Talk That Talk

THE EVALUATION AND REDESIGN OF A PERSUASIVE GAME FOR TACKLING SEXUAL VIOLENCE AMONG STUDENTS IN DUTCH UNIVERSITIES

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This thesis is submitted in fulfilment of the requirements for the degree of

MASTER OF SCIENCE

In Engineering and Policy Analysis

September 2022

Faculty of Technology, Policy, and Management
Delft, University of Technology

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Version 2

December 2, 2022

First version published on September 21st, 2022

Second version created on December 2nd, 2022

Implemented changes for second version are:
- Inclusion of pre-face
- Improved lay-out

PREFACE

The topic of this study has been two years in the making. During the first year of my Master's study in Engineering and Policy Analysis, I stumbled upon an article about a 620 km human chain of Indian women holding hands as a protest for equality. I was moved by their bravery and sense of urgency to unite peacefully for change. It motivated me to get up myself and contribute to the global women's rights movement.

During my Master thesis, I was challenged and inspired many times. One of my sources of inspiration was the book "Invisible Women" by Caroline Criado Perez. This book helped me to comprehend how systematic inequality is. It was an eye-opener in more ways than one and at the same time, a good motivator to get up and do something. I also got inspired by all the people I talked to during my project. From the discussions with my friends and the students that showed their interest and willingness to learn. To organisations like Emancipator and Time Out that are focussed on reducing the problem of sexual violence. And to the professors that guided me throughout this process and infected me with their curiosity, humanity, and enthusiasm.

Challenges surfaced when reading about this topic and dealing with the unease that comes with sensitive and triggering topics like these. It was like taking off my rose-coloured glasses and seeing the world again without them. It's like an accident or drama play happening in front of you. You want to close your eyes, but you can't. You want to avert your eyes, but you don't.

They say that knowledge is power, but I would say it's a responsibility. In a way, it felt easier to not know about the patterns that contribute to and lead to sexual violence as to not feel responsible for it. However, with my studies, I wanted to open my eyes to uncomfortable topics and to not shy away from them. It was a path I was lucky to choose instead of it choosing me. I hope this study also opens your eyes and motivates you to talk that talk.

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Francien Baijanova
Delft (NL), September 23rd, 2022

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ACKNOWLEDGEMENTS

SUMMARY

Society has a structural problem with sexual violence against women. Globally, at least one in three women has experienced sexual violence. Since the worldwide #metoo movement in 2017, awareness about sexually transgressive behaviour has been raised. Consequently, it has brought more attention to sexual violence in study places, such as Dutch universities. A report requested by Amnesty international found that one in 10 students in Dutch higher education has experienced rape (18 percent women and three percent men) and that 31 percent of the women and 11 percent of the men have experienced unwanted sexual touching during their student time. Since Amnesty International published the report, universities have struggled to find an effective evidence-based intervention tool to reduce sexual violence numbers among their students.

Sexually transgressive behaviour seems to be normalized and reinforced by cultural beliefs. Especially rigid beliefs and restrictive norms about gender roles are considered significant factors in causing violence against women. One approach that can be used in preventive intervention programs and can help create and enact cultural change is bystander intervention. Bystander intervention is a popular intervention tool in promoting ethical bystander behaviour by involving all community members and treating them as potential allies to act against sexual violence. These allies can intervene in situations of sexually transgressive behaviour. Another tool that is not commonly considered but is proven to be a valuable tool in education is games. The persuasive game of Hoobroeckx et al. (2021) is explicitly developed to address sexually transgressive behaviour by encouraging an intergroup dialogue. Hoobroeckx et al. (2021) 's persuasive game is considered an interesting and innovative tool for encouraging bystander intervention. However, this game was initially focused on high school students and therefore needed to be redesigned. A persuasive game was considered for evaluation to provide Dutch universities with a new evidence-based tool for encouraging cultural change in the student community to reduce sexual violence. Therefore, the following research question was constructed:

"How can a persuasive game promote intergroup dialogue between female and male students in Dutch universities in order to encourage bystander intervention in situations of sexually transgressive behaviour?"

In answering the research question, the concepts and the interrelationships of the three approaches - bystander intervention, persuasive and intergroup dialogue – were explored. In researching how the approaches were connected, two essential questions were asked: "how does the persuasive game promote intergroup dialogue"; and "how do the persuasive game and intergroup dialogue encourage bystander intervention". To address the first question, three pedagogical characteristics were found to influence intergroup dialogue: active learning by posing open questions, discussing ethical guidelines, and the presence of facilitators, one from each identity group. Discussing ethical guidelines and the presence of facilitators was essential to create a safe space, which was a prerequisite for intergroup dialogue.

With literature research, a new conceptual health communication model was developed to address the second question. This developed model showed how persuasive gaming and intergroup dialogue could influence sexual violence myth acceptance and bystander attitudes (i.e. awareness and responsibility) through communication processes. Consequently, the communication processes

can indirectly influence the willingness to intervene, which was taken as an indicator for bystander behaviour to reduce sexual violence among students. The developed conceptual model of variables helped to determine the dependent outcome variables: willingness to intervene, sexual violence myth acceptance and bystander attitudes. Thereby, intergroup dialogue and safe space were chosen as mediator variables and the game session with the persuasive game as an independent variable.

Next, the socio-complex problem of sexual violence among students needed to be scoped to ensure that the outcome variables fit with the game's content. Three steps were taken to scope the problem. First, the complex system was identified and decomposed by examining and extending the pyramid of sexual violence. Second, sexual violence among students in the Netherlands was contextualized. Moreover, bystander opportunities were described and scoped as well.

The new extended pyramid helped to choose the types of sexual violence that would be included in the game content. The chosen extended layers of the pyramid were: 'internalized expression of normalization', 'externalized expression of normalization', 'physical harassment', and 'physical, sexual violence'. Moreover, by understanding the context in which sexual violence occurs between students, scenarios could be tailored to students' experiences in the Netherlands. The contextual characteristics examined were the relationship between the victim and the perpetrator, locations of sexual violence, and behaviours preceding sexual violence. The five most common variables of these contextual characteristics were chosen for inclusion. Then, low-and high risk of primary bystander opportunities (before an assault happens) was chosen for inclusion, as these opportunities were found to be the least recognizable. The examples of bystander opportunities helped to examine in which situations bystanders are present and, therefore, can intervene.

Scoping the problem helped to create and derive situations of sexually transgressive behaviour, which were used to create the scenarios and statements in the game cards. Only the game content, the lay-out of the cards, and the (de)briefing needed to be redesigned. However, also the game session was aimed to be controlled and therefore was also designed. This was done with Duke's first seven steps of the game design approach(1980). First, based on the literature research, the game specifications were determined. Hereafter, the problem of sexual violence was additionally explored with brainstorm sessions. These brainstorm sessions were conducted with students from Delft, University of Technology (TU Delft), and were aimed to collect as many real-life examples for the game content as possible. Then, the problem components of sexual violence were selected, after which the game elements were designed, and the game was built.

Following the game session design, a systematic methodology for the experimental design of the persuasive game was developed to evaluate the persuasive game. An effort was made with a quasi-randomized controlled trial and a mixed-method approach to explore the game's effectiveness on the dependent variables from multiple perspectives. The experimental design included a physical 1.5-hour game session, interviews and pre-, post- and follow-up surveys. These surveys were first developed and then pilot-tested to ensure the reliability of the items. Then, the surveys were sent to both the experimental and the control group. However, only the experimental group participated in the game sessions, conducted interviews, and received the follow-up survey one month after playing the game. A total of 64 students of TU Delft participated and were divided into the experimental and control group. Both groups received financial compensation for participation.

The results of the evaluation of the persuasive game are remarkable, as this study found four significant effects of the persuasive game and intergroup dialogue on the dependent variables. First

to third, the results showed a significantly positive effect of the persuasive game on the willingness to intervene, awareness, and bystander responsibility (i.e. bystander attitudes). Third, a significant correlation was found between the construct "Critical Thinking", an indicator of intergroup dialogue and awareness level. There is a clear indication from the results that the persuasive game was able to promote qualitative intergroup dialogue between the participants. Additionally, this study proved that the game creates a safe space that consequently promotes intergroup dialogue. However, no significant effect of the persuasive game could be found on sexual violence myth acceptance. This might be explained by selection bias. Selection bias might have contributed to already low acceptance levels of sexual violence myths before the game, which did not change after the game.

This study found that the redesigned persuasive game of Hoobroeckx et al. (2021) effectively encouraged an intergroup dialogue between female and male students in Dutch universities and consequently promoted bystander behaviour by raising awareness, bystander responsibility and the willingness to intervene in sexual violence bystander opportunities. The findings provide decision-makers of universities with an interesting and engaging new evidence-based bystander intervention tool for their mission to reduce sexual violence among their students. Additionally, this study provides the scientific community with new frameworks and tools to design and evaluate persuasive games about socially sensitive topics.

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LIST OF ABBREVIATIONS

BAS   Bystander Attitudes Scale
CG   Control Group
CPS   Communication Process Scale
EG   Experimental Group
SVMAS   Sexual Violence Myth Scale
WIS   Willingness to Intervene Scale
IGD   Intergroup Dialogue

GLOSSARY

Attitudes: Eagly & Chaiken (1993, p.1) has developed a generalized definition of attitudes, which is defined as "a psychological tendency that is expressed by evaluating a particular entity with some degree of favour or dis favour". This means that an attitude is acquired when there is a tendency to evaluate past experiences with an object as either good or bad. Thus, an attitude does not exist without exposure to an object or entity (Eagly & Chaiken, 2007).

Beliefs: Fishbein (1963) defined beliefs as "the perceived likelihood that an attribute is associated with an object". One can argue that attitude is the belief that an object is good or bad (Wyer, 1974), as both attitude and belief are conceptualizations, and all conceptualizations indicate some probability. While overlap can be found between the two concepts, a distinction can still be made. An important criterium to differentiate beliefs from attitudes is that some beliefs can be verified or falsified with external and objective evidence, while most attitudes, which are of a social and political nature, cannot (Albarracin et al., 2005). Thus, according to Albarracin et al. (2005) attitude can be derived from and interact with beliefs, but the two concepts are not seen as parts of each other.

Bystander Attitudes: Bystander attitudes exist of awareness and responsibility (Banyard et al., 2014).

Expressive Games: Games that have another primary purpose than entertainment. Trépanier-jobin (2016) described these games as games that "explore cultural, social and psychological issues through an individual's perspective, in order to foster empathy, encourage reflection, and raise questions, while entertaining".

Health Communication: Defined by Schiavo (2007) as "a multifaceted and multidisciplinary approach to reach different audiences and share health-related information to influence, engaging, and support individuals, communities, health professionals, special groups, policymakers and the public to champion, introduce, adopt, or sustain a behaviour, practice, or policy that will ultimately improve health outcomes".

Intergroup Dialogue: Intergroup dialogue is defined by Faloughi & Herman (2020) as a "participatory and interactive discussion" between peers from different identity groups.

Persuasive Games:	Games that have another primary purpose than entertainment. These games do not have an institutional goal but are instead developed to persuade or influence players about their attitudes, beliefs or behaviour by either argumentation or providing information (Yusoff & Kamsin, 2015).
Primary Bystander Opportunities:	Opportunities to intervene before the act of sexual violence takes place (McMahon & Banyard, 2012).
Rape Myth Acceptance:	Defined by Lonsway & Fitzgerald (1994) as "attitudes and beliefs that are generally false but are widely and persistently held, and that serve to deny and justify male sexual aggression against women".
Safe Spaces:	Safe spaces are environments that allow for open and honest conversations as participants feel safe enough taking risks to express themselves, make mistakes, and to explore their own way of thinking and behaving (Holley & Steiner, 2013).
Serious Games:	Games that have another primary purpose than entertainment. These games have a specific educational purpose and are thus not only meant to be amusing (Trépanier-jobin, 2016). According to Arsenault (2011), these games are developed with a fixed set of institutional goals and with the intention to either teach, train, or inform.
Sexual Harassment:	Defined by UN Women (2008) as "any unwelcome sexual advances, requests for sexual favours, verbal or physical conduct or gesture of a sexual nature, or any other behaviour of a sexual nature that might reasonably be expected or be perceived to cause offence or humiliation to another".
Sexually Transgressive Behaviour:	Covers all forms of behaviour that is sexual from nature and crosses the boundaries of another person. This can range from either physical to psychological transgressive behaviour (Movisie, 2018; Movisie & Rutgers, 2019).
Sexual Violence:	Defined by European Centre for Constitutional and Human Right as "any deliberate (violent act) of a sexual nature, carried out without consent or the capacity to consent, which is not only limited to physical violence or contact".
Socio-Ecological Framework:	Framework that considers the interconnected levels (individual, social networks, community, societal) in a complex adaptive system that influence each other and their environment. This framework helps to understand how the relationship between these levels influence sexual violence through social and behavioural change (D. L. Kincaid & Figueroa, 2007; Brome et al., 2004).

1

INTRODUCTION

Since the worldwide #metoo movement in 2017, sexual violence has been receiving more attention. Stories about sexually transgressive behaviour at study, work, and in public and private spaces have been shared widely and publicly, raising people's awareness. This awareness has contributed to a societal shift regarding safety, equality and diversity (EVA, 2021). Especially sexual violence against women has received a lot of attention, as they are disproportionately affected by sexual violence at the hand of men (Act4Respect, 2020). Globally, one in three women has experienced physical or sexual violence. The magnitude of the problem has always been great but has never been as apparent as before. Because of the movement, the taboo surrounding sexual violence has reduced, but the prevalence has remained unchanged (Crooks et al., 2019).

Sexual violence is most prevalent among young people between 18 and 30 years old and is often committed by a peer (Akkermans et al., 2020; Act4Respect, 2020). Most students fall in this age category. A report commissioned by Amnesty International found that during student time, one in 10 students (18 percent women and three percent men) in Dutch higher education has experienced unwanted sexual penetration, also known as 'rape' (Driessen & Polet, 2021). Moreover, it was found that one in five students (31 percent women and 11 percent men) has experienced unwanted sexual touching during the student time such as kissing and groping. Although worldwide publicity has set policies against sexual violence on the map, the report of Driessen & Polet (2021) makes it clear that the safety of students concerning sexual violence has thus far not been adequately addressed in Dutch higher education.

Based on the report of Driessen & Polet (2021), Amnesty International requested Dutch higher education to protect their students against sexual violence. According to WHO (2009), educational institutions can play an important role in addressing gender norms and attitudes among women and men and help them to learn to recognize and prevent sexually transgressive behaviour. By signing the Amnesty manifest, educational institutions promise to better protect their students and employees by creating a safe and supportive culture. This culture can be, for example, encouraged with workshops and training. While there are colleges and universities that signed the Amnesty Manifest, many are still missing.

One of the universities that are cautious about signing the Amnesty manifest is the Delft University of Technology (TU Delft). An interview with the vice-rector of the TU Delft brings the hesitation of higher education to light. There are doubts about the efficacy and the overall benefit of the intervention prevention programs mentioned in the manifest (HOP, 2021). It is clear that there is a need for more information about effective interventions for the prevention of sexually transgressive behaviour among students. This information will then allow for better decision-making by the Executive Board of higher education and will help them to find an approach in tackling sexual violence.

An intervention tool that is not commonly considered but can be interesting for consideration in higher education are games. Games have been proven to be a valuable tool for learning, creating awareness and gaining insight into complex societal systems in a playful and dynamic way (Lukosch et al., 2018). Therefore, the question arises of how effective games are in addressing sexually transgressive behaviour among students in Dutch universities. In the following sections, the lack of evidence-based programs in higher education is discussed, bystander intervention and games as approaches for cultural change are proposed, and a new and promising persuasive game is introduced. Research questions and respective research methods are presented before the rest of the report is introduced.

1.1 Evidence-Based Intervention for Cultural Change in Higher Education

1.1.1 Sexual Violence & Sexually Transgressive Behaviour

To avoid confusion in the next sections, a clear distinction between sexual violence and sexually transgressive behaviour has been made. According to the definition of Driessen & Polet (2021), sexually transgressive behaviour covers all forms of behaviour that is sexual from nature and crosses the boundaries of victims. This can vary from sexually tinted comments to revenge porn and to unwanted sexual touching and rape. Sexual violence has a subtle difference with the definition of sexually transgressive behaviour. Sexual violence involves a *deliberate (violent)* act. It is overall defined by the European Center for Constitutional and Human Rights as *"any deliberate violent act of a sexual nature, carried out without consent or the capacity to consent, which is not only limited to physical violence or contact".* However, sexually transgressive behaviour does not need to be deliberate. Both terms will be used in this study.

1.1.2 Cultural Change Interventions in Higher Education

Sexually transgressive behaviour seems to be normalized and reinforced by cultural beliefs. Especially rigid beliefs and restrictive norms about gender roles are thought to be a significant factor in causing violence against women (Barker, Gary; Ricardo, Christine; Nascimento, 2007; Lapsansky & Chatterjee, 2013). Therefore, in order to bring down the high incidence of sexual violence, different types of preventive interventions are presented in education to positively change rape-related norms, attitudes, and behaviours. These changes can as a result lead to cultural change surrounding sexual violence (McCall et al., 2020). Examples of these interventions include workshops, trainings, semester long courses, and anti-rape messages on posters or other forms of media (Jozkowski & Ekbia, 2015). For universities to choose from available sexual violence interventions, the effectiveness of these available programs needs to be considered. It seems however, that there is a lack of evidence-based preventive tools (Keleher & Franklin, 2008). Only a few of the interventions that have been implemented in higher education have been scientifically evaluated (Keleher & Franklin, 2008; Anderson & Whiston, 2005). As a result, there is a need for a solid systematic data-driven evaluation of prevention initiatives that determine the effectiveness of the intervention in academic institutions (Eriksen et al., 2021). Consequently, the evaluation can help colleges and universities in choosing an effective preventive intervention program.

1.1.3 Bystander Intervention for Cultural Change

One approach that can be used in preventive intervention programs and can help to create and enact cultural change is bystander intervention. Bystander intervention is a popular intervention tool in promoting ethical bystander behaviour by involving all members of the community and encouraging them to intervene when they witness signs of sexual violence (Coker et al., 2011). This intervention beliefs that bystanders have the potential to make a positive cultural change in their community as bystanders adopt new and healthy social norms and disregards old attributes of their culture that support violence and harms individuals (Coker et al., 2011; Fenton & Mott, 2017).

There is a difference between being a (ethical) bystander and bystander behaviour. A bystander is someone who witnesses a problematic behaviour and doesn't do anything to change it. An ethical bystander on the other hand is someone who attempt to influence a situation that harms another individual in a positive manner, taking into consideration its own safety and wellbeing. Bystanders, can show bystander behaviour that involves going through the stages from inaction to possible action (Berkowitz, 2009).

1.1.4 Games as Tool for Bystander Intervention

Another type of approach that is interesting to consider in addressing cultural change and that can promote behavioural change in a playful and pleasant way, are games (Blumberg et al., 2013). Games provides opportunities for experiential learning, meaning that participants learn by engagement and reflection on the experience in the game. Studies show that games can be effective in acquiring the desired learning objectives (Girard et al., 2013). In addition, through game play students can gain additional motivation to participate in complex and social topics, such as sexual violence (Pho & Dinscore, 2015). While games can be a great intervention tool due to its many advantages, it seems that most people will think more about playing the game, then actually playing it (De La Hera et al., 2021). The reason for this might be that games are time consuming. Thereby, even if people play the game there is no guarantee that the game will generate learning processes and reach its learning outcomes as how it was intended. One reassuring thought, it that merely the existence of the game might be enough to make people think about a topic. Granted, for this primary effect of the game to happen, a social structure around the persuasive game involving time and attention needs to be put in place (De La Hera et al., 2021).

A systematic literature review has been conducted to find all games that have been developed for educational use to discuss sexual violence and gender inequality among young people. The systematic search and review of the games can be found in *Appendix G: Review of Educational Games.* From the Review a few things have become clear. The first is that not many games have been developed to promote a cultural change around sexual violence. Moreover, the ones that were found, only seven have been found to be evidence-based. Furthermore, out of the seven games, only three were aimed to promote ethical bystander behaviour. Next, only one out of seven evidence-based games, named "Can you fix it?" was developed in the Netherlands. However, this game which focusses on the interaction between young people between the ages 12 and 18 years, and not on students between 18 and 30 years old. From the systematic review it can be concluded that there is a need in Dutch academic institutions for an evidence-based educational game that focusses on students and promotes ethical bystander behaviour.

