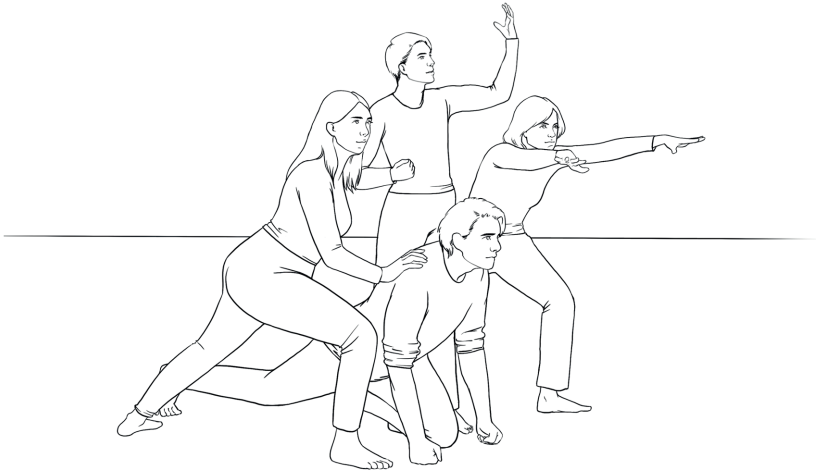
The group feels energetic, clear-minded and highly enthusiastic for reaching the aim. No matter what it takes, they are eager to accomplish a good result. It is time to take action. They are working in a serious and cooperative manner using all the resources to the extreme. The difficulties do not discourage the group; on the contrary they stir up the vigour. Group members tend to boost each other's passion by giving motivational speeches. Their motto is "we can do it!". They are excited about the future challenges and opportunities.

FUZZY

Chaotic, confused, uncertain
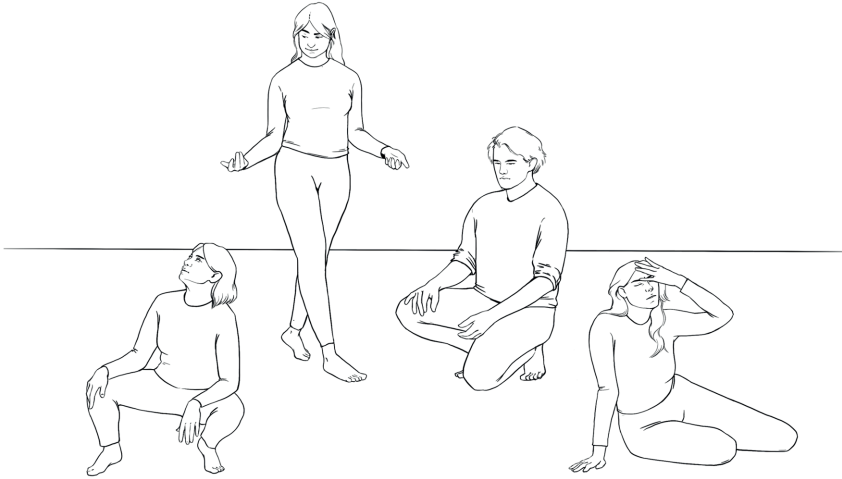
The group members feel uncertain and confused. Despite a lack of consensus, there is a joint constructive effort to make sense of things and achieve clarity. Opinion exchange is encouraged, but people approach the ideas in a sceptical manner. To process the puzzle, individuals may detach from the group and engage in their own minds. If the group struggles with uncertainty for long, chaos and frustration might come in. Some group members may feel insecure, worried and cautious. The group has a blurry view of the future, which makes the next steps to seem overcomplicated.

A

CREATIVE

Free-minded, innovative, experimental
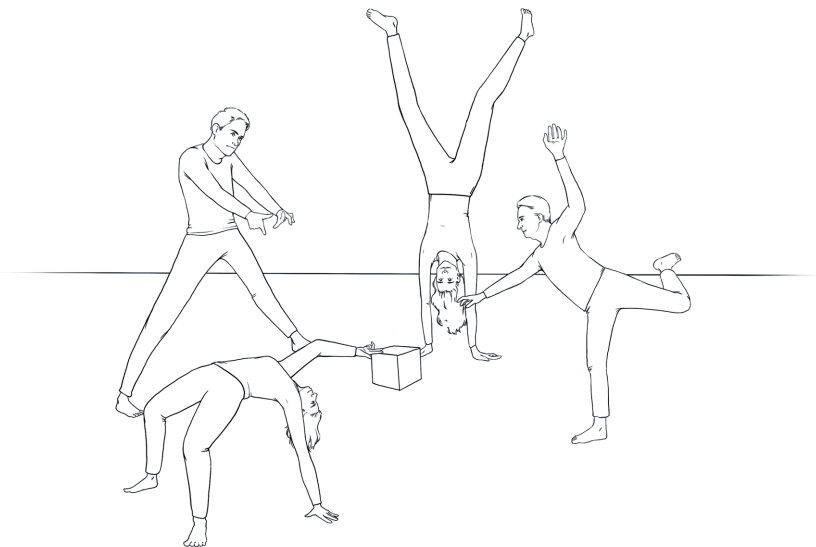
The group feels elated, lively and in good spirits. They want to go beyond the existing solutions and boundaries. Their minds idle freely and diverge in new alternatives. The group is open to receive any input that is new and interesting. The members build upon each other's ideas playfully. Acting in unusual ways or proposing unrealistic ideas are tolerated and even encouraged. They tend to be physically active and mentally energized. They feel the urge to act on, not out of rush but enthusiasm. The group tends to have an overly optimistic and exciting view of the future.