1.1.5 Game of Interest for Evidence-Based Evaluation

A game that is interesting to consider for encouraging bystander intervention is the persuasive game of Hoobroeckx et al. (2021), called "Boxing the Boxes". This game has initially been developed by students from TU Delft for high school students to raise awareness and address harmful gender norms that contribute to sexually transgressive behaviour. By posing a new dilemma with each card, the participants are encouraged to share their experiences in a small game group session, and to challenge currently accepted views and welcome new perspectives (Hoobroeckx et al., 2021). Moreover, the game provides an opportunity for critical reflection about the underlying gender norms, assumptions and expectations that support sexually transgressive behaviour, and encourages problem-solving by the community for the dilemma's they face in real life (Bantwana Initiative of World Education, 2018; Cranton, 1996; Bantwana Initiative of World Education, 2018). According to Girard et al. (2013) interventions that critically reflect on gender-norms are successful in reducing sexual violence. The overall end goal of the persuasive game is to stimulate healthy behaviour that will lead to a reduction in sexually transgressive behaviour in the student community (Hoobroeckx et al., 2021).

The persuasive game of Hoobroeckx et al. (2021) integrates transformative group learning by promoting an intergroup dialogue between female and male high school students. An intergroup dialogue is a "participatory and interactive discussion" between peers from different identity groups (Faloughi & Herman, 2020). Such a dialogue stimulates individual learning, encourages the emergence of collective knowledge, and can result in a collective understanding of the problem which can consequently contribute to a normative change within peer cultures (Eriksen et al., 2021; Making Learning Visible, 2005). Therefore, the game of Hoobroeckx et al. (2021) seems to be a promising tool for promoting cultural change and encouraging bystander intervention. Moreover, it has the potential to be used for Dutch universities after it has been redesigned. However, the effectiveness of the persuasive game has thus far not been systematically assessed. Thus, to measure the effectiveness of the game of Hoobroeckx et al. (2021) a research-based evaluation needs to be conducted.

1.2 Knowledge Gap and Research Questions

There is a need for evidence-based educational intervention tools for a cultural change in higher education to prevent sexually transgressive behaviour among students. Existing literature studies show that bystander intervention and games are promising approaches in promoting cultural change. However, only a few games have been found to be evidence-based and even fewer to address ethical bystander behaviour. Particularly in the Netherlands no evidence-based game has been found to promote bystander intervention. One game that was found promising in promoting cultural change with bystander intervention, is the persuasive game of Hoobroeckx et al. (2021). This game aims to encourage critical reflection about sexually transgressive behaviour by encouraging intergroup dialogue between female and male students through gameplay. Before conducting research-based evaluation of the game and measuring the effectiveness of an intergroup dialogue in encouraging bystander intervention, the game needs to be first redesigned to promote bystander intervention and to fit to the context of sexually transgressive behaviour among students in Dutch universities. This context can be provided by exploring the system of sexual violence. These two steps lead to the following research question:

Main Research Question (MRQ)

"How can a persuasive game promote intergroup dialogue between female and male students in Dutch universities in order to encourage bystander intervention in situations of sexually transgressive behaviour?"

Sub-Questions (SQ)
SQ1. How are bystander intervention, persuasive game, and intergroup dialogue defined?
SQ2. What are the processes and practices behind a persuasive game and intergroup dialogue that can lead to encouraging bystander intervention?
SQ3. Which situations of sexually transgressive behaviour fitted to the context of students can be derived from the system of sexual violence?
SQ4. How can a persuasive game be redesigned for university students to promote bystander intervention?
SQ5. How can the effectiveness of a persuasive game be systematically measured?
SQ6. What can be inferred from the measured effects about persuasive games as a means for bystander intervention in general?

The topic of this study is of high societal relevance as the risks and impact of sexual violence is high for a large part of the Dutch student community. In order to contribute to solutions of this societal complex problem, the objective of this study is focussed on conducting the first evaluation of a new developed persuasive game and providing the effectiveness of the persuasive game on promoting an intergroup dialogue to encourage bystander intervention in situations of sexually transgressive behaviour. The scientific contribution comes from uncovering game design choices that have the potential to affect the associated learning and outcome variables such as bystander behaviour. Moreover, different approaches and theories that are proposed and connected to capture the complex reality in the game, can lead to new insights contributing to the scientific community. The game will be reviewed as a potential educational tool in Dutch academic institutions. Based on the evaluation, policy recommendations can be designed for universities. Considering all the above, it can be concluded that this study is relevant for the Master Engineering and Policy Analysis (EPA) at TU Delft.

1.3   Research Approach & Study Design

To answer the main research question, the game design and experimental design research have been chosen to answer the main research question. Game design research can be used to redesign the game of Hoobroeckx et al. (2021), and experimental design research can be used to evaluate the redesigned game. In this section the use of the approaches and their advantages and disadvantages are discussed.

1.3.1   Game Research Design

Before research-based evaluation can be conducted, the prototype persuasive game of Hoobroeckx et al. (2021) needs to be first redesigned as the game is developed for high school students and not university students. Therefore, the focus of the game needs to be adapted. This can be done, by adapting the game cards to the context of the students. To understand what this context of sexual violence among students is, literature research will be first conducted in *Chapter 2.3 The System of*

Sexual Violence, after which the game can be redesigned in*.* The game can be modified using the steps of game design research of Duke (1980). According to Lankoski & Holopainen (2017) *"game design aims to solve a design problem of "how do we create this specific game?""*. Thus, game design research will help to create and evaluate a new persuasive game artefact (Lukosch et al., 2018).

1.3.2 Experimental Research Design

After redesigning the persuasive game, the game can be evaluated. Before evaluation can be conducted, the dependent variables need to be defined and their relationship with the persuasive game, intergroup dialogue and bystander intervention needs to be explained. This explanation is provided in *Chapter 2.1 Definition and Exploration of Concepts and Chapter* and *Chapter 2.2 Processes and Practices leading to Bystander Intervention.* Based on the literature review a conceptual model of the dependent outcome variables is created and used for the evaluation of the persuasive game *in Chapter 4 Method & Experimental Design.* In this study, research-based evaluation exists of a mixed-method research approach, case study research and interventional study design approach.

Mixed-Method Research Approach

Multiple methods can be used to conduct research-based evaluation. The use of multiple methods is called a mixed-method. This approach has been chosen to obtain more accurate findings by allowing the evaluation and analysis from multiple perspectives. In addition, the different viewpoints create the possibility for a more in-depth explanation of the research question. A challenge of this approach however is the level of difficulty to replicate the findings, especially for qualitative research. Replication is important for scientific research (Jick, 2015). While this is a research limitation, triangulation can nevertheless contribute to important findings and insights.

To collect and interpret the data, the 'between-methods' strategy of the triangulation approach, will be used to get an external validation and a more certain conclusion of the effectiveness of the persuasive game. Here, different methods are used to compare the results, which enhances the belief that the variances found between the results are derived from the system of interest and not from the method used (Jick, 2015). Data will be obtained from fieldwork experiments and surveys that will be send out to participants before and after experimentation. The surveys allow for quantitative research, which complements and enhances the generalization of the qualitative results derived from the empirical experiments. Thereby, the quantitative approach diminishes bias from the fieldwork observers. Conversely, a qualitative method provides meaning to the statistics derived from the surveys, clarifies variances, and allows for validation of the quantitative results (Jick, 2015).

Case Study Research Approach

According to the paper of Hollweck (2018) *"case study research has a functional and legitimate role in doing evaluations".* Therefore, case study research has been chosen to help generate a valid and testable theory of the effect of the persuasive game on bystander intervention. The theory can be tested and generated by conducting empirical tests with students from TU Delft. There is a great possibility for case study research to generate new theory with less researcher bias than when theory is built from literature studies. However, a disadvantage is that theory building from case study research might quickly become too complex, detailed and narrow, due to the amount of intensive use of empirical data. A good theory is usually simple and can be generalised. Therefore, a challenge in using case study research will be to make sense of the rich data and to assess what the most important relationships in the findings are (Eisenhardt, 2015).

Interventional Study Design Approach

For the evaluation of the persuasive game in TU Delft, the persuasive game will be introduced and played by a small group of students. This interference in the student community can be seen as part of interventional studies (Aggarwal & Ranganathan, 2019). By using an intervention study design the effect of the persuasive game on bystander intervention among students in Dutch universities can be assessed. To determine the effect of the persuasive game, a change in the dependent outcome variables can be measured with a pre-and post-survey, before and after the intervention. However, with this approach the change in the outcome variables cannot be reliably attributed to the persuasive game. Therefore, a randomized-controlled trial approach can be used to strengthen the design (Aggarwal & Ranganathan, 2019).

In a randomized controlled trial, a group of participants is randomly assigned into two separate groups: the experimental group that receives the intervention, and the control group that doesn't doesn't. The effect of the persuasive game is then determined by comparing not only the pre-and post-surveys, but also the experimental and control group. For the inference about the effect to be reliable and strong, the environmental factor across the groups needs to be similar. This can be quite a challenging, as no influence can be exerted on the participants outside of the experiments and the surveys (Aggarwal & Ranganathan, 2019). Moreover, for a randomized controlled trial to strengthen the research, randomization of the participants to either of the two groups is required. This requirement might not be fully fulfilled, as for the experiments the persuasive game will be played in a gender-mixed group. This gender-mixed group might need to be realized in a non-randomized way. Especially if there will be not enough players from one gender identity group.

1.4   Report Structure & Flowchart

The report is structured into seven parts. *Chapter 1. Introduction* analysis the problem of sexual violence and introduces persuasive games as a potential preventive intervention tool in higher education for promoting cultural change and bystander intervention. This chapter is followed by *Chapter 2. Literature Review* that explores the concepts of persuasive game, intergroup dialogue and bystander intervention and their interrelations. Furthermore, this chapter explores the context of sexually transgressive behavior among students in the Netherlands. Based on the literature review which is part of the preparation phase, the persuasive game of Hoobroeckx et al. (2021) is redesigned in *Chapter 3 Re-design* of the Persuasive Game to change the focus to university students. Next, in *Chapter 4 Experimental Design* the method and experimental design for the evaluation of the persuasive game is described. The data collected from *Chapter 4 Method & Experimental Design* will be analysed and reported in *Chapter 5. Results*. These results are interpreted and discussed in *Chapter 6. Discussion, Limitations & Future work* which also discusses the implications of this study, strengths, and limitations. Finally, in *Chapter 7. Conclusion* a summary of the research findings is outlined, and the conclusion of the overall research is provided.
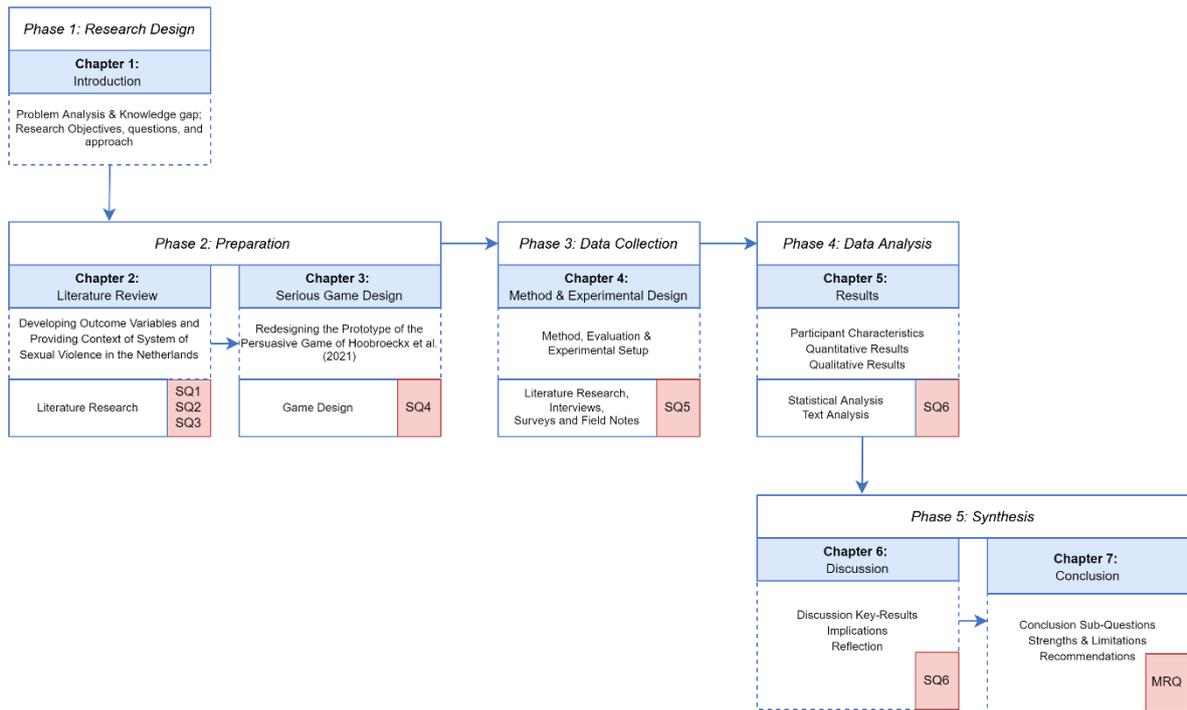
Figure 1 | Flow Chart of Report Structure

2

LITERATURE REVIEW

This chapter aims to establish the theoretical framework with literature research that will be used as input for the game and evaluation design. To answer SQ1, SQ2 and SQ3 this chapter is divided in three sections accordingly. First, to answer SQ1, literature research is conducted to explore and define the concepts 'bystander intervention', 'persuasive games' and 'intergroup dialogue' and their effects. Second, in answering SQ2 the processes of a persuasive game and intergroup dialogue are discussed to help understand how these components can encourage bystander intervention. For this sub-question two questions are posed. The first question is "How does a persuasive game *promote intergroup dialogue*?", and the second "How do persuasive games and intergroup dialogue *encourage bystander intervention*?". Third and final, to address SQ3 the system of sexual violence is explored and decomposed to be able to identify situations of sexually transgressive behaviour. A summary of the findings is provided at the end of each section and will be used as input for the game and experimental design.

Figure 2 provides a conceptual model of the outline of this chapter and will be used to navigate through this chapter to answer SQ1, SQ2 and SQ3. The outer layer of Figure 2 represents the framework of this study, with the three building components persuasive games, intergroup dialogue, and bystander intervention which also represent bystander behaviour. The concepts of these components will be explained for SQ1. Moreover, the framework represents the questions that belong to SQ2. The inner layer of the triangle represents the content of these components and is used to guide the section discussing SQ3.
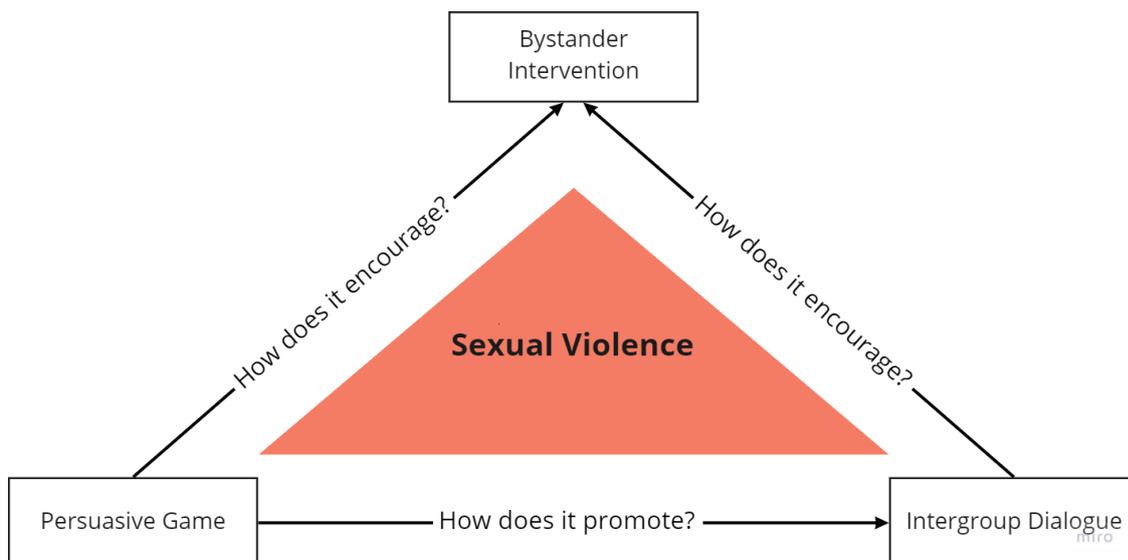
Figure 2 | Conceptual Model as Guideline for Literature Review Chapter

2.1 Definition and Exploration of Concepts

In answering SQ1, the concepts of the building components of the pyramid in Figure 3 are examined. First, the component 'bystander intervention' and its effects will be discussed. Second, the category of the game of Hoobroeckx et al. (2021) is discussed in order to understand its potential effects and limitations. Last, the intergroup dialogue, an important approach from the respective persuasive game, is explored. Figure 3 shows the focus of this section.
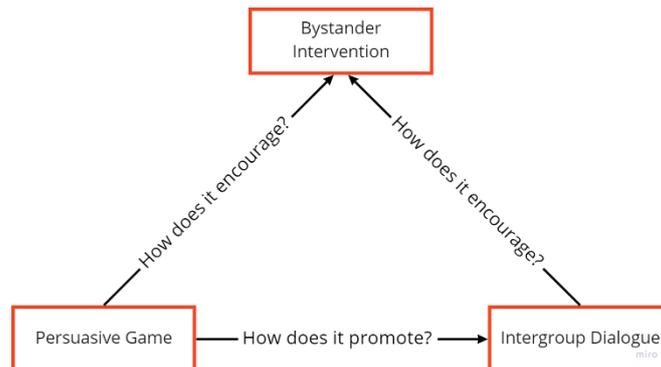
Figure 3 | Conceptual Model Literature - Focus on Concepts

2.1.1 Bystander Intervention

Previously, most sexual violence intervention programs focussed on potential victims or perpetrators. However, there is a third actor who can help to prevent sexual misconduct, the bystanders. The bystanders are the ones that are present in high-risk situations of sexual violence and who have the potential to help the victim by intervening in the situation or making the situation worse by ignoring the event or supporting the perpetrator. The focus on bystanders in intervention programmes, is called the bystander intervention (McMahon & Banyard, 2012).

There are multiple reasons for focussing on bystanders in intervention. The first is that sexual violence normally occurs once and is usually more prevalent in social settings on campus. Because of the campus culture these acts of sexual violence or the situations that promote it go unnoticed (McMahon & Banyard, 2012). If bystanders get more sensitive to these situations, they can become active and responsible peers who can intervene in these situations. Similarly, it has been found that bystanders are present in one third of the sexual assaults cases, but that they only intervene in a third of the time (Labhardt et al., 2017). With bystander intervention these numbers could increase. Moreover, bystander intervention has the benefit over traditional interventions that it encourages members of the community as potential allies, instead of as potential victims or perpetrators, which makes the intervention program less daunting, personal and offensive. With bystander intervention students are treated as part of the solution rather than as part of the problem, which weakens the defensive mechanism and prevents backlash (e.g. increased victim blaming) of the participants (Kettrey et al., 2019).

There is no consistent evidence that bystander intervention brings sexual violence rates down (Kettrey et al., 2019). However, past research has shown that bystander intervention programmes can change bystander behaviour, attitudes and knowledge of female and male students, and can

also lower rape myth acceptance (Coker et al., 2011; Mujal et al., 2021). These changes can contribute to a cultural change. As defined by Lonsway & Fitzgerald (1994) rape myth acceptance is about *"attitudes and beliefs that are generally false but are widely and persistently held, and that serve to deny and justify male sexual aggression against women"*. Acceptance of rape myth was found to be a barrier in bystander intervention. This is because if the bystander doesn't believe in the innocence or worth of the victim, the bystander might feel less responsible (McMahon & Banyard, 2012).

An effective bystander intervention program increases the knowledge and awareness about sexual violence and its prevalence, helps participants to recognize signs and risky situations of sexual violence, stimulates responsibility, and teaches bystander skills to intervene safely and with confidence (Labhardt et al., 2017; Coker et al., 2019). A lack of responsibility, poor bystander skills and concerns about social acceptability hinder bystander intervention among university students (Yule & Grych, 2017; Bennett et al., 2014). A new and promising approach to increase the level of responsibility, are intervention programmes that aim to increase the perception of participants to actively intervene in high-risk situations to reduce sexual violence by changing the social norms (Bennett et al., 2014).

2.1.2   Persuasive Games

In order to understand how persuasive games can promote intergroup dialogue and encourage bystander intervention, it is first important to understand what persuasive games are and why the game of Hoobroeckx et al. (2021) is categorized as such a game. Therefore in this section, first different types of games are introduced, after which the type of game of Hoobroeckx et al. (2021) is discussed. This section ends with a small critical reflection paragraph on persuasive games.

Types of Games
Games that are not primarily developed to entertain can be categorized by the intention of the creator (Trépanier-jobin, 2016). This categorization can help with determining and understanding the purpose of the game. Trépanier-jobin (2016) describes the differences and similarities of three types of games that have other purposes next to entertainment. These games are categorized as serious games, persuasive games and expressive games.

Serious games have a specific educational purpose and are thus not only meant to be amusing (Trépanier-jobin, 2016). According to Arsenault (2011) these games are developed with a fixed set of institutional goals and with the intention to either teach, train, or inform. Persuasive games on the other hand do not have an institutional goal but are rather developed to persuade or influence players about their attitudes, beliefs or behaviour by either argumentation or providing information (Yusoff & Kamsin, 2015). According to Bogost (2007) there are two types of persuasive games. Persuasive games that aim to persuade the player towards a specific end message or persuasive games that aim to transfer ideas and information without a specific end message in mind. Serious games that are also persuasive fall under the first category and aim to persuade the player of the worldview of the institution. While Trépanier-jobin (2016) does acknowledge that "a lot of serious games are persuasive, not all persuasive games are serious".

By the definition of Trépanier-jobin (2016) expressive games can be defined as games *that "explore cultural, social and psychological issues through an individual's perspective, in order to foster empathy, encourage reflection, and raise questions, while entertaining"*. Furthermore, Genvo (2016) mentions that expressive games are meant to confront the player with difficult questions and

dilemmas, making them sensitive to certain issues, but that they are not meant to persuade the player of a specific worldview, attitude or behaviour, or to reach a specific educational goal. Expressive games are not meant to give or steer the player to the 'correct' answer of a certain situation. Rather, the game is meant for the player to reflect on their choices and to think about the serious topic the game portrays in order to contribute to societal debates (Genvo, 2016).

Persuasive Games as Intervention

The category of the game "Boxing the Boxes" of Hoobroeckx et al. (2021) can be determined by reflecting on the intention or purpose behind the serious game. In *1.1.5. Game of Interest for Evidence-Based Evaluation* the purpose of "Boxing the Boxes" is stated as "to raise awareness and address harmful gender norms that contribute to sexually transgressive behaviour". It can be argued that this game is persuasive as the intention of its creator(s) is to persuade the players to change its attitudes and behaviour in order to reduce sexually transgressive behaviour. However, the game itself aims to encourage students to think and critically reflect on the issues at hand without giving predetermined ideas of what is right and wrong. Therefore, it can be argued that the game itself fits better within the category of expressive games. Nonetheless, it must be acknowledged that the overall goal of the game does aim to persuade the participants to change their attitudes and behaviour. This is for example done by encouraging critical reflection through game play in order to break down harmful gender norms. Critical reflection can therefore be seen as a means to influence the behaviour of the participants. Lastly, for this study the game will be redesigned to fit to the context of students and to encourage bystander intervention. Therefore, the game will have a predetermined end message in mind, which is become an ethical bystander. The persuasive game of Hoobroeckx et al. (2021) will then also become a serious game.

Critical Reflection on Persuasive Games

Persuasive games can help to represent and embrace the complex socio-political systems of the world and can through rhetoric tell others how these systems should look like or work. Rhetoric arises from processes, behaviours and models in the persuasive game, which can therefore be categorized as procedural rhetoric (Bogost, 2007). However, it seems that for the realization of the vision of the persuasive game it isn't enough to have a persuasive game that works. The social processes around the persuasive game are just, if not more important. These processes include time and attention the game receives from the media environment (De La Hera et al., 2021). Emotion and novelty play here an important part, as they generate interest in the persuasive game. Therefore, the success and value of a persuasive game is not only determined by whether or not it facilitates a vision of the complex system through procedural rhetoric, but from the idea of that promise (De La Hera et al., 2021). Thus, merely the existence of a persuasive game can already have a primary rhetoric effect on the environment, which can be greater than when playing the game. Thereby, more people think about playing the game, than actually playing it. Even if people play it, the game can have a different rhetoric effect than was initially intended (De La Hera et al., 2021). Therefore, it's good to keep in mind that attention should not be only limited to the practice and effectiveness of the persuasive game, but to the narrative and attention around it.

2.1.3 Intergroup Dialogue

An important approach from the persuasive game of Hoobroeckx et al. (2021) is promoting intergroup dialogue. An intergroup dialogue (IGD) is an interactive and student-centred approach that brings peers from different identity groups, such as gender identities, together in a facilitated and supported face-to-face environment for participatory learning about societal inequalities in the community (Faloughi & Herman, 2020). Participatory learning is an approach to actively involve participants in their learning process to learn about and engage with their environment (Intrac, 2017). It encourages learning by doing by using small groups, open questioning, and peer teaching. In the game of Hoobroeckx et al. (2021) this happens for example by posing a dilemma with each new card in a small group session. In a structured environment an intergroup dialogue increases awareness by encouraging critical reflection on group identities and societal inequalities, and perspective -taking of 'the other group'. Furthermore, IGD encourages participants to develop personal and social responsibility to address the issues in their community and build a fairer society (Nagda et al., 2009; 2012). By involving participants in a sustained dialogue they also learn how intergroup conflict manifests in their own relationships outside of the dialogue environment and thereby find new ways of developing intergroup collaboration to address these issues in constructive manner (Nagda et al., 2012).

Critical-dialogue communication processes characterise intergroup dialogues and help participants cope with differences and conflict in intergroup contact (Nagda et al., 2012). Dialogical communication processes exist of 'appreciating difference' and 'engaging self', and critical communication processes of 'critical reflection' and 'alliance building' (Zuniga et al., 2007b). Research conducted by Nagda et al. (2009) found that via these communication processes intergroup dialogues can lead to intergroup understanding, relationships, and collaboration (see Figure 4). Intergroup understanding is developed by IGD as students gain awareness and understanding of structural inequalities. Moreover, they found that dialogue increases positive intergroup relationships as it helps to develop empathy and motivates students to build relationship despite differences or conflicts. Lastly, (Nagda et al., 2009) found that intergroup collaborations are strengthened due to increased confidence, individual and collective responsibility, and capacity for taking action. After the dialogues, participants indicated higher levels of responsibility for educating themselves about group biases, challenged others in their diminishing comments towards the other group, and participated in coalitions to tackle discrimination and social injustices in their community (Zuniga et al., 2007; Nagda et al., 2009).
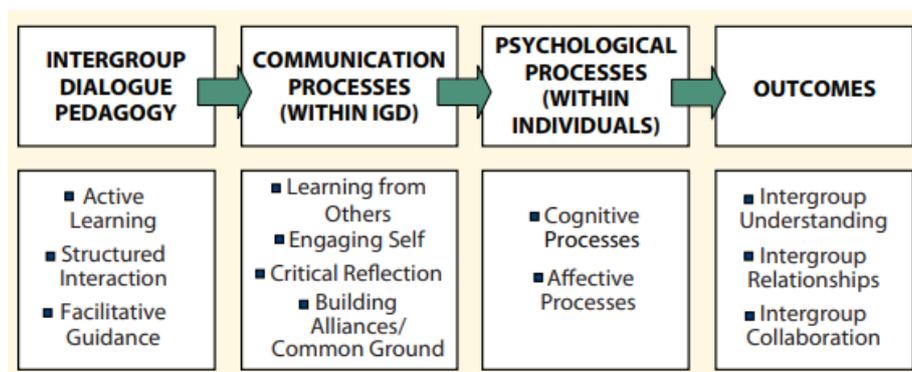
Figure 4 | Theoretical Framework of Intergroup Dialogues
Note. This figure is copied from "Evaluating intergroup dialogue: Engaging diversity for personal and social responsibility", by Nagda, A. et al., 2009, *Association of American Colleges & Universities, 12*(1), p. 5.

2.1.4   Conclusion Definition and Exploration of Concepts

It was found that bystander intervention programs can address students as potential allies in reducing sexually transgressive behaviour in the student community. This approach is less personal and offensive, but instead treats people as part of the solution rather than the problem. While bystander intervention programs have not been proven to bring down sexual violence rates, effective programs were found to encourage ethical bystander behaviour, attitudes and knowledge of participants, and can in addition also lower rape myth acceptance. After the exploration of different categories of games, the game of Hoobroeckx et al. (2021) was categorizes as a persuasive and serious game. The goal of this study, and of the game after it is redesigned, is to persuade players to become ethical bystanders. Because of the predetermined goal of the game, the game can also be named a 'serious game'. The game of Hoobroeckx et al. (2021) aims influence behaviour and attitudes by encouraging critical reflection between people from different identity groups. This approach is called intergroup dialogue. It was found that an intergroup dialogue can stimulate participants to learn and engage with the community, can increase awareness through critical reflection, can encourage participants to take personal and social responsibility, and lastly can help to develop intergroup collaboration to tackle social issues in constructive manner.

2.2   Processes and Practices leading to Bystander Intervention

In this section, the relationship between a persuasive game and an intergroup dialogue is explored and consequently an elaboration is provided on how a persuasive game can be organized to encourage an intergroup dialogue. This exploration and elaboration of the relationship between bystander intervention, persuasive games and intergroup dialogue addresses the two additional questions of SQ2: "How does a persuasive game *promote intergroup dialogue*" and "how do a persuasive game and intergroup dialogue *encourage bystander intervention*". Figure 5 and Figure 6 show which part of the conceptual model is addressed to help answer SQ2.

2.2.1   Promoting Intergroup Dialogue

After establishing the concepts of the building components of the pyramid in Figure 5, the relationship between persuasive games and intergroup dialogue can be explored. First, theories are sought that help to explain how an intergroup dialogue can be organized. Second, insight is provided into how the persuasive game of Hoobroeckx et al. (2021) can encourage an intergroup dialogue. Lastly, based on the insights gained by the first two paragraphs, the third paragraph is focussed on how a safe space can be created, providing further elaboration on how a qualitative intergroup dialogue can be realized.
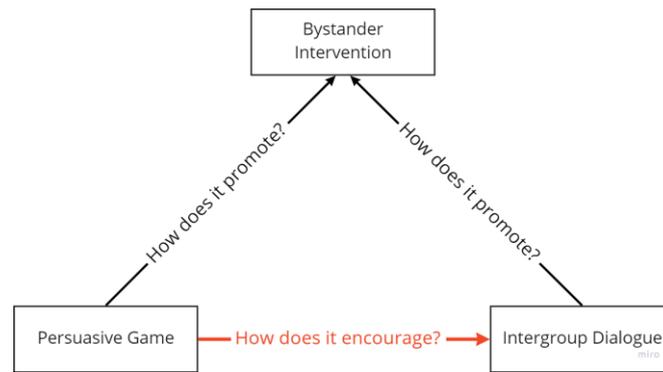
Figure 5 | Conceptual Model Literature – Encouraging an Intergroup Dialogue

Organizing Intergroup Dialogues

Nagda et al. (2012) mentions three pedagogical characteristics that mark and stimulate intergroup dialogue. First, content learning, such as posing questions can stimulate participatory engagement and promote critical reflection, analysis and dialogue. By going around with questions, participation by all participants can be further encouraged (Zuniga et al., 2007b). Second, a structured interaction through the implementation of guidelines for positive and respectful interaction, including conflict-resolution, can be put in place. In addition, structured activities and small groups with an equal number of members from either group identities can foster engagement and learning. Lastly, facilitated learning environments with two co-facilitators, one from each identity group, in this study based on gender, are needed to guide and support the communication process of participants (Nagda et al., 2009; 2012).

It is important to have an equal number of women and men in the group. Research has found that men tend to talk more in a classroom or meeting than women and that they more frequently interrupt women than other men (Sadker & Sadker, 1986). Women enhance this problem as they typically don't resist, but instead withdraw, ask questions and make encouraging remarks. They also tend to interrupt other women more often. There is a double standard that women are looked down upon when they talk more in meetings, whereas men exert themselves as leaders when they do. In addition, men are more likely to be taken seriously and to have a greater influence on the group discussion than women do (Sadker & Sadker, 1986; Graffer et al., 2019). Therefore, Graffer et al. (2019) suggests to consciously make an effort for diversity in the group and considering including more women in the meeting.

Having gender-mixed facilitators in a gender-mixed group has four benefits. First, research shows that female and male participants tend to feel more comfortable or safe to have an honest and open conversation in a single-gender group (Flood, 2006; The Roestone Collective, 2014). Thus, having a facilitator as representative might help to make the participants more comfortable. Second, in addition to what has been previously mentioned, a male facilitator might be viewed as a more credible source by other men present and is taken more seriously when speaking about similar topics (Berkowitz, 2004; Flood, 2006). Third, having a male facilitator next to a female facilitator also shows that men need to take responsibility and contribute to reduce sexual violence. Lastly, mixed gender facilitators also demonstrate an equal partnership and an interest of both genders in reducing sexual violence (Flood, 2006).

Encouraging Intergroup Dialogue with a Persuasive Game

One of the most important game mechanisms of the prototype of "Boxing the Boxes" is posing difficult questions about scenarios and statements, which are written on the cards. These questions are meant to raise a dialogue between different types of students from different cultural and educational backgrounds, who might not know each other. Encouraging a meaningful dialogue between strangers and different group identities with different power levels and statuses in society, however, is quite challenging, as people base their perceptions and interpretations of others on socially biased information. Dialogues about sensitive topics such as sexual violence are especially difficult, as the topic is complex and participants may experience strong emotional reactions to the topic and each other. In addition, a multicultural group adds to the difficulty of a dialogue, as there might be a cultural discrepancy in the interpretation of behaviour and language, and what is or is not appropriate to share or how to behave (Holley & Steiner, 2013). However, a diverse group also has its benefits, as it contributes to a more critical dialogue and in this way helps to expand the worldviews of the participants. It is therefore important to ensure a safe space, in which people feel invited and safe enough to share their perspectives and experiences with others (Zuniga & Nagda, 2001). This was also mentioned in the previous paragraph, stating that an intergroup dialogue can be stimulated if the dialogue is structured through the implementation of guidelines for positive and respectful interaction, which can consequently create a safe space for interaction and can contribute to understanding and social change (DeTurk, 2007).

Creating a Safe Space

Safe spaces are environments that allow for open and honest conversations as participants feel safe enough taking risks to express themselves, make mistakes, and to explore their own way of thinking and behaving (Holley & Steiner, 2013). Physical safety is a pre-requirement for safe spaces, but they also need to offer psychological and emotional safety. This means that safe spaces encourage students to take the risk of exposing themselves in order to grow, while minimizing the risk of social penalties such as embarrassment or mockery (Holley & Steiner, 2013). This does not mean that safe spaces are free from conflict or discomfort. To quote (Gayle et al., 2013) *"The absence of conflict in a classroom may mistakenly be viewed as a safe classroom when in fact its absence may only further ignorance and stifle ideas and critical thinking"*. Therefore, in order to learn and grow participants often have to get outside of their comfort zone to address their own biases and deep-rooted worldviews (Holley & Steiner, 2013).This way, safe spaces can promote understanding and learning in difficult dialogues. It is up to the instructor how to address this paradox to the participants and manage conflict in the group (Gayle et al., 2013).

Holley & Steiner (2013) found several components in their research that contribute to a safe space and which are dependent on the characteristics of the instructor, peers, the individual itself, and the physical environment. Here, the most important characteristics will be mentioned. To contribute to a safe space as an instructor it is important to be open, unbiased, and non-judgemental. In addition, it is important for the instructor to develop and discuss ethical guidelines or ground rules with the participants. Moreover, the instructor should be comfortable with conflict or raising controversial ideas, be respectful/supportive of others' opinions, encourage class participation, and be friendly. Furthermore, participants might feel safer, when the instructor is well informed, challenges participants by posing questions, shares personal information, and is laid back, flexible, calm, and comfortable (Holley & Steiner, 2013).

Peers that contribute to a safe environment are described as people that have good discussion skills, such as being respectful, listening, and following the ground rules. In addition, they honestly share

thoughts, ideas, opinions, and facts; are non-judgemental and open to new ideas or perspectives; and have a sense of community, meaning that they are friendly, supportive and trustworthy. The most important characteristics for the individual participants are open-mindedness; sharing honest ideas, views, and values; actively participating in the discussions; and being respectful towards the others. Lastly, the physical environment can contribute to a safe space by arranging the seating in such a manner that participants can see everyone. In addition, rooms that are fitting to the number of participants and have good lighting are important as well (Holley & Steiner, 2013). While many components and characteristics contribute to a safe space, Holley & Steiner (2013) found that participants place most of the responsibility to create a safe space on the instructor. If safe spaces are created successfully, participants will learn about others, expand their worldviews, and find an increased sense of self-awareness.

2.2.2 Encouraging Bystander Intervention

As mentioned in section *2.1.3 Intergroup Dialogue*, an intergroup dialogue is characterised by communication processes. Therefore, to understand how intergroup dialogue and persuasive games can promote bystander intervention, the health communication model of D. Kincaid et al. (2012) is discussed. This discussion is followed by providing an explanation for the two underlying theories of this communication model: the socio-ecological framework theory, and behavioural theories. In the final paragraph the insights of the theories are combined and used to explain how persuasive games and intergroup dialogues can promote bystander intervention. Additionally, from these theories the outcome variables for this study can be determined. Figure 6 illustrates the topic of this section, by emphasizing the relationship between persuasive games and intergroup dialogues with bystander intervention.
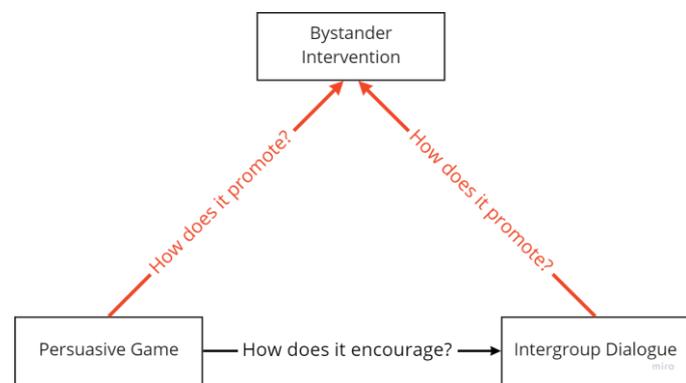
Figure 6 | Conceptual Model Literature - Promoting Bystander Behaviour

Health Communication Model
The theory-based socio-ecological communication model of D. Kincaid et al. (2012) in Figure 7 can be used to understand how communication through dialogue and entertainment can indirectly influence the bystander behaviour of participants through its effect on the ideational factors in order to reduce sexual violence among students. Health communication is defined by Schiavo (2007) as:

"a multifaceted and multidisciplinary approach to reach different audiences and share health-related information with the goal of influencing, engaging, and supporting individuals, communities, health professionals, special groups, policymakers and the public to champion, introduce, adopt, or sustain a behaviour, practice, or policy that will ultimately improve health outcomes".