TENSE

Pressured, stressed, nervous, on edge, wired, uptight
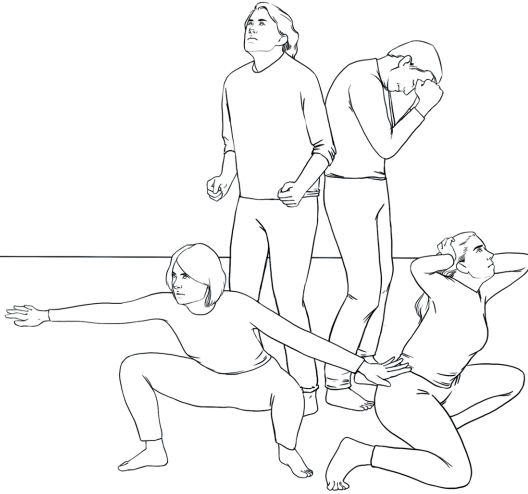
The group feels stuck, stressed and on edge. They are pressured by situations hampering their progress: e.g. an upcoming deadline, high expectations, unexpected problems, or overloading mishaps. The primary goal is to survive the challenge no matter what it takes. The members tend to react in impulsive and directive ways. They can get easily agitated by mistakes or extra responsibilities. It feels safe to stick to structures, rules and plans. There is no room for doubts, new ideas or jokes. The group is pessimistic about the future.

A

CONFRONTATIONAL

Conflicting, competitive, hostile
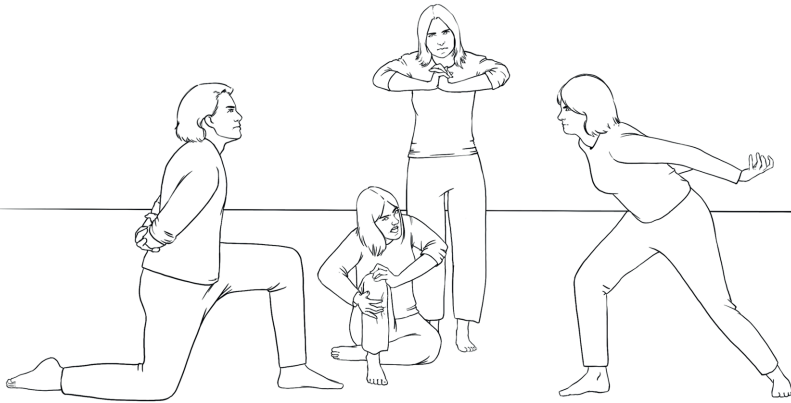
Group members are facing a debate due to conflicting opinions. Although the discussion is necessary to entangle the situation, it disrupts the smooth progress towards the goal, which causes frustration. Conflicting members defend their ideas assertively. To test each other's ideas, they ask critical questions and bring in alternative scenarios in a competing manner. In case of heated discussions, opinions may bounce back without being heard. The members tend to be less patient and receptive to other's perspectives. At extreme levels, aggression and hostility may come in.

SAFE HAVEN

Supportive, understanding, together, cosy

The group members feel safe, accepted and supported. They are driven by nourishing good relations, facilitating harmony and group bond. The members comfort, help and encourage each other in the time of personal or group work-related struggles. They interact in a friendly and caring manner. Equality, tolerance and honesty are favoured. They listen to each other attentively, comment in a respectful and understanding manner. Doubts, weaknesses and worries can be expressed transparently. Everyone feels welcome to express their opinions in a constructive way. The group spends effort to reach a consensus and take collectively approved actions.

SLACK

Reluctant, half-hearted, weary, overwhelmed, drained
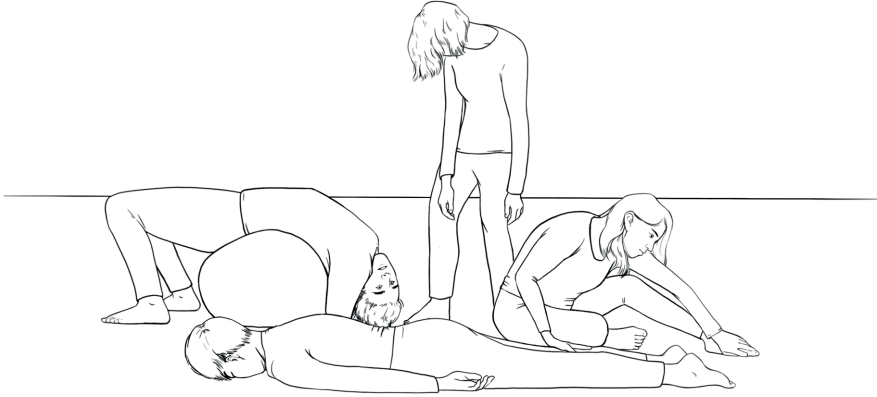
The group members feel drained, weary and unwilling to start or continue working, although they have to do so. They experience an inner counterforce against proceeding. It feels like their efforts do not pay. Challenges feel like a vicious cycle, which can result in frustration and pessimism. They don't want to fight anymore; they only endure. They act sluggishly and carelessly. New information or future tasks may feel overwhelming. The group wishes to finish and disperse the group meeting as soon as possible.

APPENDIX D

Participant details

General information					Job Experience			Group engagement		
Group no	Partici-pant	Age	Nationality	First Language	Duration (in the company)	Function	Main responsibilities	Overall percentage of groupwork	Overall time spent in groupwork (hours per week)	Time spent in group-work in the participant team (hours per week)
G1	S1	31	Dutch	Dutch	4 years	Designer/researcher (Medior)	Project management, study set-up, research, analysis, workshops, presentations	75	20–30	5
	LE1	26	Dutch	Dutch	6 months	Designer/researcher (Junior)	Designing, research, project management	15	6	2
	LO1	24	Dutch	Dutch	3 months	Designer/researcher (Intern)	Research, graphic design	30	25	20
	J1	26	Dutch	Dutch	1 year	Designer/researcher (Junior)	Research, project execution, management and design activities	50	15	15
G2	K2	31	Dutch	Dutch	3,5 years	Designer / project lead (Senior)	Leading projects, guiding the design team	80	25-30	n.a.
	RI2	23	Dutch	Dutch	5 months	Design researcher (Junior)	Research, analysis, conducting the process	80	25	n.a.
	RO2	33	Dutch	Dutch	3+ years	Designer / project lead (Senior)	Responsible end-result, client contact, project management and planning	30-40	10	n.a.
	RA2	28	Dutch	Dutch	3+ years	Service designer (Medior)	Research, design	50-80	16	n.a.
G3	N3	46	Chilean/ Dutch	Spanish	13 years	Associate professor	Research (coordination, supervision, execution), education	50	20	12
	L3	29	Dutch	Dutch	2,5 years	Researcher/ educator	Research, education (course coordination and project support)	50	8–10	4–8
	M3	30	Dutch	Dutch	1,5 years	Design researcher	Design-lead on developing a digital platform	50	4–8	4–8