Reducing sexual violence can be viewed in the model as a desired public health outcome. This is because sexual violence is seen as a serious public health problem, as it can negatively affect the physical, emotional and social well-being of an individual (Barker, Gary; Ricardo, Christine; Nascimento, 2007). Communication that is used to influence health outcomes is labelled as health communication. The model of health communication can be used to predict and analyse behaviour for the purpose of designing effective communication interventions (D. L. Kincaid, 2000). In this study the model of health communication can be used to predict the effect of intergroup dialogues encouraged by persuasive games on bystander behaviour.
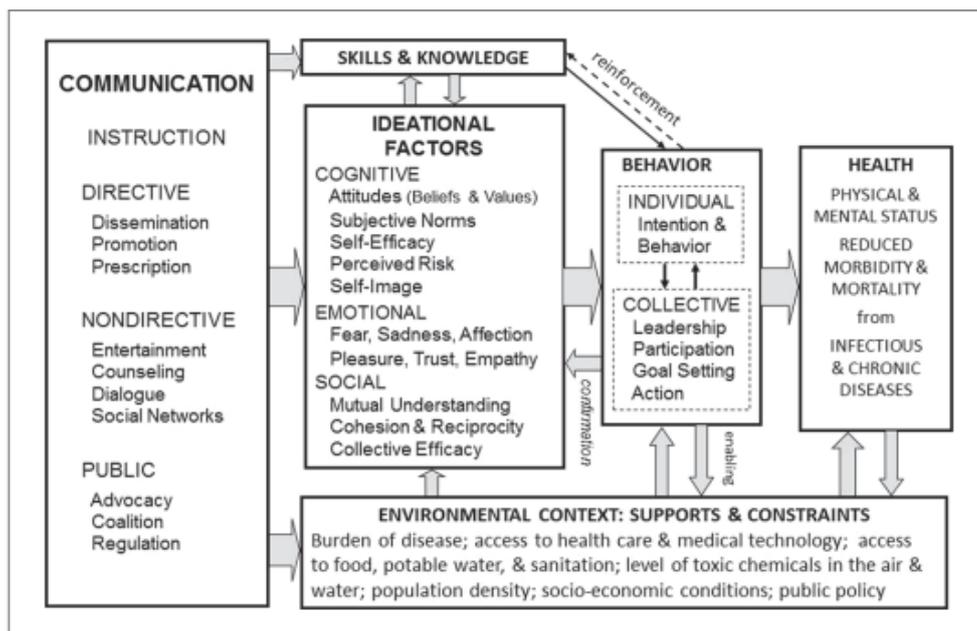
Figure 7 | Health Communication Model for Behavioural Change.
Note. This figure is copied from "Advances in Theory-Driven Design and Evaluation of Health Communication Campaigns: Closing the Gap in Practice and Theory", by Kincaid, DL. et al., 2012, p. 308, Sage.

Social Ecological Framework Theory

The health communication model in Figure 7 summarizes multiple communication, social and behavioural change theories and shows how they are interrelated. One of these theories is the social ecological theory of communication and behaviour change, that is represented from top-to-bottom in the health communication model (D. L. Kincaid & Figueroa, 2007). The theory of social ecology uses a systems approach that explains how complex adaptive systems exists of interconnected levels that influence each other and their environment. The interconnection of these levels means that change in one level will affect change in the other levels. As independent agents interact with each other or their environment, they learn from these interactions and change their behaviour accordingly. These interactions can lead to the emergence of structure or patterns that feedback into and influence the rest of the system. The systems approach can help to explain how our complex and adaptive societal system can influence sexual violence through social and behavioural change (D. L. Kincaid & Figueroa, 2007; Brome et al., 2004).

Interventions that only focus on the individual level of the system have been found to be ineffective, as they don't pay attention to the influence of other system levels, such as the social networks, communities or institutions. If there is no or little support for change higher up in the system, individuals might face resistance which may make behavioural change more difficult regardless of

one's motivation (D. L. Kincaid & Figueroa, 2007). The social ecological framework shows how systems levels higher up may either facilitate or slow down change. Therefore, it is suggested that interventions are more successful when they address multiple systems levels, if not all (D. L. Kincaid & Figueroa, 2007).

The social ecological framework helps to explain how the persuasive game 'Boxing the Boxes' attempts cultural change on campus. By encouraging a dialogue between students, discussions that emerge from the game might encourage and influence the behaviour of the individual that are playing respectively. Outside of this game, the individual students might share their newfound insights and perspectives with others. In addition, as the behaviours of these students change, their interaction with their environment might also change. Consequently, this individual might influence others in their environment either consciously or unconsciously as well, leading to a change in their social networks and their community at large, which in turn might contribute to a cultural change in the society. Thus, the serious game "Boxing the Boxes" targets the individual, the peer group and the community. It can therefore be said that the game strengthens prevention through this multi-level socio-ecological approach. As more time is required to research the effect of the game on the higher order system levels, the scope of this study is limited to the individual level.
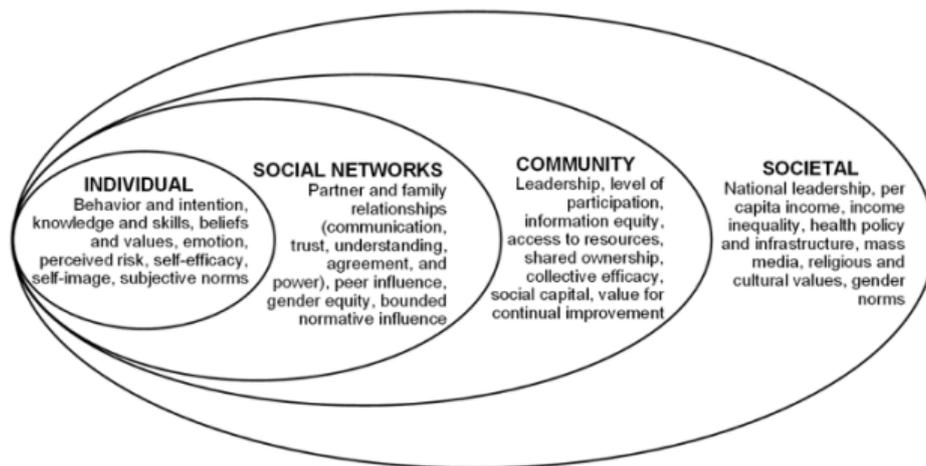
Figure 8 | The Socio-Ecological Model of Communication and Behaviour Change
Note. This figure is copied from "A Socio-Ecological Model of Communication for Social and Behavioral Change ", by Kincaid, D. et al., 2020, *Breakthrough*, p.2.

Behavioural Change Theories

Another theory that is represented in the health communication model is the theory of planned behaviour of Ajzen (1991) shown in Figure 10. This theory implies the causal relationship from left to right in the health communication model in Figure 7. The behavioural theory of Ajzen (1991) helps to understand how behaviour that is performed out of free will can be predicted by the intention of the individual. Intention on its turn is influenced by perceived behavioural control (or self-efficacy), subjective norms or perceived social pressure, and attitudes toward the behaviour, which also influence each other.

The theory of planned behaviour is also used to develop the Prototype-Willingness Model shown in Figure 9. According to Gerrard et al. (2008) there are two types of decision-making that affect health behaviour: behavioural intention (BI) and behavioural willingness (BW). Behavioural intention is part of the theory of planned behaviour as described by Ajzen (1991), and is a deliberate effort that involves analytical processes to plan or perform a behaviour. Behavioural intention is often used to predict behaviour. However, not all behaviour is planned or reasoned, but can alternatively be an

unintended reaction, or an openness to engage with the situation at hand given the opportunity (Gerrard et al., 2008). This openness to engage is also called behavioural willingness. Research shows that while behavioural intention is highly correlated with behavioural willingness, both are independent predictors of behaviour (Pomery et al., 2009a). If an individual has relatively little experience with engaging in a behavioural opportunity, there is little chance they might plan or intend to perform a behaviour beforehand. However, this individual might already have an idea on how they would like to behave in a particular situation if the opportunity arises. Behavioural willingness in this case might therefore be a better predictor of future behaviour, than behavioural intention. Likewise, if the individual has more experience, behavioural intention is a better predictor (Pomery et al., 2009a).

It is not known how many students in the Netherland have experience with bystander intervention and to what degree. While students might have some experience with intervening in situations of sexually transgressive behaviour, for this study participants don't need to have personal experience to be able to participate in the game. Therefore, the willingness to intervene might be a better indicator for behavioural change, than the intention to intervene, as little experience is required. In addition, research found that a change in behavioural intention is weak when social circumstances and social image are relevant to the decisions of the individual to intervene or not (Pomery et al., 2009b). The behaviours in these situations are normally not planned or intended but are a reaction to the social environment, according to Pomery et al. (2009b). Intervening in situations of sexually transgressive behaviour might have a social and physical risk. Next to the possibility that people involved in the transgression might become aggressive, the intervention of the bystander might also be disapproved others present. Thus, intervening might come at the costs of the bystanders' social image and social acceptance, and so depending on the social context an individual might choose to intervene or not (Yule & Grych, 2017). This is another reason for why behavioural willingness might be a better indicator for behavioural change, than behavioural intention in this study. The final reason for why behavioural willingness is of interest to research and not bystander behaviour, is because long-term evaluation is needed to measure behavioural change, as this is a process that can take some time (Jozkowski & Ekbia, 2015). This study evaluates the persuasive game on a short-term, which is deemed not enough to measure differences in bystander behaviour after intervention. This is an added reason for why behavioural willingness is taken as indicator for bystander behaviour.
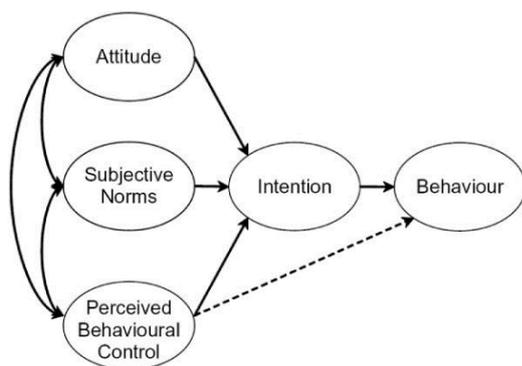
Figure 10 | Theory of Planned Behaviour.
Note. This figure is from "The theory of planned behaviour", by Azjen, I., 1991, Organizational Behaviour and Human Decision Processes, 50(2), p. 179–211 (https://doi.org/10.1016/0749-5978(91)90020-T).

Figure 9 | The prototype Willingness Model.
Note. This figure is from "A dual-process approach to health risk decision making: The prototype willingness model", by Gerrard, M. et al.,2008, Developmental Review, 28, p. 29–61 (https://doi.org/10.1016/j.dr.2007.10.001).

Promoting Bystander Behaviour

Taking the theories about the effects of persuasive games, intergroup dialogue and bystander intervention, together with the relationships between these components, a new framework can be developed. The new conceptual health communication model for promoting bystander behaviour is visualized in Figure 11. Underlying theories of this new framework are the health communication of D. Kincaid et al. (2012) in Figure 7 and its respective theories mentioned in the previous paragraphs. The model of D. Kincaid et al. (2012) is represented from left to right. Entertainment and dialogue - respectively persuasive games and intergroup dialogue in the new model – causally affects the ideational factor attitudes (i.e. attitudes and beliefs), which consequently influence behaviour and can lead to the desired health outcome.

in Figure 12 the ideational factor attitudes are represented by rape myth acceptance, which in this study have been named sexual violence myth acceptance, and bystander attitudes. Research has proven that reduced rape myth acceptance is an important barrier to bystander intervention (McMahon & Banyard, 2012). Bystander attitudes exists of awareness and responsibility (Banyard et al., 2014). Lower rape myth acceptance and greater perceived responsibility have been linked to greater willingness to intervene in situations of sexual violence (Bennett et al., 2014). Furthermore, awareness was found to be an important factor for ethical bystander behaviour (Labhardt et al., 2017; Coker et al., 2019). Bystander skills were also found to be important, and a lack of it can hinder bystander behaviour. However, as mentioned in *section 2.1.2. Persuasive Games*, the game of Hoobroeckx et al. (2021) is a persuasive game, that aims to reduce sexual violence by encouraging intergroup dialogue between students. It is not a serious game that aims to teach a skill. Therefore, bystander skills are not included in this study. Furthermore, behavioural willingness (i.e. willingness to intervene), is used as an indicator for behavioural change to promote bystander behaviour, as mentioned in the previous paragraphs. The overall goal of promoting bystander behaviour is to reduce sexual violence among students.
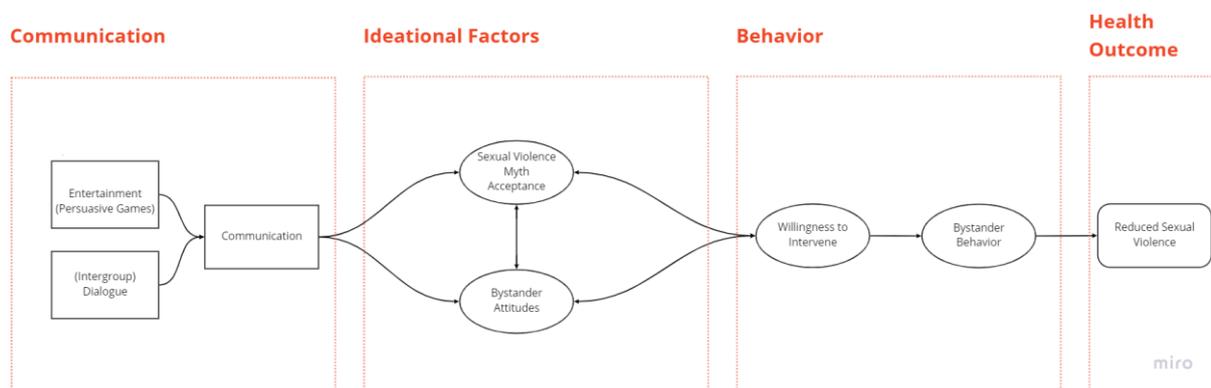
Figure 11 | New Conceptual Health Communication Model for Promoting Bystander Behaviour

Independent, Dependent and Mediator Variables

To measure the effectiveness of the persuasive game and an intergroup dialogue and to contribute to the answer on the main question, a conceptual model of the independent, dependent and mediator variables is developed and shown in Figure 12. This figure is based on Figure 11. Together the 'persuasive game' and 'intergroup dialogue' components in Figure 11 are named 'game session'. These two components are taken together as not only the game but also the environment in which the game takes place, and the organization of the game itself can influence communication between the players and the game play overall. The persuasive game is however an important component of

the game session. Added, is the component safe space, which is found in section *2.2.1 Promoting Intergroup* Dialogue to be a prerequisite for encouraging an intergroup dialogue and indirectly influencing the ideational factors 'sexual violence myth acceptance' and 'bystander attitudes', and the behaviour indicator 'willingness to intervene' (i.e. behavioural willingness). The variable 'willingness to intervene' is taken as indicator for bystander behaviour, because it is deemed to be measurable in a short-term evaluation. The variables 'sexual violence myth acceptance' and perceived responsibility (i.e. bystander attitude) are important for measurement, as they were found to be linked with greater willingness to intervene. Thereby, also awareness (i.e. bystander attitude) was found to be an important factor for bystander behaviour. The arrows in Figure 12 represent the causal relationship between the variables. The variables in the conceptual model are the outcome variables measured in this study.
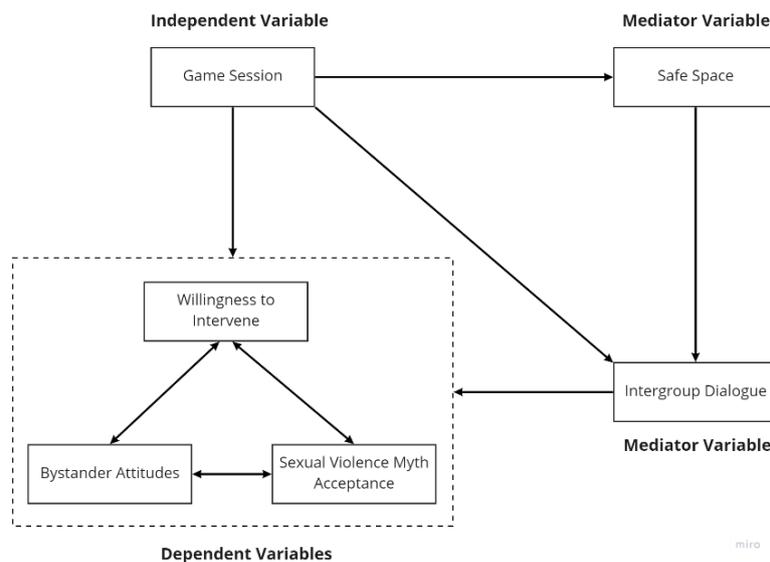
Figure 12 | Conceptual Model of Independent, Dependent and Mediator Variables

2.2.3   Conclusion Processes and practices Leading to Bystander Intervention

Two questions were asked to find out what the processes and practices behind a persuasive game and intergroup dialogue are to encourage bystander intervention. The first is how persuasive games affect intergroup dialogue, and the second how these two approaches affect bystander intervention.

For the first question, it was found that to encourage an intergroup dialogue with persuasive games, it is most important that the persuasive game provides a safe space for positive and respectful interaction. A few factors that can be considered for the game design and can be controlled are: unbiased and non-judgemental facilitators, discussions of ethical guidelines with the participants, and ensuring that the physical environment has a circular seating arrangement, good lighting, and suitable size for the number of people in the room. Next, it is important to redesign the game so that it poses questions to encourage an intergroup dialogue which in turn stimulates critical reflection. This can be done by letting participants take rounds answering questions. Furthermore, a small group size with an equal number of women and men can foster engagement and learning. If it's not possible to have an equal number of each gender, then it's preferred to have more women in one game session than men, as research shows that men tend to talk more in a classroom or meeting than women and more frequently interrupt women than other men. In addition, co-facilitators from

each identity group are needed to guide and support the communication processes of the participants and demonstrate equal partnership of both sexes in combatting sexual violence among students.

The second question can be answered with the health communication model of Kincaid et al. (2012). Based on this model a new conceptual health communication model was created. This new model shows how entertainment and dialogue can contribute to communication processes which can influence rape myths (or sexual violence myths) acceptance, and bystander attitudes. Consequently, these attitudes and beliefs can influence behavioural willingness which is an indicator for bystander behaviour. Based on this model the variables communication, sexual violence myth acceptance, bystander attitudes and behavioural willingness to intervene are chosen for evaluation in this study.

2.3 The System of Sexual Violence

To help redesign the persuasive game to the context of sexually transgressive behaviour among students, situations of sexually transgressive behaviour need to be more clearly defined. These situations can be derived from the system of sexual violence. Therefore, to address SQ3 literature and document research is conducted to first identify and decompose the system of sexual violence. Hereafter, an inventory will be made on the context of sexual violence among students in the Netherlands. Lastly, bystander opportunities will be described, which will help to scope the system of sexual violence. From these bystander opportunities and their examples situations of sexually transgressive behaviour can be derived for the game design. Figure 13 emphasizes the focus of this section with the orange triangle and provides an overview of the steps of this section that aims to scope and conceptualize situations of sexually transgressive behaviour among students in the Netherlands.

Figure 13 | Conceptual Model Literature - System of Sexual Violence

2.3.1 System Identification & Decomposition

For the identification and decomposition of the system of sexual violence, the pyramid of sexual violence created by University of Alberta (2021) and Vandiver & Braithwaite (2022) is examined. The pyramid helps to explain how sexual violence in society is create and promoted. Therefore, the pyramid is first described, after which each layer of the pyramid is further elaborated with literature research, which results into new and expanded frameworks of the layers.

The Pyramid of Sexual Violence

The pyramid of Sexual violence in Figure 14, created by the Sexual Assault Centre of University of Alberta (2021) and adapted by Vandiver & Braithwaite (2022) shows how an environment of sexual violence, or rape culture, is created and sustained in society. In addition, this pyramid helps to understand the different forms of sexual violence and helps to scope sexually transgressive behaviour for game design.
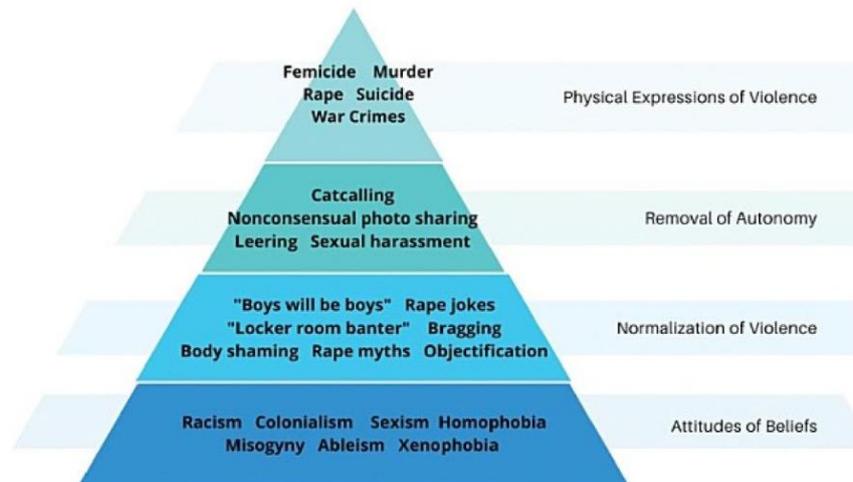
Figure 14 | *The Pyramid of Sexual Violence.*
Note. This figure is copied from *"Sex Crimes: Research and Realities"*, by Vandiver, D. et al., 2022, 2nd edition, New York, Taylor & Francis.