A

G4									
R4	22	Dutch	Dutch	4 years	Design student (MSc Design for Interaction)	Conceptualization	65	30	15
F4	23	Hungarian	Hungarian	1 years	Design student (MSc Design for Interaction)	Creating visuals	100	–	15
B4	23	Dutch	Dutch	6 years	Design student (MSc Design for Interaction)	Arduino programming	100	15	15
G5									
B5	25	Irish	English	2,5 months	Solution specialist	Management of recruitment systems, system support and enhancement	80	6	2
Y5	29	China	Chinese	5 years	Solution owner	Managing digital solutions and life cycles	40-60	16-24	1
G5	50	Singaporean	Malay	12 years	Solution manager	People management, business solution management, technology development	80	35	30
D5	47	Dutch	Bosnian	16 years	Solution owner	Stakeholder alignment and implementation	90	30	30
M5	36	Dutch	Dutch	6 years	Change leader	Improving ways of working	50-70	18-20	6
A5	32	Polish	Polish	11 months	Solution specialist	Administration	85	34	2–3

SUMMARY

From the primal act of hunting in prehistoric times to the contemporary task of designing an online shopping platform, almost every collective goal is achieved through collaborative *team efforts.* One team may flourish in a shared sense of excitement and purpose, sustaining their momentum throughout their collaboration, resulting in outcomes that exceed their prior expectations: *good vibes,* indeed! And yet, another team may find themselves starting their task with similar enthusiasm, only to end up feeling drained or annoyed and delivering a mediocre outcome just to get it over with. Could *bad vibes* be to blame?

This shared emotional atmosphere is called the *group mood*, colloquially known as the "*vibe*" of the group. Research indicates that group mood has a significant impact on organizational functioning, influencing group effectiveness, performance, and outcomes, as well as group interactions and consequently workplace wellbeing. Given its profound impact, being able to effectively regulate group mood can be very useful. In real life, however, group mood remains an elusive phenomenon that, while we can sometimes sense it, we struggle to understand, to describe in detail, and consequently to regulate or manage. What if teams[53] could actively manage their group moods to help them achieve the shared goal at hand? This would entail stimulating group moods that are beneficial to the group activity while preventing or mitigating those that stand in the way of the goal. Designed products, services, or interventions may potentially support groups in effective group mood management. A key challenge in designing for group mood management is the lack of contextual understanding of what group mood is, and what different group moods occur. To address this gap, this thesis conceptualizes group mood as an emergent concept with unique qualities and aims develop a nuanced understanding of group mood in work settings, beyond the basic positive-negative dichotomy. This serves as an initial step towards effective group mood management, taking the first step towards developing a dedicated typology. The main research questions are:

1. *What types of group moods are experienced in small work groups?* The findings of this question yield to the first nuanced description of group mood experience, which served as foundational knowledge to investigate the second and third research questions.
2. *How can nuanced group moods be effectively communicated?*
3. *How can group mood reflection be facilitated?*

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53   In this thesis, we focus on small work groups consisting of three to seven members working towards a common goal, defined as "a collective goal that is endorsed by everyone" (van den Hout et al., 2018, p. 395). In organizational literature, various definitions are available to distinguish between teams and groups, as well as the types within each. However, such distinctions are less relevant to this project. Consequently, we use *team* and *group* interchangeably throughout the thesis and adopt Katzenbach and Smith's (1993, p.112) definition of team: "a small number of people with complementary skills who are committed to a common purpose, set of performance goals, and approach for which they hold themselves mutually accountable".

To answer these questions, we conducted various research activities utilizing multiple research methods. As a result, we developed a descriptive overview of nuanced group moods, knowledge, and tools to effectively communicate these group moods, and knowledge and insights to facilitate reflection on group mood to support group mood management.

Overview of Chapters

Below is a summary of the studies reported in each chapter, organized into three parts that correspond to the three research questions.

Part A: Describing Group Mood

In Chapter 2, we explored the types of group moods experienced in small work groups through a phenomenological inquiry. We observed eight real-life meetings across five project teams and gathered their collective descriptions of the experienced group mood in a co-inquiry session. Our thematic analysis revealed four aspects and 36 qualities to describe group moods. Categorizing these qualities, we developed eight group mood types: **Chill Flow, Fiery, Creative, Safe Haven,[54] Slack, Tense, Confrontational and Fuzzy** (Sönmez et al, 2022a), which are described in the *Eight Group Vibes* booklet (Sonmez et al, 2022b) (accessible at https://doi.org/10.5281/zenodo.13332750). This descriptive overview of eight group moods served as the foundation for subsequent research activities in this thesis. The additional findings–three properties of group mood and four categories of situational factors–provide primary knowledge on group mood dynamics, which can serve as entry points to influence and thus regulate group mood.

Part B: Embodying Group Mood

In Chapter 3 and Chapter 4, we explored two embodied ways to communicate the eight group moods. Chapter 3 reports the development and evaluation of the *Vibe Image Set*, which consist of eight illustrations each depicting a *group pose* that expresses a group mood. The images were developed through a three-step generative process. In the first step, we created a series of photos of group poses expressing eight group moods in a co-creation session with four actors. In the second step, we selected the poses that best represent each of the eight group moods through a group discussion with two experts. In the third step, we translated the photos and insights into eight group-mood drawings, in collaboration with an illustrator**.** Chapter 4 reports the development and evaluation of the *Vibe Video Set* (Sonmez et al, 2022b) as a dynamic representation of eight group moods, a workshop session that explored research opportunities with the videos, and a comparison of the Vibe Image Set and the Vibe Video Set in terms of performance and similarity of expression. The video set consists of eight professional video clips, each featuring a 3-minute dance

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54   In the final overview, Safe Haven is replaced by a new group mood type Jolly, based on the revisions of the paper presented in Chapter 2, which lead to reevaluation of the types.

performance designed to represent a group mood.[55] The videos were the end result of an artistic inquiry led by a professional dance studio, in collaboration with a choreographer, dancers and artists for music, filming, costumes, make-up, and set design.

Two sets were evaluated separately by means of an online questionnaire designed to investigate what group mood qualities each image and video communicates and to what extent they communicate the intended group mood. Respectively, 36 and 40 participants rated the degree to which they associated each of the 36 group mood qualities with the group mood expressed in the image and video on a 7-point scale (1= not at all; 7 = extremely). Our results demonstrated that both sets effectively communicate the eight group moods in a holistic, distinctive, and relatable manner. However, the performance (i.e., the extent to which they communicate the intended group mood) varies across different group moods for both the images and videos. Additionally, there is a variety in how similarly separate group moods are represented by their image and video. For instance, the two mediums each expressed the Tense group mood differently, while the Safe Haven, Chill Flow, and Fuzzy group moods were expressed consistently. Our initial exploration revealed that the similarity in representations could be explained by shared embodiment qualities between the mediums. Additionally, our findings revealed four potential dimensions to describe eight group moods, which can serve as variables to measure and regulate group mood. These two chapters provide insights into developing embodied mediums to communicate group moods effectively. In the following studies, these two sets were applied in the context of group work.

Part C: Facilitating Group Mood Reflection

In part C, adopting a group-centric approach to group mood management, we explored ways in which the potential of the eight-group-mood typology can support groups in managing their group moods, with a particular attention to reflection. With group mood reflection we aim to foster group-specific understanding of group mood and know-how of its regulation. Chapter 5 explores the potential of the eight-group-mood typology in facilitating group mood management. It reports an intervention study conducted with twelve student project groups. In the study, the typology is operationalized through a card set, which was designed by incorporating the Vibe Image Set developed in Chapter 3 and group mood descriptions generated in Chapter 2. Participants used the card set to identify their desired group mood and to evaluate the experienced group mood in their meetings throughout the day. Later, they discussed how the use of the card set influenced their group mood management with regard to group mood awareness, granularity, and regulation. The results suggested that using the card set supported awareness and granular understanding of group mood in various ways, yet it was less effective in facilitating the regulation of

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55   The video set can be viewed on Zenodo at https://doi.org/10.5281/zenodo.13319377.

group mood. Simply identifying a desired group mood at the start of a meeting does not necessarily encourage members to actively regulate their group mood during the meeting. A significant barrier appears to be the lack of practical knowledge of and experience in effectively influencing group mood. Furthermore, the results indicated that reflecting on the experienced group mood after the meeting can be beneficial for long-term group mood management, as it helps group members pinpoint specific triggers of group mood and stimulates them to discuss potential adjustments to improve group mood in their future meetings. Additionally, the study revealed five action-based steps of group mood management: understand, intend, notice, regulate, and evaluate, which is illustrated in the Group Mood Management Cycle. This chapter provides initial insights into group mood management process and offers practical entry points for future efforts to support group mood management in small work group meetings.

Chapter 6 focuses on reflection as an approach to supporting group mood management. It introduces the *Vibe Moves workshop*, a format designed to facilitate reflection on the lived group mood experiences within small work groups. Participants engaged in dance movements to embody group moods, followed by group reflection about their experiences in relation to these movements. The Vibe Video Set (Sonmez et al, 2022b) was used as inspirational material to support the embodiment process. The effectiveness of the workshop was assessed by five professional work groups, primarily consisting of design researchers. Results indicated that the workshop effectively stimulated reflection on the group mood experience by enabling participants to intuitively express and embody the group mood, articulate nuanced definitions using a new movement-based vocabulary, critically analyze and evaluate mood dynamics, draw meaningful conclusions about their team's group mood dynamics, and exchange strategies for managing group moods. To further enhance the workshop's effectiveness, facilitating more explicit reflection on regulation strategies is suggested. The chapter provides insights for refining the workshop format and underscores the value of combining embodiment and group reflection as a powerful approach to develop group-specific understanding of group mood and know-how of its regulation.

In the final chapter, we look back at the project as a whole, summarize our key findings, and discuss their broader implications. The first section revisits the main research questions, followed by sections discussing that have emerged throughout the project. The second section elaborates on the three ways in which the project contributed to design for group mood management: (1) by providing designers with a conceptual framework and a rich vocabulary to navigate and address group mood effectively; (2) by offering novel communicating mediums that can serve as user research tools and sources of design inspiration; (3) by offering actionable entry points for design interventions aimed at supporting the group mood management process. The third section reflects on the

embodied approach used in the development of materials in Chapters 3 and 4 with respect to the effectiveness of outcomes and the artistic process. The section ends with insights and recommendations for researchers seeking to embark on similar artistic collaborations. The final section discusses the contribution of the project to group mood management in practice, elaborating on how the knowledge and materials generated in this thesis can be utilized towards an integrated and group centric approach to group mood management.