Layer 1: Attitudes and Beliefs

According to the theory behind the Pyramid of Sexual Violence, sexual violence starts with and is embedded in our foundational attitudes and beliefs, which are connected to systems of inequality (University of Alberta, 2021). These systems of inequality, such as sexism, homophobia, and racism, all reinforce the privilege and dominance of one group, and oppress the other. In addition, the intersection of these systems results in the complex and unique experience of an individual experiencing sexual violence (Aylward, 2011). This intersectionality also can help to understand why one group in society, such as women or LGBTQ+ people in particular experience more frequently sexual violence in the Netherlands (Vandiver & Braithwaite, 2022).

This study focusses on gender transgressive behaviour between women and men. Therefore, to scope the problem only the system of sexism is elaborated and shown in Figure 15. Sexism is prejudice, stereotype, or discrimination against another person on the basis of sex. According to the theory of sexism, sexism is inherently ambivalent, meaning that it exists of both hostile and benevolent sexism (Glick & Fiske, 1997). Hostile sexism is a negative perception of 'the other gender', usually of women. From this view women are seen as dangerous by challenging the power and status of men, through using for example their sexual allure. Women that behave outside of the traditional gender norms are viewed especially negatively. Benevolent sexism on the other hand idealizes women, which are seen as pure creatures that are weak, and therefore need the protection, adoration, and support of men. Therefore, according to benevolent sexism women fit best in the traditional gender roles. Moreover, in this view the man needs the love of the woman to make him complete (Gaunt, 2013; Rollero & Tartaglia, 2019).

Both complementary views sustain the traditional gender roles that give more power to men, and thus create gender hierarchy. Hostile and benevolent sexism also exist towards men. Hostility

towards men is expressed by resenting the male power. From the view of benevolent sexism men are praised for their role as protectors and providers (Rollero & Tartaglia, 2019; Gaunt, 2013). Both views believe that male power is natural and inevitable. Research shows that benevolent and hostile sexism towards women and/or men contribute to a society of gender inequality. Societies having these views, experience greater gender inequality (Gaunt, 2013).
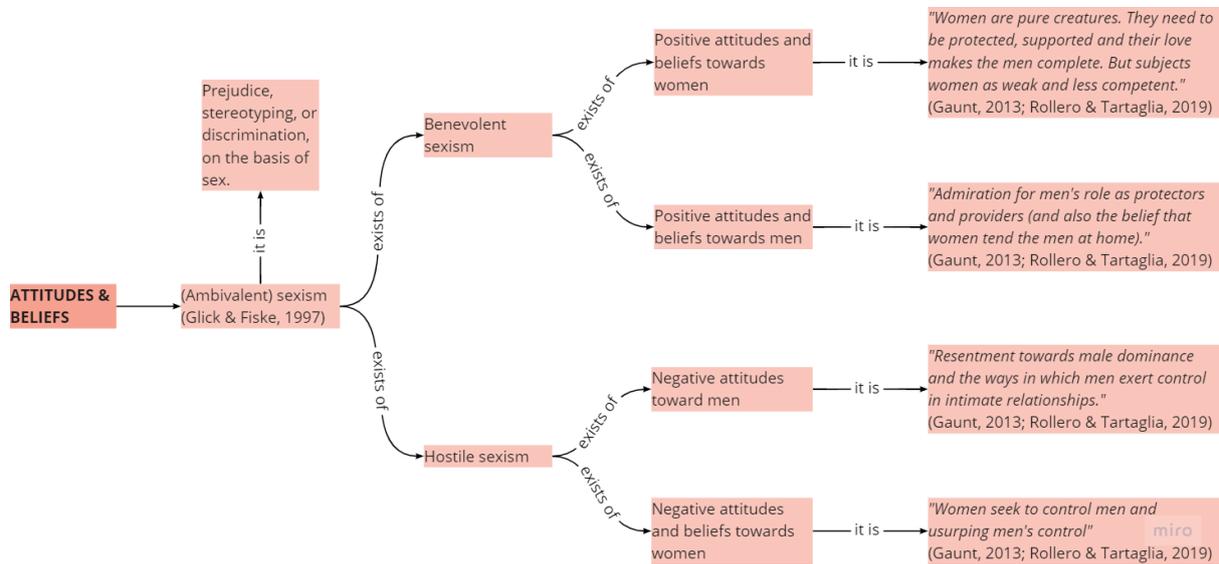
Figure 15 | Expanded Framework of First Layer of Pyramid - Attitudes & Beliefs

Layer 2: Normalization of Violence

The system of inequality leads to a culture in which social processes promote and normalize attitudes and beliefs that encourage power and violence by the dominant group, and subordination by the submissive group. This leads to an environment where sexual violence is accepted, not recognized, or minimized. This normalization is communicated by slut or body shaming, objectification, rape jokes and sexist humour which is dismissed as "boys will be boys" and "locker room talk" (Vandiver & Braithwaite, 2022). Research shows that people exposed to sexist humour have a greater tendency to commit rape (Romero-Sánchez et al., 2010). In addition, attitudinal rape myths are also an important factor in its justification of and contribution to a climate of rape. Moreover, reduced acceptance of rape myths has been proven to reduce sexually violent behaviour (O'Connor & McMahon, 2022).

Rape myths are the stereotypical, and false beliefs of rape, its victims and perpetrators (Vandiver & Braithwaite, 2022). These false beliefs lead to victim blaming and clearing perpetrators from blame. While victim blaming has become less acceptable over the years, there are still subtle beliefs that the victim is somehow partly responsible, or caused the rape, and the perpetrator is not totally to blame for rape. Four main common rape myths can be identified as: 'she asked for it'; 'she lied', 'he didn't mean to', 'it wasn't really rape'. The first two can be identified as part of victim blaming, and the latter two as part of clearing the perpetrator (Rollero & Tartaglia, 2019). Figure 16 shows a summary and overview of the normalization of violence layer. To understand the difference, rape myth acceptance is in this study named as "internalized expression of normalization", and the rest of the layers as "externalized expression of normalization". Both internalized and externalized expressions of normalization lead to the normalization of violence by promoting aggressive sexual behaviour and the tolerance of sexual abuse (Vandiver & Braithwaite, 2022; Sinko et al., 2021).

Construct: She asked for it
Construct: She lied
Construct: He didn't mean to
Construct: it wasn't really rape

exists of
exists of
exists of
exists of

Victim blaming
Perpetrator responsibility

exists of
exists of

Stereotypical, and false beliefs of rape, its victims and perpetrators.

It is

Rape myth acceptance (Vandiver & Braithwaite, 2022)

exists of

Internalized expressions of normalization

leads to
leads to
leads to
leads to

promotes aggressive sexual behavior
Promotes tolerance of sexual abuse

leads to
leads to

exists of

Normalization of attitudes and beliefs that support sexual violence in culture. (Vandiver & Braithwaite, 2022)

exists of

rape jokes
locker room banter

eg.
eg.

Sexist humor
"boys being boys"
Body shaming
Bragging
objectification

exists of
exists of
exists of
exists of
exists of

Externalized expression of normalization

exists of

NORMALIZATION OF VIOLENCE

exists of

Figure 16 | Expanded Framework of Second layer of Pyramid - Normalization of Violence

26

Layer 3: Removal of Autonomy

The normalization of violence results in the removal of autonomy, in which especially marginalised people experience less autonomy of their sexuality, by people that hold oppressive attitudes and beliefs. These latter group of people may express removal of autonomy in number of ways, which are defined as sexual harassment. Sexual harassment is defined by UN Women (2008) as *"any unwelcome sexual advances, requests for sexual favours, verbal or physical conduct or gesture of a sexual nature, or any other behaviour of a sexual nature that might reasonably be expected or be perceived to cause offence or humiliation to another"*. There are three forms of sexual harassment: verbal (eg. catcalling), non-verbal (eg. stalking, leering), and physical (eg. unwanted sexual touching) (Edlund, 2020). These three forms and their examples are shown in Figure 17.
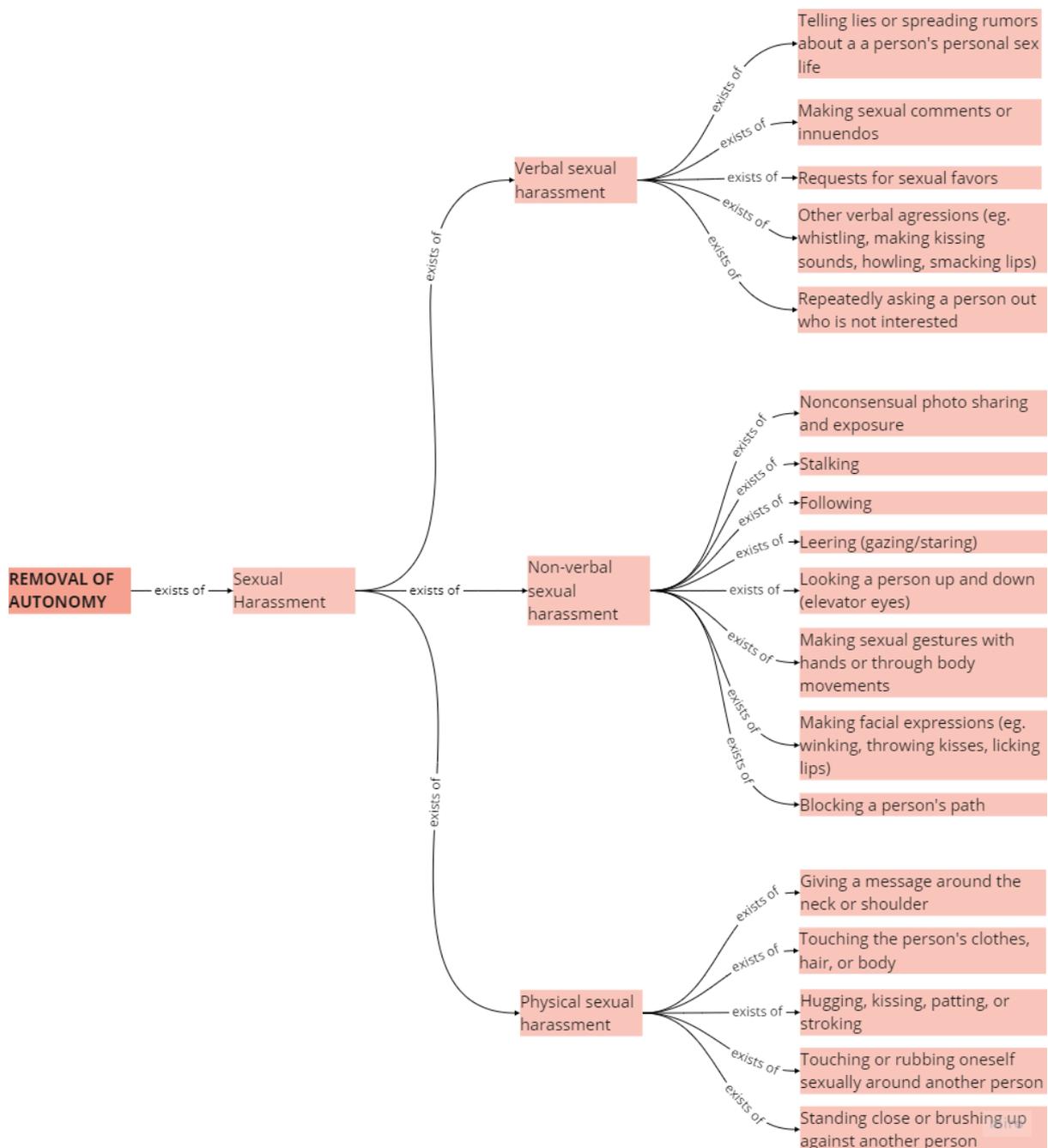
Figure 17 | Expanded Framework of Third layer of Pyramid – Removal of Autonomy

Layer 4: Physical Expressions of Sexual Violence

The last layer of the pyramid is called the physical expressions of sexual violence. These include the most severe forms of sexual violence such as rape. A rape culture however does not only sustain and stimulate sexual violence, but also other forms of violence, which are shown in the pyramid. It is important to realize that rape is not an independent event. Repeated cultural and social processes of inequality stimulate a system in which rape is allowed to continue. Prevention programmes therefore benefit from starting at the lower levels in the pyramid (Vandiver & Braithwaite, 2022). Figure 18 shows the last layer of the pyramid together with its examples.
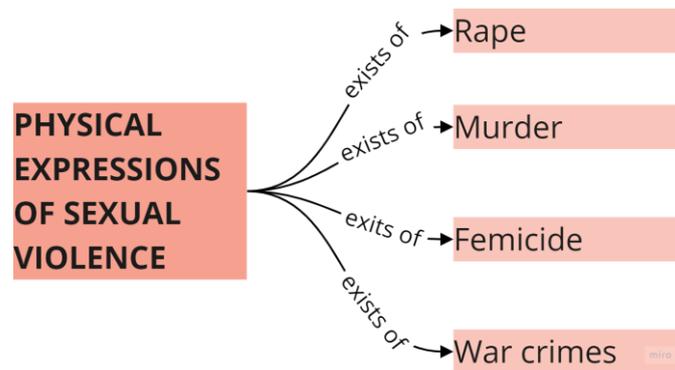
Figure 18 | Framework of Fourth layer of Pyramid – Physical Expressions of Sexual Violence

2.3.2   Context of Sexual Violence in The Netherlands

This section aims to contextualize sexual violence among students in the Netherlands by identifying the actors of sexual violence based on age and gender, the relationship between perpetrators and victims, the locations of violence, additional risk factors of sexual violence such as sexual orientation, and the behaviours preceding sexual violence.

Actors: Age and Gender

In the Netherlands, sexual violence is most prevalent among people between 18 and 24 years old (Akkermans et al., 2020). After the age of 24 the prevalence decreases. Sexual violence also more often affects women than men. A study commissioned by Amnesty International and conducted among 1059 Dutch speaking students in higher education in the Netherlands found that 18 percent of female students and three percent of male students have experienced unwanted sexual penetration during their lifetime (Driessen & Polet, 2021). During their time studying this percentage falls at 11 percent for female students and one percent for male students. Women are in general four times more likely to become the victim of sexual violence. In contrast, research found that in 79 percent of the cases the perpetrator is male (Akkermans et al., 2020). Furthermore, in 60 percent of the cases of female victims between the age of 15 and 25 years old, the perpetrator was found to be a peer (AugeoMagazine, 2017). This is supported by (Act4Respect, 2020) that found that perpetrators are often young, as 25 percent of the perpetrators fall in the age category between 17 and 21 years, and another 25 percent between 21 and 30 years. Therefore, this study will focus on female victims and male perpetrators and will include students between 18 and 30 years of age.

Relationship between Perpetrators and Victims

According to Driessen & Polet (2021) sexual violence is in most cases committed by someone that is known by the victim. Students that have experienced unwanted sexual penetration have identified

the perpetrator as either their partner (34 percent), someone they knew from going out (26 percent), a date (21 percent), a good friend (16 percent), or a fellow student (7 percent). In 11 percent of the cases the perpetrator was unknown (Driessen & Polet, 2021).

Sexual Orientation

Sexual orientation and identity also play a role in the prevalence of sexual violence. The research of Wellum et al. (2021) shows that the LGBQ are more at risk of becoming a victim of sexual violence than heterosexuals and cisgenders (someone that takes the gender identity of its biological birth gender). In comparison, 23.4 percent of the heterosexuals and 37.4 percent of the LGBQ has experienced unwanted sexual penetration and touching since starting university. Moreover, 35.4 percent of the heterosexuals and 50.4 percent of the LGBQ has experienced other non-physical forms of sexual violence (Wellum et al., 2021).

Locations of Sexual Violence

The report of Driessen & Polet (2021) has not analysed in which places sexual violence is the most prevalent. The only other research that has been conducted among students in the Netherlands is the report of Wellum et al. (2021), which has analysed the prevalence of sexual violence among students at Maastricht University. This study found that sexual violence took most often place in 'other housing' or student rooms (36.5 percent), and restaurant, bars and clubs (31.6 percent). These locations are followed by 'some other place' (10.5 percent), outdoor or recreational space (7.3 percent), and 'other association space' (2.6 percent). The least common places are student association building (1.5 percent), university building (1.1 percent), and other non-residential buildings (0.6 percent). While sexual violence doesn't take place that often in association buildings, Wellum et al. (2021) did find that association members are twice as much at risk of sexual violence than non-association members.

Behaviours Preceding Sexual Violence

Often, unwanted sexual penetration is preceded without an explicit threat. In most cases (72 percent) penetration without consent happens when a person doesn't check the boundaries of another person. It also happens when a person either ignores the boundaries that are indicated verbally or non-verbally (64 percent) or keeps insisting (67 percent). In 63 percent of the cases boundaries were transgressed when the person didn't respond anymore or froze. Almost one in five students has experienced unwanted penetration by a person who was misusing alcohol or drugs, and eight percent of the students was drugged before they were raped. In 23 percent of the cases the person that transgressed got angry or aggressive, and in 14 percent of the cases this person used other methods to pressure the victim. In a few cases (3 percent) the victims were threatened with violence, and just one percent of the victims experienced blackmail beforehand (Driessen & Polet, 2021).

2.3.3 Bystander Opportunities

This section aims to describe bystander opportunities, which are opportunities, or situations, for bystanders to intervene. First, the different types of opportunities are described, after which more focus is brought on primary bystander opportunities. Finally, the primary bystander opportunities are categorized based on the pyramid of sexual violence, which will help to set the scope for situations of sexually transgressive behaviour.

Proactive and Reactive Bystander Opportunities

Bystander intervention programs can include behaviours ranging from proactive bystander opportunities to reactive. Opportunities for proactive actions are taken to contribute to a change in the community social norms, without the perceived risk of harm. In these situations, bystanders actively seek or are committed to reduce sexual violence, whether the bystander has witnessed sexual violence or not. Examples are participating in or creating an education program to learn more, joining demonstrations, volunteering at the sexual assault centre, or actively committing oneself to change policies or laws to address sexual violence. Reactive bystander actions on the other hand are taken in situations that pose a low or high risk for the bystander to intervene. These actions can be taken before (primary), during (secondary), or after an assault has occurred (tertiary prevention) (McMahon & Banyard, 2012).

Primary Bystander Opportunities

Research shows that in many colleges, bystanders are present in primary bystander opportunities. Primary bystander opportunities can be categorized into either a high- or low-risk situation for the (potential) victim (McMahon & Banyard, 2012). High-risk situations pose an immediate risk for the victim of getting assaulted. Low-risk situations are situations that present more subtle rape supportive behaviours and norms. In these situations, people express negative attitudes against women, but do not directly lead to sexual violence. Examples of negative attitudes are objectifying women, making sexist jokes, or ranking women. Compared to high-risk primary bystander intervention, low-risk situations are less recognizable, which makes it more difficult for students to intervene. Thereby, students might risk losing face in front of their peers when intervening in these low-risk situations, and therefore have more hesitations to act or speak out than in high-risk situations (McMahon & Banyard, 2012). Research shows that as the situation shifts from low- to high-risk, there is a higher probability that bystanders will intervene. It is important that students intervene in the early stages of sexually transgressive behaviour to prevent worse. Therefore, the scope of the research will be focussed on primary bystander opportunities. See Figure 19 for a list of examples of every bystander opportunity category.

Reactive Bystander Opportunities	Primary Prevention (before the assault)		Secondary Prevention (during the assault)	Tertiary Prevention (after the assault)
	Low risk	*High risk*		
	• Friends make a sexist joke or use sexist language to describe women and girls • Activities or rituals are held where women's bodies are ranked or rated • Pornographic or sexualizing posters of women and girls are displayed • Friends make rape or abuse jokes • Friends or classmates blame a victim of sexual violence in conversation or class	• A friend is bringing an intoxicated woman to his room • A friend says he plans to intoxicate a woman to have sex • A woman is being harassed by a group of men • A woman who is passed out on a couch is being approached or touched by a man	• Witnessing a group rape • Hearing cries for help or distress • Walking in on a situation where an individual appears to be either physically forced or verbally coerced into sex • Directly observing an intoxicated victim being sexually assaulted by a perpetrator	• A friend or classmate discloses that she is a survivor • A friend is seeking information for herself or another person on where to go for help for an assault • There is suspicion that a friend or classmate is a perpetrator • Authorities or residence life are looking for information on a possible sexual assault • A police or judicial investigation needs corroboration
Proactive Bystander Opportunities	• Taking a course on gender based violence • Joining a peer education group • Participating in Take Back the Night • Volunteering at a local sexual assault organization • Arranging an educational program on sexual assault for a dorm or student organization • Changing student organizational policies to address sexual assault			

Figure 19 | Bystander Opportunities Framework for Preventing Sexual Violence.
Note. This figure is from "When can I help? A conceptual framework for the prevention of sexual violence through bystander intervention", by McMahon, S., & Banyard, V.L., 2012, *Trauma, Violence, and Abuse, 13*(1), p. 8.