Addressing the Research Questions

In response to RQ 1, this thesis proposes that there are at least eight types of group moods that can be experienced in small work groups: Chill Flow, Fiery, Creative, Safe Haven, Slack, Tense, Confrontational, and Fuzzy. In organizational sciences and psychology, group mood is traditionally conceptualized as an aggregation of individual moods. It is often operationalized with a general valence dimension (positive-negative) and, in some cases, an additional activation dimension (high energy-low energy). This thesis introduces group mood as an emergent experience with unique qualities, and it has developed the first descriptive overview of group mood through a phenomenological inquiry. This initial typology offers experience-oriented descriptions with a rich vocabulary for understanding and distinguishing group moods and serves as a foundation for developing further knowledge, methods, tools, products, and services aimed at fostering positive group dynamics and facilitating good office vibes.

In response to R2, this thesis demonstrates the potential of embodied visual representations as a way to explore effective ways to communicate eight group moods. The evaluation of the two sets of embodied communications (Vibe Image Set and Vibe Video Set) indicates that they successfully communicate the moods in a holistic, distinct, and relatable manner, although variations exist in how different groups moods are perceived across the two mediums. These two mediums extend the palette of experience typologies available in design to the collective level, showcasing the potential of embodiment and artistic approaches in generating rich and effective communications for group mood and other collective affective experiences. The detailed report of the development process offers insights into how to develop such mediums and will hopefully inspire the development of new embodied mediums in research and practice. The sets, in their current state, serve as research materials for the ongoing study of group mood phenomena. The initial comparison between the two mediums opens up new research opportunities in group mood research.

In response to R3, this thesis proposes a group-centric approach to group mood management. It demonstrates the potential of the group mood typology to support groups in managing their group moods by facilitating group mood reflection. We developed two formats (the Vibe Card Set intervention and Vibe Moves workshop) in which we operationalized eight group moods in the context of group work. The

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thesis offers insights into supporting group mood management in small workgroups, with a particular focus on facilitating reflection on lived group mood experiences. Our findings extend the understanding of the group mood management process and highlight the potential of reflective and embodiment approaches in enabling a fresh perspective for understanding and describing group mood experiences. The formats in which we operationalize the group mood typology also serve as examples of applications for the embodied communications we developed in response to RQ2. This offers insights into how to utilize such materials as tools to support group mood management.

We envision this thesis as a foundational step towards understanding and shaping group moods within the design domain, offering insights and starting points for future research and practice in designing for group mood management. In professional practice, our research contributions can enable and support workgroups in their attempts to communicate and manage their group moods.

SAMENVATTING

Van het jagen in archaïsche tijden tot de hedendaagse taak van het ontwerpen van een online shoppingplatform, bijna elk professioneel doel wordt bereikt door samen te werken in *teamverband*. In sommige gevallen gedijt een team in een gedeeld gevoel van opwinding en doelgerichtheid, met een momentum in de samenwerking en resultaten die hun eerdere verwachtingen overtreffen: Wat een *goede vibe*! Maar een ander team kan met vergelijkbaar enthousiasme aan hun taak beginnen, en uiteindelijk uitgeput of geïrriteerd raken en een middelmatig resultaat leveren, puur om ervan af te zijn. Zou het kunnen komen door *slechte vibe*?

Deze gedeelde emotionele sfeer, in de volksmond vaak aangeduid als de "*vibe van de groep*", wordt groepsstemming genoemd. Onderzoek wijst uit dat deze groepsstemming een aanzienlijke impact heeft op het functioneren van organisaties, de effectiviteit, prestaties en uitkomsten van groepen beïnvloedt, evenals groepsinteracties en daardoor het welzijn op de werkplek. Gezien deze brede impact kan het nuttig zijn om groepsstemmingen effectief te kunnen reguleren. Echter, in de dagelijkse praktijk blijft groepsstemming een ongrijpbaar fenomeen dat, hoewel we het soms kunnen aanvoelen, moeilijk is te begrijpen, gedetailleerd te beschrijven, en daardoor te reguleren of te managen. Wat als teams[56] effectief hun eigen groepsstemmingen zouden kunnen reguleren op een manier die helpt het gedeelde doel te bereiken? Dit zou inhouden dat groepsstemmingen worden gestimuleerd die bevorderlijk zijn voor de groepsactiviteit, terwijl die welke doelbereiking belemmeren, worden voorkomen of verminderd. Producten, diensten of interventies kunnen mogelijk teams hierbij kunnen ondersteunen. Een belangrijke uitdaging bij het ontwerpen voor groepsstemming is een gebrek aan contextueel begrip van wat groepsstemming is en welke verschillende groepsstemmingen er bestaan. Om deze kloof te dichten, conceptualiseert dit proefschrift groepsstemming als een opkomend concept met unieke kwaliteiten en streeft het ernaar een genuanceerd begrip van groepsstemming in werkomgevingen te ontwikkelen, voorbij de basale dichotomie van 'positief versus negatief'. Dit dient als een eerste stap richting effectief groepsstemming regulering, waarbij de eerste stap wordt gezet naar het ontwikkelen van een typologie. De belangrijkste onderzoeksvragen zijn:

1. *Welke soorten groepsstemmingen worden ervaren in kleine werkgroepen?* De bevindingen naar aanleiding van deze vraag leveren de eerste genuanceerde beschrijving van

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56 In dit proefschrift richten we ons op kleine werkgroepen bestaande uit drie tot zeven leden die naar een gemeenschappelijk doel toewerken, gedefinieerd als "een collectief doel dat door iedereen wordt onderschreven" (van den Hout et al., 2018, p. 395). In de organisatieliteratuur zijn verschillende definities beschikbaar om onderscheid te maken tussen teams en groepen, evenals de typen binnen elk. Dergelijke verchillen zijn echter minder relevant voor dit project. Daarom gebruiken we de woorden team en groep door elkaar in het proefschrift en hanteren we de team definitie van Katzenbach en Smith (1993, p. 112): "een klein aantal mensen met complementaire vaardigheden die zich inzetten voor een gemeenschappelijk doel, een set prestatie-doelen en een aanpak waarvoor zij zichzelf wederzijds verantwoordelijk houden".

groepsstemmingen op, die als basiskennis diende voor het onderzoek ten behoeve van de tweede en derde onderzoeksvraag.