Categorization of Primary Bystander Opportunities

According to McMahon & Banyard (2012) prevention programs should address all behaviours along the continuum of sexual violence. This continuum was shown in the pyramid of sexual violence in Figure 14. Addressing the lower levels of the pyramid is especially important as they contribute to a culture of sexual violence and allow more serious forms of sexual violence to exist. Taken into consideration that students are most often present in primary bystander opportunities, the examples of these opportunities shown in Figure 19 set the scope of the redesigned persuasive game. These examples have been categorized according to the expanded framework layers of the pyramid in Figure 15, Figure 16, Figure 17 and Figure 18. The second component levels of these frameworks have been chosen for categorization: 'Sexism' from 'Attitudes and Beliefs Layer'; 'Internalized and Externalized Expression of Normalization' from the 'Normalization of Violence Layer'; 'Verbal', 'Non-Verbal', and 'Physical' sexual harassment from 'Removal of Autonomy Layer'; and physical sexual violence from the layer 'Physical Expressions of Sexual Violence'. In Figure 20 an overview is shown of the categorization of the examples of primary bystander opportunities. Based on this overview it was determined to include the normalization of violence (i.e. internalized and externalized expression of normalization), physical harassment (i.e. touching and standing close to someone) and physical sexual violence (i.e. rape) for redesigning the game.
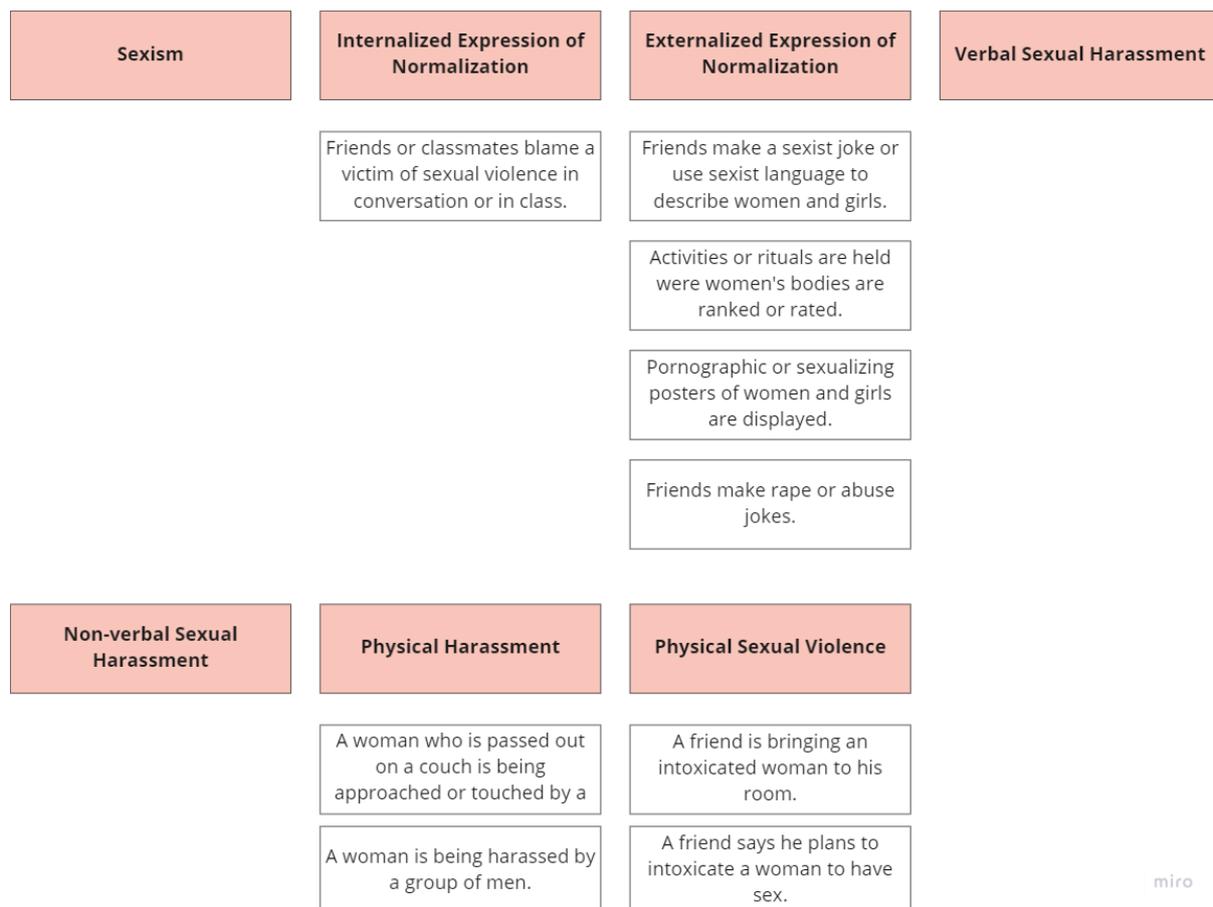
Figure 20 | Categorization of Primary Bystander Opportunities based on Pyramid of Sexual Violence

2.3.4   Conclusion System of Sexual Violence

To provide an answer on which situations of sexually transgressive behaviour are fitted to the context of students, the system of sexual violence has been identified and decomposed, the context of sexual violence in the Netherlands has been inventoried, and bystander opportunities have been described. It was found that many students are present in primary bystander opportunities. Therefore, the examples of these opportunities of Figure 19 set the scope of the game design and were categorized based on the expanded framework layers of the pyramid of sexual violence. The categorization showed clearly that the primary bystander opportunities fit with the layers normalization of violence (i.e. internalized and externalized expression of normalization), physical harassment (i.e. touching and standing close to someone) and physical sexual violence (i.e. rape). Examples of the situations of sexually transgressive behaviour can and will therefore be derived from these layers.

Moreover, based on the inventory on the context of sexual violence in the Netherlands, the following additional decisions can be made for the scope of the game. First, it was found that sexual violence is most prevalent among people between 18 and 30 years of age and is most often perpetrated by men and experienced by women. Therefore, the game will be developed for students between 18 and 30 years old, and the game's content will focus on female victims and male perpetrators. Second, to ensure enough variance in the examples of situations of sexually transgressive behaviour in the content of the game, multiple characteristics of sexual violence will be included. This includes the five most common types of relationship between the victim and perpetrator (i.e. partner, someone from nightlife, date, good friend, and fellow student); locations of sexual violence (i.e. student rooms, nightlife, associations, on the street, and university building); and the behaviours preceding sexual violence (i.e. ignoring boundaries, person freezing, alcohol abuse, aggression of perpetrator, using other types of pressure or intimidation (eg. nagging)). Different types of sexual orientation will however not be included in designing the content of the game, as the intersectionality of sexual orientation and gender with sexual violence creates multiple complex unique experiences of violence. Therefore, to limit the complexity of the game content, sexual orientation and other types of gender of the victims and perpetrators have been left out of focus.

3

RE-DESIGN OF THE PERSUASIVE GAME

The main goal of this Chapter is to answer SQ4, how a persuasive game can be redesigned for university students to promote bystander intervention. Thereby, this chapter provides additional information for SQ3, about which situations of sexually transgressive behaviour fitted to the context of students can be derived. First, the chapter starts with providing an explanation for the motivation of the methodological approach for the game redesign. Second, based on the methodological approach, the game is redesigned step by step.

3.1   Methodological Approach

The persuasive game of Hoobroeckx et al. (2021) is a prototype that is used for evaluation in this study. However, the game was initially developed for high school students to raise awareness about sexually transgressive behaviour. As this study focusses on sexually transgressive behaviour among students, the persuasive game, needs to be redesigned. The re-design will focus on the game content, as those provide the dilemmas that are posed to the participants.

According to Duke (1980) there are nine basic steps of game design. The first step is to develop specifications for game design, followed by a schematic representation of the problem (step 2). Next, the components of the problem to be gamed are selected (step 3), after which a planning is made to include these components in the game (step 4). The fifth step is to summarize the content of each gaming element, followed by selecting how each game element will be represented (step 6). Then the game can be finally built (step 7). The final two steps include the evaluation and testing the game in the field (step 8 and 9) (Duke, 1980). These steps from Duke (1980) will be used to redesign the game.

Based on the literature review in Chapter 2 the specifications for the game can be set for step 1 and a schematic representation of the problem provided for step 2. Moreover, brainstorm sessions with TU Delft students will be organised to gain more insight into the problem, adding the findings to step 2. The goal of these brainstorm sessions is to collect real-life examples of situations of sexually transgressive behaviour to use for the redesign of game content, contributing to the answer of SQ3 and therefore also to SQ4. Moreover, to address step 3, the categorization of primary bystander opportunities in Figure 20 in section *2.3 The System of Sexual Violence* is used to select the components of the problem in the design of the game content. This is followed by creating the scenarios and answers to redesign the game of Hoobroeckx et al. (2021), which addresses step 4. These scenarios and answers have been inspired by examples found with document research. Next, for step 5 and 6 each game element is summarized, and a description of their representation is given. Finally, for step 7 an explanation is provided for how the game is built. For step 8 and 9, a description of the evaluation and testing of the game is provided in *Chapter 4 Method & Experimental Design.*

3.2   Game Design Steps

To provide an answer for SQ4 for how a persuasive game can be redesigned, the first seven steps of Duke (1980) are followed. First, a description will be provided about the persuasive game of Hoobroeckx et al. (2021) that is used as prototype in this study. The description will clarify which game elements need to be adapted. Then, following the steps of Duke (1980), the specifications are developed for step 2. This is followed by providing a description of the brainstorm sessions, which were organised to collect real-life examples of situations of sexually transgressive behaviour among students. These examples will provide additional information to SQ2 and will be used as input for steps 3 and 4. In step 3 and 4 components of the problem are selected and a planning to how to include these components is made. Moreover, the game elements are described and designed in step 5 and 6. Finally, the overall game is built, addressing step 7.

3.2.1   Description of Persuasive Game

In this section a description of the persuasive game of Hoobroeckx et al. (2021) is provided. Based on the description a decision is made on which part of the game will be redesigned. Moreover, the new purpose of the game together with the outcome variables, determined in Chapter 2 are repeated.

Description of Prototype Game
The persuasive game prototype of Hoobroeckx et al. (2021), called 'Boxing the Boxes', is used in this study to analyse how a persuasive game can encourage bystander intervention by promoting an intergroup dialogue between students in Dutch universities. The persuasive game was initially developed for high school students to start a conversation about sexism. However, as the focus has shifted, the game needs to be adapted.

The game "Boxing the Boxes" is played by four to six players and has a game time of 30 to 60 minutes. In the game there are six piles of dilemma cards and a dice that represent one of the following categories: Sports, Culture, Education, Sexuality, Social Media and Safety. A dilemma card poses either a scenario or a statement and provides four respective ABCD answers. Each round a player throws the dice, which determines from which category a dilemma card will be taken. The dilemma card is read out loud, and the other players guess what this player's answer will be, by putting down blindly one of their ABCD cards. The player also decides blindly with which answer it agrees the most. Once everyone has chosen, the player that has the turn, explains its answer to the other players. Afterwards the players will show their answers after which the points are distributed accordingly. Scores will be noted with a scoreboard. Debriefing of maximum half an hour will start after the first person reaches the finish line.

To adapt the prototype to the context of students, the game elements, and rules (eg. decks of cards, ABCD cards, scoreboard, pawns, dice, duration, number of participants) will stay the same. Only the content of the cards together with the categories of the decks of cards, and the (de)briefing will be redesigned for this study.

New Purpose and Outcome Variables of the Persuasive Game
For this study, the purpose of the persuasive game is to encourage a dialogue between female and male participants in Dutch universities, in order to promote bystander intervention in situations of sexually transgressive behaviour. The outcome variables determined in section *2.2.2 Encouraging*

Bystander Intervention are sexual violence myth acceptance, bystander attitudes (i.e., awareness and level of responsibility), communication processes and the willingness to intervene. These outcome variables are used to redesign and evaluate the persuasive game and the game session. Specifically, it was chosen to use the dependent variables 'willingness to intervene' and 'sexual violence myth acceptance' as inspiration to create respectively the scenarios and statements of the cards. It is assumed that the discussions created by the cards lead indirectly to more awareness and greater level of responsibility, as is reflected by bystander attitudes.
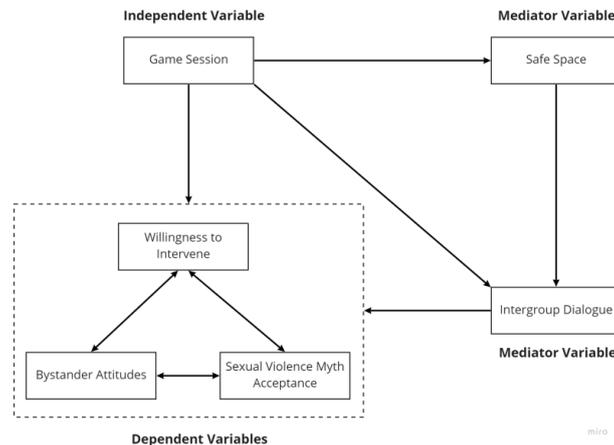
Figure 21 | Conceptual Model of Independent, Dependent and Mediator Variables

3.2.2 Step 1: Specifications

Based on the theoretical findings in Chapter 2 and the conclusion of SQ3 in *2.3.4 Conclusion System of Sexual Violence* the specifications for the persuasive game session have been developed in this section. As only the game content and the (de)briefing need to be redesigned, specifications are provided for only these game elements. Moreover, specifications have been provided for the participant characteristics and the environment for game play. These latter two specifications will however be further addressed in *Chapter 4 Method & Experimental Design*.

Game Content
- The game poses scenarios and dilemmas in the context of sexual violence students in Dutch universities, as the focus of this study is sexually transgressive behaviour among students in the Netherlands.
- The game discusses only female victims and male perpetrators. This is because women are disproportionately affected as mentioned in *Chapter 1 Introduction* and *2.3.2 Context of Sexual Violence in The Netherlands*.
- The game discusses cards from the perception of the bystander. The reasoning for this specification is mentioned in *1.1.3 Bystander Intervention for Cultural Change* and *2.1.1 Bystander Intervention*.
- The game content is designed for the context of primary bystander opportunities. Many students have been found to be present in primary bystander opportunities (*see 2.3.3 Bystander Opportunities*).
- The intersectionality of sexual violence with gender and sexual orientation will be left out for simplicity purposes of this study.
- The content of the cards is created with the five most common contextual characteristics of sexual violence (see *2.3.2 Context of Sexual Violence in The Netherlands)*:

- Relationships between the victim and perpetrator: i.e. partner, someone from nightlife, a date, good friend, or a fellow student.
- Locations of sexual violence: i.e. student rooms, nightlife, associations, on the street, and university building.
- Behaviours preceding sexual violence: i.e. ignoring boundaries, person freezing, alcohol abuse, aggression of perpetrator, using other types of pressure or intimidation (eg. nagging).

(De)briefing
- Explanation of set-up and game rules.
- Guidelines for creating a safe space are discussed in the briefing with the participants. According to Holley & Steiner (2013), discussing guidelines is important for the sense of safety of the participants (see *2.2.1 Promoting Intergroup Dialogue*)
- Information about sexual violence and its prevalence among students is provided in the debriefing. As mentioned in *2.1.2 Persuasive Games* providing information about sexual violence can help to persuade the participants to become ethical bystanders (Yusoff & Kamsin, 2015).

Participant Characteristics
- The game is developed for students between 18 and 30 years old. The biggest group of victims and perpetrators finds themselves in this age category (see *2.3.2 Context of Sexual Violence in The Netherlands*).
- The game has an equal number of female and male participants. If this is not possible, then preferable more female than male participants. Studies found that women talk less than men and are interrupted more by men more in a meeting. Therefore, to ensure the participation of the women in the game it is preferable to have more women in the game session, if it is not possible to have an equal number of both genders in the group (see 2.2.1 *Promoting Intergroup Dialogue*).
- The game is open to all students of TU Delft from all educational backgrounds and nationalities.
- The game is designed for a minimum of four and maximum of six participants, as this is how the game of Hoobroeckx et al. (2021) is developed.

Game Environment
- The game takes place offline.
- The game takes place in a room fitted to the number of participants, which has good lighting, provides limited distractions, and has a circular seating arrangement. Studies found that these room attributes stimulate participatory engagement and help to promote a dialogue (see 2.2.1 *Promoting Intergroup Dialogue*).
- The game has one female and one male facilitator. Studies in *2.2.1 Promoting Intergroup Dialogue* show that gender-mixed facilitators demonstrate an equal partnership in reducing sexual violence and that it might be more comfortable to participants of either gender.

3.2.3 Step 2: Schematic Representation of the Problem with Brainstorm Sessions

Step 2 is already partially covered by *Chapter 2.3. The system of Sexual Violence.* In addition to answering step 2, brainstorm sessions have been organised to collect real-life examples of situations of sexually transgressive behaviour. Moreover, these examples have been used as inspiration to create the dilemmas and scenarios for the game cards. In this section, the method of organising the brainstorm sessions is explained, and the results are provided. The results of these sessions provide examples of real-life cases which can be used to further develop a schematic representation of the problem of step 2. These examples are then used to create the scenarios in step 4. The brainstorm sessions also validated some game specifications. However, these results did not affect the schematic representation of the problem and were therefore moved to *Appendix A: Game Design.*

Participant Characteristics
To get ideas for how the prototype "Boxing the Boxes" could be adapted to the context of sexual violence among students in TU Delft, two semi-structured brainstorm sessions were conducted. In total 12 students of TU Delft between the age of 22 and 28 years old participated. The goal of the session was to brainstorm about scenarios in which a female student felt unsafe or uncomfortable because of a male student. The results of these sessions can then be used to design the content of the cards.

Separate sessions have been organised for women and men to create a safe space for each gender. One brainstorm session existed of six women, and one of seven men. Out of the 12 attendants, 10 participants were Dutch, one was European, and another was from a non-European and non-Western country. All participants were following a master's education at TU Delft. Five participants were following a Master's degree at the faculty of 3mE, and seven from the faculty of TPM. This group is not representative for the TU Delft. However, due to time limitation group diversity could not be realized.

Sampling Procedure
The group of students that participated in the brainstorm sessions are close contacts to the researcher and volunteered to give their input. For motivation, these students were promised an interesting evening with drinks and snacks. Each session took place in private spheres at home and took approximately two hours. The spoken language was English.

Data Collection
Each session started with a short presentation of the research conducted and an explanation of the program for the evening. To gain more understanding of this study and to get ideas flowing, attendants could play the game for 15 minutes if they wished. In addition, they were given examples of primary bystander opportunities shown in *Figure 11 | New Conceptual Health Communication Model for Promoting Bystander Behaviour.* Attendants were then asked to think of personal experiences or stories from friends or hearsay. To help them out, four questions about these scenarios were asked:
1. What happened and why do you think it happened?
2. What did you/she/he do?
3. How did bystanders respond?
4. What could the bystanders have done according to you?

The sessions were recorded by note-taking. These notes were processed after the sessions had ended and were saved in an online document. To ensure the privacy of each person no recordings have been made. All participants consented to using their quotes and insights gained from the brainstorm sessions.

Results: Examples Scenarios

A list of examples of scenarios and dilemmas from female and male participants are provided in this section.

Examples of female participants:
- A woman spoke up to colleagues in a café who started talking about the body of a female co-worker. They answered with "are you on your period?".
- A girl at a bar with colleagues felt sexually harassed by one colleague. The next day she said that loudly to everyone at work. Quoting the female participant: "She did not handle it very discreetly."
- Guys that touch inappropriately during dancing. Female participant: "When dancing, a guy groped my crouch". She could not respond but given the chance again, she mentioned that she could have slapped or told someone from the club, although she doubts whether they would have acted.
- A friend is sexually abused by her boyfriend. She found it hard to leave her partner. The female participant mentioned that she learned that its best to advise someone in this position to seek professional help. If you tell victims of (sexual) partner abuse what to do, they will blame you when it goes wrong, according to the participant.
- Calling out a friend who makes sexist remarks about his ex-girlfriend. He got angry, and now they are not friends anymore.
- Guys standing close to you on the dancefloor ready to kiss you, and not knowing if he will back off or not.
- Trying to create space with guys that enter your personal space when dancing.
- Guys in a bar were talking about transgressing, which made me uncomfortable. Didn't do anything because 1) they are older, and 2) it didn't affect me.
- Once on a holiday 20 boys or something in my group were ranking women that were passing by. This made me feel unsafe. If they would rank those women, they could do that with me. Someone said something about this and then they stopped. They thought it was fun, but it made me uncomfortable.
- Making a banga list (list of people that someone had sex with, shared with a group of other people) depersonalizes a person according to the female participants.