2. *Hoe kunnen genuanceerde groepsstemmingen effectief worden gecommuniceerd?*
3. *Hoe kan reflectie op groepsstemming worden gefaciliteerd?*

Om deze vragen te beantwoorden, hebben we verschillende onderzoeksactiviteiten uitgevoerd waarbij meerdere onderzoeksmethoden zijn gebruikt. Als resultaat hebben we een beschrijvend overzicht ontwikkeld van genuanceerde groepsstemmingen, kennis en tools om deze groepsstemmingen effectief te communiceren, en kennis en inzichten om reflectie op groepsstemming te faciliteren ter ondersteuning van groepsstemming regulering.

Overzicht van Hoofdstukken

Hieronder volgt een samenvatting van de studies die in elk hoofdstuk worden gerapporteerd, georganiseerd in drie delen die overeenkomen met de drie onderzoeksvragen.

Deel A: Beschrijven van Groepsstemming

In Hoofdstuk 2 onderzochten we de soorten groepsstemmingen die worden ervaren in kleine werkgroepen door middel van een fenomenologisch onderzoek. We observeerden acht vergaderingen in de praktijk binnen vijf projectteams en verzamelden hun collectieve beschrijvingen van de ervaren groepsstemming in een co-onderzoek sessie. Onze thematische analyse onthulde vier aspecten en 36 kwaliteiten om groepsstemmingen te beschrijven. Door deze kwaliteiten te categoriseren, ontwikkelen we acht typen groepsstemmingen: ***Chill Flow, Fiery, Creative, Safe Haven[57], Slack, Tense, Confrontational en Fuzzy*** (Sönmez et al, 2022a), die worden beschreven in het boekje "*Eight Group Vibes*" (toegankelijk op https://diopd.org/eight-group-vibes/). Dit beschrijvende overzicht van acht groepsstemmingen diende als basis voor de daaropvolgende onderzoeksactiviteiten in dit proefschrift. De aanvullende bevindingen – drie eigenschappen van groepsstemming en vier categorieën van situationele factoren – bieden primaire kennis over de dynamiek van groepsstemmingen, welke als aanknopingspunten kan dienen om groepsstemming te beïnvloeden en daardoor te reguleren.

Deel B: Verbeelden van Groepsstemming

In Hoofdstuk 3 en Hoofdstuk 4 onderzochten we twee 'belichaamde' manieren om de acht groepsstemmingen te communiceren. Hoofdstuk 3 rapporteert over de ontwikkeling en evaluatie van de *Vibe Image set*, die bestaat uit acht illustraties die elk een *groepshouding* weergeven die een groepsstemming uitdrukt. De afbeeldingen zijn ontwikkeld via

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57   In het laatste overzicht wordt Safe Haven vervangen door een nieuw type groepsstemming, Jolly, gebaseerd op de herzieningen van het onderzoek gepresenteerd in Hoofdstuk 2, wat leidde tot herbeoordeling van de typen.

een generatief proces in drie stappen. In de eerste stap creëerden we een serie foto's van groepshoudingen die acht groepsstemmingen uitdrukken door middel van een co-creatie sessie met vier acteurs. In de tweede stap selecteerden we de houdingen die het beste elke van de acht groepsstemmingen vertegenwoordigen door middel van een groepsdiscussie met twee experts. In de derde stap vertaalden we de foto's en inzichten in acht tekeningen van groepsstemmingen, in samenwerking met een illustrator. Hoofdstuk 4 rapporteert over de ontwikkeling en evaluatie van de *Vibe Video set* (Sonmez et al, 2022b) als een dynamische weergave van acht groepsstemmingen, een workshop die onderzoeksmogelijkheden met de video's verkende, en een vergelijking van de Vibe Image set en de Vibe Video set met betrekking tot prestatie en gelijkenis van expressie. De video set bestaat uit acht professionele videoclips[58], elk met een dansvoorstelling van drie minuten die is gecreëerd om een groepsstemming weer te geven. De video's zijn ontwikkeld door een artistiek onderzoek geleid door een professionele dansstudio en omvatten samenwerkingen van een choreograaf, dansers en kunstenaars voor muziek, filmopnamen, kostuums, make-up en set ontwerp.

De twee sets zijn afzonderlijk geëvalueerd door middel van een online vragenlijst die is ontworpen om te onderzoeken welke kwaliteiten van groepsstemming elk beeld en elke video communiceren en in hoeverre ze de beoogde groepsstemming communiceren. Respectievelijk 36 en 40 deelnemers beoordeelden de mate waarin ze elk van de 36 kwaliteiten van groepsstemming associeerden met de groepsstemming die in het beeld en de video werd uitgedrukt, met behulp van een 7-punts schaal (1 = helemaal niet; 7 = extreem). Onze resultaten toonden aan dat beide sets effectief de acht groepsstemmingen communiceren op een holistische, onderscheidende en herkenbare manier. De prestaties (d.w.z. de mate waarin ze de beoogde groepsstemming communiceren) variëren echter per groepsstemming voor zowel de afbeeldingen als de video's. Daarnaast is er variatie in hoe vergelijkbaar afzonderlijke groepsstemmingen worden weergegeven door hun beeld en video. Bijvoorbeeld, de Tense groepsstemming werd verschillend uitgedrukt tussen de media, terwijl Safe Haven, Chill Flow en Fuzzy een consistente uitdrukking vertoonden tussen afbeeldingen en video's. Onze eerste verkenning onthulde dat de gelijkenis in weergaven kan worden verklaard door gedeelde belichaamde kwaliteiten tussen de media. Bovendien onthulden onze bevindingen vier potentiële dimensies om acht groepsstemmingen te beschrijven, die kunnen dienen als variabelen om groepsstemming te meten en te reguleren. Deze twee hoofdstukken bieden inzichten in het ontwikkelen van belichaamde media om groepsstemmingen effectief te communiceren. In de volgende studies worden deze twee sets toegepast in de context van groepswerk.