Examples of male participants:
- One male participant always pays attention to his female friends when going out. The participant has talked a lot with his female friends about sexually transgressive behaviour. Quoting: "That's why I do the following: If a stranger approaches my female friends I check with my friends if they are comfortable with that by making eye contact. If they are not, I step in. Sometimes I say that I am their boyfriend."
- Some girls were harassed on the street by some guy. One of them told him to go away, but he didn't leave and instead put his arms around her. This was on the street. Quoting: "First, I was keeping my eye on the girls and the guy. When he put his arms around her, I stepped in and pulled on his jacket. Afterwards I kept checking if the guy left them alone. The guy didn't harass me. My friends didn't do anything. I think they were scared to act. Another way to act

could have been to wait, watch and prepare your phone in your hand. sometimes it is scary to act, because the harassers can also pick a fight with you."

- "I once kissed a girl when being drunk that apparently didn't want to in hindsight. I can't remember anything about it, but she sends me a text. I felt really guilty afterwards. Now I only kiss people with explicit consent."
- With strangers it is difficult to estimate the boundaries because you don't know where they are. You need to estimate it.
- At my work I hear a lot of sexist comments especially from the older generation. Such as "she can get some coffee" and "a woman organises everything".
  - These comments happen structurally. I don't always dare to say something because of power differences. You also want to maintain a good work relationship. When something is really sexist, then I do say something about it.
  - If sexist remarks are being made by my equals in the professional environment, then I do say something about it. Saying something like "woman is emancipated". However, often people talk over you.
  - With friends it is easier to say something about it. In a professional environment you also have other interests, which makes you not always say something about sexist comments.

3.2.4 Step 3 and 4: Select and Plan Problem Components

Selecting Components for the Game Content

With literature research and document research, *Chapter 2* helped to determine the outcome variables and helped to set the scope of the game. A choice was made for primary bystander opportunities that fit with the following layers of the pyramid of sexual violence (see Figure 22Figure 22 | Categorization of Primary Bystander Opportunities based on Pyramid of Sexual Violence: 'Normalization of Violence' (i.e. internalized and externalized expressions of sexual violence), 'Removal of Autonomy' (i.e. physical sexual harassment), and 'Physical Expressions of Sexual Violence' (i.e. physical sexual violence or (attempted) rape).

Decisions regarding the context of situations of sexually transgressive beahviour fell on the five most common contextual characteristics of sexual violence: relationships between the victim and perpetrator (i.e. partner, someone from nightlife, date, good friend, and fellow student); locations of sexual violence (i.e. student rooms, nightlife, associations, on the street, and university building); and behaviours preceding sexual violence (i.e. ignoring boundaries, person freezing, alcohol abuse, aggression of perpetrator, using other types of pressure or intimidation (eg. nagging). The scope has also been included in the specifications of Step 1.

As was mentioned in section 3.2.1 Description of Persuasive Game, only the content of the cards together with the categories of the decks of cards, and the (de)briefing will be redesigned. The outcome variables and the determined scope help to create the scenarios and statements for the game content. All scenarios are based on situations related to the 'willingness to intervene' dependent variable, and all statements on 'sexual violence myths acceptance'. The examples of primary bystander opportunities provide inspiration for creating the game content. Finally, the four chosen layers of the pyramid of sexual violence are used to rename the categories of the cards, while the contextual characteristics of sexual violence provide the components for creating scenarios and statements.

Selecting Components for the (De)briefing

To develop the briefing, knowledge about safe spaces from *2.1.3 Promoting Intergroup Dialogue* is used to create a safe space by discussing ethical guidelines before game play. For constructing the debriefing knowledge from *2.3 The System of Sexual Violence* is used to explain what sexual violence is, how it is created and sustained in society, and what the prevalence of sexual violence is.

Internalized Expression of Normalization	Externalized Expression of Normalization	Physical Harassment	Physical Sexual Violence
Friends or classmates blame a victim of sexual violence in conversation or in class.	Friends make a sexist joke or use sexist language to describe women and girls.	A woman who is passed out on a couch is being approached or touched by a	A friend is bringing an intoxicated woman to his room.
	Activities or rituals are held were women's bodies are ranked or rated.	A woman is being harassed by a group of men.	A friend says he plans to intoxicate a woman to have sex.
	Pornographic or sexualizing posters of women and girls are displayed.		
	Friends make rape or abuse jokes.		miro

Figure 22 | Categorization of Primary Bystander Opportunities based on Pyramid of Sexual Violence

3.2.5 Step 5 and 6: Describe and Design Game Elements

In step 5 and 6 the game elements will be described and ideas about how each game element will be designed is provided. These game elements include the content of the cards, the decks of cards and the (de)briefing. The design of the game elements can be found in *Appendices Appendix A: Game Design*.

Renaming the Categories of the Decks of Cards

The scope helped to create and rename the categories of the decks of the cards. Each chosen sub-layer, except for the layer of physical harassment, reflects one category in the game. The layer of physical harassment however reflects two categories: one category for touching, and one category for standing close to someone. These categories were respectively named 'Close enough' and 'Unseen'. 'Unseen' because standing close to someone might not seem that alarming to an outsider. 'Close enough' because someone has already crossed the boundaries of an individual by touching her. Furthermore, the (sub-)layers 'internalized expression of normalization', 'externalized expression of normalization', and rape (from the layer physical sexual violence) were respectively named 'The Sound of Silence', 'Thinking out Loud' and 'Rewind'. The category name for 'internalized expression of normalization' has two meanings: 1) people stay silent when someone has been harassed by either blaming the victim or taking away the responsibility from the perpetrator, and 2) because rape myth attitudes and beliefs are personal and internalized. These internalized attitudes and beliefs are externalized when we share them with the people in our environment. Therefore, externalized normalization of violence has been named 'Thinking out Loud'. Lastly, physical sexual violence, or rape, has been named 'Rewind', as people (i.e. victims or perpetrators) might regret the decisions they made and the events that took them to either experiencing or perpetrating this act of violence.

For the five categories new icons were created, which were used for the decks of cards and put, which were then put on the dice. The sixth side of the dice has an arrow, which means that when a participant throws this arrow, the person that the arrow points closest towards, can choose a card of choice from the decks. The person that threw the dice will then lose its turn, and the game will move on with the next participant.

Developing Scenarios for the Cards
Content for the cards were created based on the examples provided in Figure 19 from *2.3.3 Bystander Opportunities.*, the examples generated in the brainstorm sessions, examples found or inspired by desk research online, and examples based on personal experiences and hearsay. Each card developed, contains one of the following two questions: 1) "What do you think?", and 2) "How do you respond?". The first question reflects sexual violence myth acceptance. The cards that contain this question are ask participants to reflect on a scenario that contains sexual violence myths. The second question reflects bystander willingness to intervene in primary bystander opportunities. These cards are meant to reflect on a what one would do or could do in a scenario with a risk of sexual violence. The assumption is that the cards would create discussions about sexual violence myths and about how and when to intervene. These discussions would then lead to more awareness and a greater level of responsibility as is reflected by the bystander attitudes. Consequently, these discussions would then also lead to greater willingness to intervene as is shown in *Figure 11 | New Conceptual Health Communication Model for Promoting Bystander Behaviour* from section *2.2.2 Encouraging Bystander Intervention*

The aim of redesigning the game was to develop at least seven cards per category, so creating a minimum of 35 cards, to get a good pile of cards for each category. In the end 39 cards were created, which were not divided equally over the five decks of cards. For example, three card decks contain seven cards, one deck contains eight, and another deck of 10 cards. Moreover, 28 cards contain questions with "What do you think?" and 11 cards with "How do you respond?". In addition, each card contains three or four responses that the participants can choose from. The scenarios and dilemmas created for each category are provided in *Appendix A.2. Content Game Cards.*

Briefing
The briefing includes the agenda for the game session, and an explanation of the game set-up, rules, and ethical guidelines. The agenda, game set-up and rules are provided in *Appendix A.4. Briefing.* The ethical guidelines are created based on section *2.2.1 Promoting Intergroup Dialogue.* Participants are asked before the gameplay starts, how a safe space is created. This question aims to involve participants in the discussion and encourage them to think about their own needs. This discussion is deemed relevant to create a safe space according to *2.2.2. Safe Spaces.* After this discussion, additional guidelines are provided and are as follows: respect each other's opinions and experiences, let someone finish speaking first, and reflect on your and someone else's thinking.

Debriefing
The main goal of the debriefing is to let participants reflect on the discussions that they have had during the game, and on the solutions for situations of sexually transgressive behaviour. The debriefing exists of two parts. The first part reflects on the discussions generated during game play, and the second part focusses on providing information about sexual violence in the Netherlands. This information includes the prevalence of sexual violence, changes in the rape law, and facts of sexual harassment.

Part 1: Reflection on the discussion (examples of questions):
- Which solutions did you come up with during the game?
- Did you learn something from the other participants, and if so what?
- What did you learn during the game play?
- Did you hear new or interesting perspectives?
- How did the discussions go?
- Did you expect the answers you got on the cards from the other players?
- Did your attitude towards sexual violence change?
- Did your attitude towards intervening change?
- How do you feel about intervening in situations of sexual transgressive behaviour?
- What will you take away from this game to your life?

Part 2: Explanation of Sexual Violence
- Explanation of the Pyramid of Sexual Violence
- Explanation of the new rape law in the Netherlands
- Give facts about sexual harassment and rape among students in the Netherlands

3.2.6   Step 7: Building the Game

Based on the previous steps, the game could be redesigned and built. The title of new redesigned game is "Talk That Talk", which is a pun on the intergroup dialogue. The game design of all the game elements that needed to be redesigned are shown in *Appendices*
Appendix A: Game Design. In this appendix, all the content of the cards are provided, together with lay-out of the game design including the cards, the game box and the dice. Moreover, the agenda that was included in the briefing is provided, together with the statistics and information mentioned in the debriefing.

The set-up of the game exists of five decks of cards with each another category, ABCD cards, pawns that fit to the colour of the ABCD cards, an hourglass that limits the discussion to three minutes, a dice with the different categories of the card decks, a score board, a manual and the game box itself.

Figure 23 | Set-up of the Game 'Talk That Talk'

4

METHOD & EXPERIMENTAL DESIGN

The method to systematically measure the effectiveness of the persuasive game helps to answer SQ5 and is addressed in this chapter. First, the variables and the hypothesis are presented, which are followed by the methodological approach and the experimental design. The experimental design explains step by step how the outcome variables of the persuasive game have been measured. The chapter ends with an explanation of the data analysis.

4.1 Variables & Hypotheses

Based on the conceptual model of variables in section *2.2.2 Encouraging Bystander Intervention,* the outcome variables are discussed. Moreover, this section presents the set-up of the experiment which are controlled by the researcher. Finally, based on the outcome variables six hypotheses are discussed and augmented.

4.1.1 Conceptual Model of Variables

The aim of this study is to understand how effective a persuasive game is in encouraging an intergroup dialogue between female and male students in Dutch universities in order to promote bystander behaviour. In *2.2.2 Encouraging Bystander Intervention* five outcome variables have been determined for analysis: willingness to intervene, bystander attitudes, sexual violence myth acceptance (SVMA), communication process and Safe Space. The variables 'Communication Process' and 'Safe Space' are mediator variables that are influenced by the experimental independent variable 'Game Session', and on their turn influence the dependent variables 'Willingness to Intervene', Bystander Attitudes' and 'Sexual Violence Myth Acceptance' (SVMA). The experimental independent variable 'Game Session' is directly manipulated by the researcher to explore the effects of the persuasive game and the session surrounding it on the dependent variables. Figure 24 shows the conceptual model of the variables and relationships to be measured.

The game session exists of the game session components mentioned in *Step 1: Specifications.* These components exist of game content, briefing, debriefing participant characteristics and game environment. The game environment and briefing with the ethical guidelines are meant to create a safe space, that allow for open and honest conversations and consequently encourages an intergroup dialogue (see *Promoting Intergroup Dialogue*). The manipulation of participant characteristics allows for gender diversity in the game sessions. Gender diversity creates different perspectives on the game content due to the different experiences created by the intersectionality of gender and sexual violence. These different perspectives can as consequence spark more discussion and therefore will contribute to encouraging an intergroup dialogue between women and men (Zuniga & Nagda, 2001). The content cards are meant to start a discussion, or intergroup

dialogue, about the willingness to intervene and SVMA, which on their turn will raise awareness and level of responsibility (or bystander attitudes). The debriefing that follows the game play and provides information about the system of sexual violence and its prevalence is meant to affect the bystander attitudes as well, which on its turn is meant to affect the willingness to intervene and SVMA. Figure 24 shows an overview of the independent and dependent variables of this study. Table 1 provides the base case of the experimental setup with the five components of the game design session.

4.1.2   Hypotheses

Based on Figure 24 hypotheses are formulated to be able to provide an answer for SQ6 in the next two chapters. Sub-question 6 goes as follows: *"What can be inferred from the measured effects about persuasive games as a means for bystander intervention in general?"*. In the hypotheses the effect of the game session overall will be measured. The focal part of the game session is the persuasive game. However, the game is not the only variable that is controlled. As Table 1 shows, this study also controls the game's set-up.

Hypothesis 1: *'The game session increases the willingness to intervene in primary bystander opportunities, reduces SVMA, and raises awareness and level of responsibility (or bystander attitudes) about sexual violence in female and male students.'*
The theory-based socio-ecological communication model of D. Kincaid et al. (2012) has shown that communication through dialogue and entertainment, here persuasive games can directly affect attitudes and beliefs and as consequence can indirectly influence behaviour. As attitudes and beliefs are in this study defined as bystander attitudes and sexual violence myth acceptance, and behavioural willingness is taken as an indicator for bystander behaviour, it can be hypothesised that the communication model has an influence on these variables. More specifically, communication processes of intergroup dialogue were found in the literature to increase awareness and level of responsibility, or bystander attitudes which on their turn have been linked, together with lesser rape myth acceptance, with greater willingness to intervene (Nagda et al., 2009),.

Hypothesis 2: *"The effects of the game session on the dependent variables will fade over time."*
While it is expected that the game session will have a positive impact on the dependent variables, it is speculated that these effects will fade over time (Lamade et al., 2018). The redesigned persuasive game will be evaluated in a relatively short time due to the time limitation of this study. For effects to be effective over a longer period of time, they need to be played longer than an hour and be frequently repeated. Attitude and behaviour change is a process and therefore it can take some time before the impact can be measured (Jozkowski & Ekbia, 2015).

Hypothesis 3: *'The game session encourages an intergroup dialogue.'*
The persuasive game is designed to encourage an intergroup dialogue, by creating for example a safe space, asking thought-provoking questions in the cards, letting participants go round with questions, having a small group for the game session and having a structured session. Literature found that these game session characteristics stimulate intergroup dialogue (Nagda et al. 2012). Moreover, gender-mixed facilitators are also included in the game sessions. Studies show that facilitators are needed to guide and support the communication process of the participants (Nagda et al., 2009; 2012). Therefore, it is hypothesised that the persuasive game will encourage an intergroup dialogue.
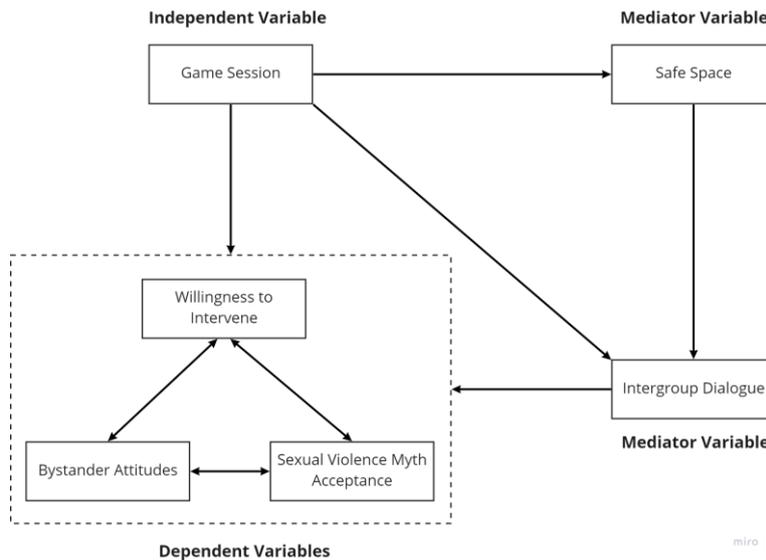
Figure 24 | Concept Model of Independent, Dependent and Mediator Variables

Table 1 | Base Case of Experimental Setup-Up – Game Design Parameters and Description

Game Design Parameters:	Description	Dependent/ Mediator Variable
Content Cards	Forty-eight cards with examples about sexual violence among students in the Netherlands with female victims and male perpetrators divided in five categories each with a scenario or statement asking either "What do you think?" or "What do you do?". Three or four answers are provided on each card to choose from. The cards are answered from the perspective of the bystander.	• Intergroup dialogue • Willingness to intervene • Sexual Violence Myth Acceptance (SVMA) • Bystander Attitudes
Briefing	Discussing guidelines for creating a safe space.	Safe space
Debriefing	• Information about the system of sexual violence • Statistics about the prevalence of sexual violence among students in the Netherlands	Bystander attitudes
Participant characteristics	• Equal number of women and men • Students between 18 and 30 years old • Students (bachelors, masters, PhD) from TU Delft	Intergroup dialogue
Game environment	1. Good lighting 2. Two facilitators: one woman, one man 3. Open-minded and well-informed facilitators 4. Room fitting for max eight people (6 participants plus two facilitators) 5. Seats provide face-to-face interaction (circular seating) 6. Quiet room with limited distractions	Safe space Intergroup dialogue

Hypothesis 4: *'The intergroup dialogue in the persuasive game has a positive correlation with the willingness to intervene in primary bystander opportunities, a negative correlation with 'No Awareness' and a positive correlation with 'Taking Responsibility' of bystander attitudes, and a negative correlation with sexual violence myth acceptance.'*

If the game is able in stimulating an intergroup dialogue between the students, then the new conceptual health model in Figure 7 and Figure 11 in section *2.2.2 Encouraging Bystander Intervention* show that communication can influence attitudes, beliefs and behaviour.

Hypothesis 5: *'The game session creates a safe space.'*

The design choices mentioned in Table 1 are aimed to be implemented to create a safe space. A safe space can for example be created by discussing ethical guidelines in the briefing, having two gender-mixed facilitators who are open-minded and well-informed, providing circular seating, good lightning and a quiet room that is fitted to the group size. Therefore, it is hypothesized that the persuasive game will create a safe space (Holley & Steiner, 2013).

Hypothesis 6: *'The safe space encourages a positive intergroup dialogue.'*

It was found that a safe space is a prerequisite for a positive intergroup dialogue (Nagda et al., 2009; 2012). Therefore, it is assumed that if hypothesis 4 is true, hypothesis 5 must also be true.

4.2 Methodological Approach

This section discusses the methodological approach for the experimental design. First, the use of quasi-randomized controlled trial is discussed, after which an explanation is provided for the mixed-method approach that aims to gain more in-depth understanding about the effect of the persuasive game. At the end of this section the challenges of evaluation will be discussed.