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58   De videoset kan worden bekeken op Zenodo via https://doi.org/10.5281/zenodo.13319377.

Deel C: Faciliteren van Reflectie op Groepsstemming

In deel C, waarbij een groepsgerichte benadering van stemming regulering wordt aangenomen, verkenden we manieren waarop de typologie van acht groepsstemmingen teams kan ondersteunen bij het beheren van hun groepsstemmingen, met bijzondere aandacht voor reflectie op groepsstemming. Met reflectie op groepsstemming streven we naar het bevorderen van groepseigen begrip en knowhow voor regulatie. Hoofdstuk 5 verkent het potentieel van de typologie van acht groepsstemmingen in het faciliteren van groepsstemming regulering. Het rapporteert een interventiestudie uitgevoerd met twaalf studentprojectgroepen. In de studie wordt de typologie operationeel gemaakt door middel van een kaart-set, die werd ontworpen door het combineren van de Vibe Image set (Hoofdstuk 3) en de beschrijvingen van groepsstemming (Hoofdstuk 2). Deelnemers gebruikten de kaart-set om hun gewenste groepsstemming te identificeren en de ervaren groepsstemming in hun vergaderingen gedurende een dag te evalueren. Later bespraken ze hoe het gebruik van de kaart-set hun groepsstemming beheer beïnvloedde met betrekking tot bewustzijn van groepsstemming, granulariteit en regulatie. De resultaten suggereren dat het gebruik van de kaart-set het bewustzijn en het genuanceerde begrip van groepsstemming op verschillende manieren ondersteunde, maar minder effectief was in het faciliteren van de regulatie van groepsstemming. Simpelweg het identificeren van een gewenste groepsstemming aan het begin van een vergadering stimuleert leden niet noodzakelijk om hun groepsstemming actief te reguleren tijdens de vergadering. Een significante belemmering lijkt het gebrek aan praktische kennis en ervaring in het effectief beïnvloeden van groepsstemming. Verder gaven de resultaten aan dat reflectie op de ervaren groepsstemming na de vergadering nuttig kan zijn voor het beheren van groepsstemming op lange termijn. Het helpt groepsleden om specifieke triggers van groepsstemming te identificeren en stimuleert hen om mogelijke aanpassingen te bespreken om de groepsstemming in toekomstige vergaderingen te verbeteren. Bovendien onthulde de studie vijf actiegerichte stappen voor het beheren van groepsstemming: begrijpen, doelbepalen, opmerken, reguleren en evalueren, geïllustreerd in de 'Groepsstemming Beheer Cyclus'. Dit hoofdstuk biedt initiële inzichten in het proces van het beheren van groepsstemming en praktische aanknopingspunten voor toekomstige inspanningen om dit beheer in kleine werkgroep vergaderingen te ondersteunen.

Hoofdstuk 6 richt zich op reflectie als een benadering om beheer van groepsstemming te ondersteunen. Het introduceert de *Vibe Moves workshop*, een format ontworpen om reflectie op de geleefde ervaringen van groepsstemming binnen kleine werkgroepen te faciliteren. Deelnemers nemen deel aan dansbewegingen om groepsstemmingen te belichamen, gevolgd door groepsreflectie over hun ervaringen in relatie tot deze bewegingen. De Vibe Video set (Sonmez et al, 2022b) wordt gebruikt als inspiratiemateriaal om het belichamingsproces te ondersteunen. De effectiviteit van de workshop werd beoordeeld door vijf professionele werkgroepen, voornamelijk bestaande uit ontwerponderzoekers. Resultaten gaven aan dat

de workshop effectief reflectie op groepsstemming stimuleerde door deelnemers in staat te stellen intuïtief de groepsstemming te uiten en te belichamen, genuanceerde definities te articuleren met behulp van een nieuwe op beweging gebaseerde woordenschat, stemming dynamiek kritisch te analyseren en te evalueren, zinvolle conclusies te trekken over de dynamiek van groepsstemming van hun team en strategieën uit te wisselen voor het beheren van groepsstemmingen. Om de effectiviteit van de workshop verder te verbeteren, wordt gesuggereerd om meer expliciete reflectie op regulatiestrategieën te faciliteren. Het hoofdstuk biedt inzichten voor het verfijnen van het workshop format en benadrukt de waarde van het combineren van belichaming en groepsreflectie als een krachtige benadering om groepseigen begrip van groepsstemming en knowhow van de regulatie ervan te ontwikkelen.

In het laatste hoofdstuk kijken we terug op het project als geheel, vatten we onze belangrijkste bevindingen samen en bespreken we hun bredere implicaties. Het eerste deel herhaalt de belangrijkste onderzoeksvragen, gevolgd door delen waarin bevindingen worden besproken die gedurende het project zijn ontstaan. Het tweede deel licht de drie manieren toe waarop het project heeft bijgedragen aan het ontwerp voor het beheren van groepsstemming: (1) door ontwerpers een conceptueel kader en een rijke woordenschat te bieden om groepsstemming effectief te navigeren en aan te pakken; (2) door nieuwe communicatiemediums te bieden die kunnen dienen als tools voor gebruikersonderzoek en ontwerpinspiraties; (3) door praktische aanknopingspunten te bieden voor ontwerpinterventies gericht op het ondersteunen van het beheersproces van groepsstemming. Het derde deel reflecteert op de belichaamde aanpak die is gebruikt bij de ontwikkeling van materialen in Hoofdstukken 3 en 4 met betrekking tot de effectiviteit van de uitkomsten en het artistieke proces. Het deel eindigt met inzichten en aanbevelingen voor onderzoekers die vergelijkbare artistieke samenwerkingen willen aangaan. Het laatste deel bespreekt de bijdrage van het project aan beheer van groepsstemming in de praktijk, waarbij wordt uitgewerkt hoe de kennis en materialen die in dit proefschrift zijn gegenereerd kunnen worden gebruikt voor een geïntegreerde en groepsgerichte benadering van beheer van groepsstemming.

Beantwoording van de Onderzoeksvragen

In antwoord op RQ 1 stelt dit proefschrift dat er minstens acht soorten groepsstemmingen zijn die kunnen worden ervaren in kleine werkgroepen: Chill Flow, Fiery, Creative, Safe Haven, Slack, Tense, Confrontational en Fuzzy. In de organisatie- en psychologische wetenschappen wordt groepsstemming traditioneel geconceptualiseerd als een aggregatie van individuele stemmingen. Het wordt vaak geoperationaliseerd met een algemene plezierdimensie (positief-negatief) en, in sommige gevallen, een extra activeringsdimensie (hoge energie-lage energie). Dit proefschrift introduceert groepsstemming als een opkomende ervaring met unieke kwaliteiten en heeft het eerste beschrijvende overzicht van groepsstemming ontwikkeld door middel van een fenomenologisch onderzoek. Deze

initiële typologie biedt ervaringsgerichte beschrijvingen met een rijke woordenschat voor het begrijpen en onderscheiden van groepsstemmingen en dient als basis voor de ontwikkeling van verdere kennis, methoden, tools, producten en diensten die gericht zijn op het bevorderen van positieve groepsdynamiek en het faciliteren van goede kantoor vibes.

In antwoord op RQ 2 demonstreert dit proefschrift het potentieel van belichaamde visuele representaties als een manier om effectieve manieren te verkennen om acht groepsstemmingen te communiceren. De evaluatie van de twee sets belichaamde communicatie (Vibe Image set en Vibe Video set) geeft aan dat ze de stemmingen op een holistische, onderscheidende en herkenbare manier succesvol communiceren, hoewel er variaties bestaan in hoe verschillende groepsstemmingen worden waargenomen in de twee media. Deze twee media breiden het palet van ervarings-typologieën in design uit naar het collectieve niveau en tonen het potentieel van belichaming en artistieke benaderingen bij het genereren van rijke en effectieve communicatie voor groepsstemming en andere collectieve affectieve ervaringen. Het gedetailleerde verslag van het ontwikkelingsproces biedt inzichten in hoe dergelijke media kunnen worden ontwikkeld en hopelijk inspireert het de ontwikkeling van nieuwe belichaamde media in onderzoek en praktijk. De sets, in hun huidige staat, kunnen dienen als onderzoeksinstrumenten voor de verdere studie van groepsstemming fenomenen. De initiële vergelijking tussen de twee media opent nieuwe mogelijkheden voor onderzoek naar groepsstemming.

In antwoord op RQ 3 stelt dit proefschrift een groepsgerichte benadering van het beheren van groepsstemming voor. Het toont het potentieel van de typologie van groepsstemmingen om groepen te ondersteunen bij het beheren van hun groepsstemmingen doorreflectie op groepsstemming te faciliteren. We hebben twee formats ontwikkeld (Vibe Card set interventie en Vibe Moves workshop) waarin we acht groepsstemmingen operationeel hebben gemaakt in de context van groepswerk. Het proefschrift biedt inzichten in het ondersteunen van beheer van groepsstemming in kleine werkgroepen, met bijzondere aandacht voor het faciliteren van reflectie op beleefde groepsstemmingen. Onze bevindingen vergroten het begrip van het heersproces van groepsstemming en benadrukken het potentieel van reflectieve en belichaamde benaderingen bij het bieden van een frisse kijk op het begrijpen en beschrijven van groepsstemming. De formats waarmee we de typologie van groepsstemmingen operationeel maken, dienen ook als toepassingsvoorbeelden voor de belichaamde communicatie die we hebben ontwikkeld in antwoord op RQ 2. Dit biedt inzichten in hoe dergelijke materialen kunnen worden gebruikt als tools om het beheer van groepsstemming te ondersteunen.

We zien dit proefschrift als een fundamentele stap naar het begrijpen en vormgeven van groepsstemmingen binnen het ontwerpgebied, en bieden inzichten en uitgangspunten voor toekomstig onderzoek en praktijk in het ontwerpen voor het beheer van groepsstemmingen. In de professionele praktijk kunnen onze onderzoeksbijdragen werkgroepen in staat stellen en ondersteunen in hun pogingen om hun groepsstemmingen te communiceren en te beheren.

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Alev Sönmez was born in Bulgaria and grew up in Izmir, Turkey. She earned her bachelor's degree in industrial design from Middle East Technical University (METU). In 2015, she moved to the Netherlands to pursue a Master of Science in Design for Interaction at TU Delft. Her master's thesis, *Mindful Bites* (2017, cum laude), addressed the issue of obesity in cats by focusing on the emotional aspects of the feeding experience.

Before beginning her PhD, Alev worked as a service designer on social innovation projects for the Municipality of Amsterdam, where she developed workshops, formats, and tools to facilitate citizen participation in local government processes. Additionally, she served as a research assistant on the *Design for Mood Regulation* project led by Professor Pieter Desmet, which sparked her interest in her PhD topic. Currently, Alev is a postdoctoral design researcher at TU Delft, where she works on an EU-commissioned project aimed at reducing the demand for exotic pets.

Alev's research interests focus on understanding the motivations and needs underlying human experiences to promote well-being at various levels—from the individual to the collective, and from humans to animals. Following a design-driven approach, her work draws on knowledge and inspiration from the fields of psychology and the arts.

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