4.2.1 Quasi-Randomized Controlled Trial

Researchers believe that a randomized controlled trial (RCT) is vital to prove the effectiveness of an intervention. RCT's are highly regarded due to their ability to reduce selection bias by randomly allocating participants to either the experimental or control group (Stephenson & Imrie, 1998). This makes RCT internally valid, meaning that any evidence for change found in the trials can be attributed to the intervention and not to an alternative explanation (Mohr et al., 2009). However, this study conducts a quasi-randomized controlled trial (RCT) to measure the effectiveness of the persuasive game, meaning that participants are not fully randomized. Instead, participants are allocated to a group based on their gender to ensure an equal number of men and women in the game sessions within the experimental group as in the control group. This allocation based on gender was determined in the game specifications of participant characteristics in *3.2.2 Step 1: Specifications.*

Quasi-experiments are commonly used for health intervention. Research has shown that the effect size for quasi- and full RCT's are of similar size, meaning that quasi-experiments are usable alternatives for finding evidence about causal relationships when RCT's are not possible (Bärnighausen et al., 2017). Furthermore, Quasi-experiments can have the advantage over RCT of representing the results of intervention implementation conducted in real life. With RCT the procedure of the intervention implementation often does not reflect the real-life impact of the intervention. This means that the results of quasi-RCT's can be of even higher external validity than

the results of RCT, because the results are reproducible in real life and thus can be generalized (Bärnighausen et al., 2017). The persuasive game designed in this study is meant to generate an intergroup dialogue between an equal number of women and men in real life. Therefore, it is important that the experiments also are conducted with an equal number of both sexes. Moreover, quasi-RCT's are normally blinded, and therefore can avoid threats to internal validity as participant in the control group in non-blinded RCT can become resentful and adapt their response to the overall experiment. Therefore, to avoid threats to internal validity, the experimental design aims to blind the participants as much as possible.

4.2.2   Mixed-Method Approach

A mixed-methods approach has been chosen to analyse the experimental group of quasi-RCT. This method makes use of both quantitative as qualitative methods to gain more in depth understanding about the effect of the persuasive game designed in Chapter 3. The complex nature of human phenomena in the game requires a mixed method approach, to help analyse the phenomena from multiple perspectives, thus gaining a complete picture (Doyle et al., 2009). Furthermore, the mixed method approach can give an explanation of the findings by using one method to explain the data from another method (Doyle et al., 2009; Malina et al., 2011). In addition, this approach can be used to test the theories discussed in *Chapter 2. Literature Review* from which the dependent variables and game design choices have been determined (Doyle et al., 2009).

More emphasis is put in this study on the quantitative method to collect experimental data from the surveys. The quantitative experimental data from the pre-and post-surveys are compared to find an effect of the intergroup dialogue in the persuasive game on the willingness to intervene. Qualitative data is collected from notes taken during the physical experiment and interviews and will then be analysed to explore the communication processes during game sessions and to help explain the quantitative data. The methods in this embedded design, also known as nested mixed methods design, that has one dominant method and one supportive, are conducted concurrently. This means that the quantitative and qualitative data are collected of and during the physical experiments (Doyle et al., 2009). Qualitative data from the interviews with participants are collected sequentially after the game sessions to help explain and gain additional understanding of the quantitative data from the surveys. This phase can be categorized as sequential explanatory design according to Creswell et al. (2003). The quantitative experimental data from the pre-, post-surveys were compared to find an effect of the intergroup dialogue on the dependent variables mentioned in *4.1 Variables & Hypotheses.* The pre-and post- surveys of the experimental group were then compared with a follow-survey, which is taken one month after the post-survey. The final step of this study is analysed and compared to the quantitative data from the experimental and control group. Figure 25 provides an overview of the research design of the mixed method approach used for in this study.

Concurrent Embedded Mixed Method Approach

Quantitative
Qualitative → Data Convergence → Data Interpretation

Sequential Explanatory Mixed Method Approach

Quantitative → Qualitative → Data Convergence → Data Interpretation

Combination of Concurrent Embedded & Sequential Explanatory Mixed Method Approach

Quantitative
Qualitative → Data Convergence → Qualitative → Data Interpretation

Figure 25 | Overview of Research Mixed Method Design

4.2.3   Challenges of Evaluation

There are a few challenges related to the evaluation of the effectiveness of the persuasive game. The first, is that the evaluation will be of short-term, due to the relatively short research duration of the thesis. However, long-term evaluations have been found to be more effective. Attitudinal change and behavioural change is a process and therefore it can take some time before the impact can be measured (Jozkowski & Ekbia, 2015). Second, changes in social gender-norms affect the whole community, but few interventions have measured the social impact beyond the individual participants. Given that the persuasive game can only be played by a small group of participants, the community impact might be limited. Therefore, this research only focusses on measuring changes in the individual on the short-term.

Moreover, the persuasive game of Hoobroeckx et al. (2021) is played within a short amount of time, but it has been proven that long-duration interventions are more effective than short-term interventions. Traditional interventions, such as face-to-face workshops and trainings, that aim to reduce sexual violence are typically long. However, these interventions have also been found to be more cost- and resource-intensive for academic institutions. In addition, if it's not mandatory, the interventions vary in extent to how many students they attract and expose to (Jozkowski & Ekbia, 2015; Dworkin et al., 2013). Because of this, there is doubt about the practicality of traditional interventions in higher education (Anderson & Whiston, 2005). It is suspected that the attractiveness of the persuasive game, will attract more participants. Moreover, it is believed that the game can be easily diffused over the student community due to its resource-efficient design. However, due to the small number of participants that can play the game, "Boxing the Boxes" might be costly, as more games need to be bought. Whether the game is practical feasible for colleges and universities needs to be further discussed after evaluation.

Lastly, while effective preventive intervention programs can lead to cultural change, their evaluation and implementation require social and structural change in the respective community as well. This means that in order for a cultural change in the system to occur, all members of the institution need to contribute to a positive cultural change and support the principles that are being carried out by the preventive interventions (Eriksen et al., 2021). Students alone cannot be the only bearers for this change. They need the leadership and engagement from the top. Members at the top have the power and resources to make supportive pathways for the accessibility and awareness of interventions that can establish a gender-equitable culture (Eriksen et al., 2021; Lorist, 2018). Therefore, it seems vital to engage decision-makers in education in the evaluation and implementation of intervention tools.

4.3   Experimental Design

The experimental design is described in this section. The design starts with an explanation of how participants are recruited for the quasi-controlled experiments, which is followed by reporting the materials that have been used to measure the outcome variables. Finally, a detailed outline is provided for the procedure that aims to investigate the relationship between the variables.

4.3.1   Participants

Sampling Procedure
Approval from the Human Research Ethics Committee (HREC) of the TU Delft was obtained first before the recruitment of the participants started. The approval letter from HREC can be found in *Appendix E: Advertisement Materials.* Bachelors, Masters and PhD students from all TU Delft faculties and nationalities between 18 and 30 years old were invited to participate in this experimental study. Students from other universities or academic institutions and students younger than 18 years old and above 30 years old were excluded, as was determined in 3.2.1*Step 1: Specifications.* For recruitment purposes, multiple channels advertised the study through April and May 2022.

Posters were created to be used in advertising the study (*see Appendix E: Advertisement Materials*). Emails and posters were sent to the library's service desk and the faculty's communication department to promote the study on screens in hallways or the online learning environment Brightspace, which students frequently use. Seven buildings agreed to promote the study on screens. In addition, 43 physical posters were hung up on the whole campus: in the TU Delft library, the Aula, the sports and culture facility, and each faculty. Permission needed to be asked and was received in each campus building.

Furthermore, the study association Curius from the faculty of Technology, Policy and Management (TPM) at TU Delft was asked to help recruit students. They helped print out flyers and hand them to association members. They also allowed access to seven WhatsApp groups for masters and bachelors studies of TPM, which were also used to promote the study. In a monthly joined meeting, other study associations were also asked to help with recruitment. Furthermore, close contacts and other external parties, such as friends, neighbours and professors, were also requested to spread the word about this study. Snowballing sampling was also used to recruit participants via other participants. Participants could voluntarily sign-up by responding to an online Qualtrics form.

The advertisement materials and the messages sent in WhatsApp groups and by word did not fully disclose the topic of this study to limit bias and increase the engagement of potential participants. Instead, the research was framed during recruitment as research about an interesting social dilemma game. Moreover, it was during sign-up introduced as research that aims to encourage a dialogue among students about transgressive behaviour. Notice that the word 'sexually' has been removed from 'transgressive behaviour' and how this term is placed at the end. Total masking of the subject was ethically not aspired due to the topic's sensitivity.

According to Eriksen et al. (2021) and Lorist (2018) prevention programs need the support from the top. Therefore, help was sought from the highest board of the faculty of TPM and the university. To make this study more attractive to students, funding was attained by the faculty of TPM to compensate participants with a 10-euro bol.com voucher. Moreover, support was gained from the

TU Delft Executive Board and the Integrity Officer of TU Delft, which was allowed to be announced when recruiting participants.

Sampling Size and Power

According to the central limit theorem, a minimum of 30 participants are required in each independent group for research to be statistically relevant. As two independent groups were involved in the study, the experimental and the control group, recruiting a minimum of 60 participants was aimed.

4.3.2   Materials 1: Development of Scales

Based on literature-based scales, three surveys, one demographic questionnaire and one short additional questionnaire have been developed, to assess the mediator and dependent variables shown in Figure 24. In this section, the development of these assessment materials is explained, and the quality of the materials have been addressed. The quality of the materials is presented with the reliability scores of each survey. These reliability scores are presented with Cronbach's alfa, which is a measure of internal consistency within the constructs and represent how close the items within a construct are. A general rule of thumb is that a reliability score above .70 is good.

The original scales from literature and the adapted version of these scales can be found in Appendix *B.1. Development of Scales*. The development of the materials was based on five criteria. First, the surveys which measure the willingness to intervene and bystander attitudes only addresses primary bystander intervention as mentioned in section *2.3.3 Bystander Opportunities*. Second, the items need to be connected to the context of sexually transgressive behaviour among students, defined in *2.3 The system of Sexual Violence*. Third, the items address sexual violence against women as specified in 3.2.2 *Step 1: Specifications*. Fourth, the language of the scale's fits with the language of the students. Five, the surveys take between 10 and 15 minutes to fill in. This criterion was added to prevent lengthy surveys and therefore ensure the engagement of the participants.

Development of Sexual Violence Myth Acceptance Scale (SVMAS)

To assess the dependent variable 'sexual violence myth acceptance' two evidence-based surveys have been used to design the Sexual Violence Myth Acceptance Scale: the Sexual Assault Myth Acceptance (SAMAS) from Recalde-Esnoz et al. (2021) and the Rape Excusing Attitudes and Language Scale (REALS) from Hahnel-Peeters & Goetz (2022). SAMAS was used to measure sexual violence myth acceptance in relationship with alcohol consumption. Alcohol was found to be one of the five most contributing risk factors of sexual violence (see 2.3.2 *Context of Sexual Violence in the Netherlands*) and therefore SAMAS was chosen as measurement instrument. REALS is an updated survey of rape myth acceptance and reflects more nuanced attitudes and beliefs. REALS provided additional items of interest, that could not be found in SAMAS, such as "If she doesn't physically resist, she must have thought it wasn't that bad" and "If two individuals are in a sexual relationship, it cannot be rape". The chosen and adapted items from SAMAS and REALS form one scale, named the Sexual Violence Myth Acceptance Scale which is shown in *Appendix B.2.1. Sexual Violence Attitudes and Beliefs.*

Both SAMAS and REALS are five-point Likert scales ranging from strongly disagree to strongly agree. SAMAS consists of ten items and is made up of three constructs: responsibility of the victim, social conventions of sexuality, and context of sexual assault. REALS consists of 20 items divided over four constructs: exaggeration of harm, confusion of consent, and lied about the event, lack of defence against rape. The three-factor solution of SAMAS and four-factor solution of REALS account for 66.29

and 58.82 percent of the total variance respectively. (Recalde-Esnoz et al., 2021) has calculated the Cronbach's alpha for the whole survey and separately for the constructs, which are presented in Table 2. Hahnel-Peeters & Goetz (2022) only calculated the reliability for the whole survey, but not for the construct. The paper shows that REALS has an internal consistency of α = .93.

Table 2 | Reliability Scores of Constructs for Sexual Assault Myth Acceptance Scale (SAMAS)

FACTOR	RELIABILITY
Responsibility of the Victim	Cronbach's α = .746
Conventions of Sexuality	Cronbach's α = .666
Context of Sexual Assault	Cronbach's α = .544
Overall Score	Cronbach's α = .738

SEXUAL ASSAULT MYTH ACCEPTANCE (SAMAS). Two items have been excluded from the survey for this study: "Many women tend to over interpret well-intentioned gestures", and "for an act of sexual violence to take place there must always be physical contact". The first two items have been excluded as this item was deemed to raise confusion and could raise a lot of questions. The phrasing of the remaining seven items have been adapted to fit the survey to the language of the students, and to also include the wider continuum of physical sexual violence. For example, the item "A woman who dresses provocatively should not be surprised if a man tries to force her to have sex" was adapted to "A woman who dresses *sexy* should not be surprised if a man touches her inappropriately". Lastly, one item was added to the construct "social conventions of sexuality" which was also included in the statements of Driessen & Polet (2021) and was deemed relevant to the context of sexual violence among students: "If the man was drunk when the woman didn't want to have sex, it cannot be called rape". In total eight items from SAMAS have been included. The chosen and adapted items of SAMAS are presented in Appendix *B.1.1. Sexual Assault Myth Acceptance Scale.*

RAPE EXCUSING ATTITUDES AND LANGUAGE (REALS). Six out of 20 items have been chosen for inclusion. There were multiple reasons for why items have been excluded. The first reason is that some items were similar to the items of SAMAS. For example, the item "If a woman sexually arouses a man and then changes her mind, it's not his fault if he rapes" in REALS was similar to "If a woman has no intention of having sex with a man, she should not flirt with him" in SAMAS. Therefore, the item in REALS was excluded. For the same reason, the construct 'lack of defence against rape' was excluded as the items were already represented by the other items in the construct 'responsibility of the victim' of SAMAS. For example, the item "A woman is somewhat responsible for being raped if it happened while she was drunk" in REALS, was similar to the item "If a woman is sexually assaulted while drunk, she is partly to blame for having lost control of her" in SAMAS. Furthermore, if items in REALS had a similar meaning, the item that was more nuanced was chosen to be included to prevent lengthy surveys. For example, between the items "if a victim of rape doesn't fight back, they must have thought the assault wasn't that bad" and "If she doesn't physically resist, she must have thought it wasn't that bad", the later was included. In addition, the item "Unless she audibly says 'no' she cannot claim that she was raped" was removed from the construct 'lied about the event' and was moved to the construct 'confusion of consent' in REALS, as this was deemed to be more fitting. The other items in the constructs were not included, as they were considered 'old-fashioned', such as the item 'Women often report rape to get even with men'. The chosen and adapted items of REALS are presented in Appendix *B.1.2. Rape Excusing Attitudes and Language Scale.*

Development of Bystander Attitudes Scale (BAS)

The bystander attitudes survey with a 5-point Likert Scale from (Banyard et al., 2014) was used to measure the dependent variable bystander attitudes. As mentioned in *2.2.2 Encouraging Bystander Intervention* in *2.2.2 Encouraging Bystander Intervention* for this study bystander attitudes includes awareness and responsibility. The scale of (Banyard et al., 2014) includes thirty-six items which were divided into three constructs: action, taking responsibility, and no awareness. The constructs explain 50.8 percent of the total variance. Furthermore, the scale was initially referred to as the Readiness to Help scale and included topics such as sexual abuse, relationship abuse, and stalking. The reliability score of Cronbach's alpha was found for each construct and is shown in Table 3.

For the development of the bystander attitudes scale, the construct 'Action' was first excluded, as the items in this construct represented proactive bystander opportunities, instead of primary bystander opportunities. For example, "I recently attended a program about sexual abuse" is a proactive bystander opportunity as it shows the commitment of the bystander to address sexual violence before it took place and without a perceived risk of sexual violence. Furthermore, all items were repeated for the different topics. Therefore, the repetition of these items was excluded, and the topic was changed to 'sexual violence'. For example, "I think I can do something about sexual abuse" was changed to "I think I can do something about sexual violence". In the end six items, three per construct, were included in the final survey. The chosen and adapted items from (Banyard et al., 2014) are shown in Appendix *B.1.3. Readiness to Help Scale*.

Table 3 | Reliability Scores of Constructs for Bystander Attitudes Scale

FACTOR	RELIABILITY
Action	Cronbach's α = .93
Taking Responsibility	Cronbach's α = .91
No Awareness	Cronbach's α = .87

Development of Willingness to Intervene Scale (WIS)

The 20-item one-factor 'Perception of Peer Helping Scale and Intent Scale' from (Banyard et al., 2014) was used to design the 'Willingness to Intervene Scale'. This survey was designed to ask participants how they viewed their friends as active bystanders. Participants were asked to rate on a 5-point rating scale, ranging from 1 (not at all likely) to 5 (extremely likely), how likely their friend would respond in the scenarios the items portrayed. The one-factor survey explains 51.34 percent of the variance and has a reliability score of Cronbach's alpha of .95. The scales have been chosen because their respective items included scenarios that addressed bystander intervention.

Five out of 20 items were chosen to be included in this study. Ten items about partner abuse were excluded. Additionally, another five items were excluded as it represented secondary and tertiary, or proactive bystander intervention. As mentioned before only primary bystander opportunities were included. For example, "Criticize a friend who says they had sex with someone who was passed out or didn't give consent" was deemed to belong to tertiary bystander opportunity, as it concerns with intervention after the fact. Moreover, the 5-point rating scale was changed to a scale ranging from 0 (not willing to do) to 100 (willing to do). The adapted survey asked participants how willing they are to intervene in the situations of primary bystander attitudes represented in the items, by entering a number from 0 to 100. Accordingly, the items were rephrased. For example, "Criticize a friend who says they had sex with someone who was passed out or didn't give consent" to "*I am willing* to criticize a friend who *tells me he* had sex with someone who was passed out or didn't give consent".

Furthermore, one item about verbal sexual harassment was added to the survey as it was also included in the scope of the game design: "I am willing to say something to someone when I hear that person is catcalling a woman on the street". The chosen and adapted items from Banyard et al. (2014) are shown in Appendix *B.1.4. Perceptions of Peer Helping Scale and* B.1.3. Readiness to Help Scale*.*

Communication Process Scale (CPS)

The 20-item communication process survey from Nagda (2006) is used to measure the quality of the communication process of the intergroup dialogue aimed to be encouraged by the persuasive game. Nagda (2006) developed the scale to understand communication processes, underlying intergroup dialogue between students, and their role in bridging differences. The survey uses a 4-points scale ranging from 1 (not important at all) to 4 (very important) and asks participants how important each item is during their learning process about racial/ethnic identities. The survey exists of four constructs: alliance building, engaging self, critical reflection, and appreciating difference. These constructs reflect the intergroup dialogue communication processes. The constructs explain 65.9 percent of the total variance. The reliability score of Cronbach's alpha is known for each construct and is shown in Table 4.

All items of the survey were included in this study. Adaptations were made to make the survey more fitting to this study. First, the four-point scale was changed to a 5-points Likert Scale with 1 (strongly disagree) to 5 (strongly agree). The adapted survey asks participants how much they agree with each item that reflects the communication process during the game. Accordingly, the items were rephrased. For example, "being able to disagree" was rephrased to "I was able to disagree". Next the topic from the items was changed from racial/ethnic identities to sexual violence. For example, "Exploring ways to take action with people from different racial/ethnic groups" was changed to "I was able to explore ways to take action with people with a different gender". The chosen and adapted items are shown in Appendix *B.1.5. Communication Process Scale.*

Table 4 | Reliability Scores of Constructs for Communication Process Survey

FACTOR	RELIABILITY
Alliance building	Cronbach's α = .92
Engaging self	Cronbach's α = .82
Critical self-reflection	Cronbach's α = .83
Appreciating difference	Cronbach's α = .80

Demographics Questionnaire

To test if the difference in survey answers could be deduced to the demographics of the participants, questions were asked about the age, gender, nationality, educational degree, and faculty of education. Age and gender were relevant to know for the inclusion and design of the experiments. Moreover, according to Barnett et al. (2018) and Glick (2005) the acceptance of rape myth acceptance is related to the demographic characteristics of respondents, such as gender and nationality. For example, people from a (national) culture with conservative ideologies and men were more likely to accept rape myth acceptance than people from a culture with progressive ideologies and more than women. Therefore, gender and nationality matter to measure, as the study welcomes students from all nationalities and faculties. Each faculty also has their own culture, which is therefore relevant to include.

Additional Questions

To measure sense of safety from participants of the experimental group and to understand how the experiment was perceived, seven additional questions have been asked to assess their experience of the game. In addition, participants were asked about which part of the physical experiment was most influential.

4.3.3   Materials 2: Pilot-test of Scales

Before the surveys could be used for measuring the outcome variables in the experiments, the underlying structure and the quality of the scales needed to be determined. Therefore, the scales of SVMAS, BAS and WIS have been pilot-tested and their reliability and validity scores have been analysed with SPSS. SPSS allows for complex statistical data analysis. This section first discusses the sampling procedure and the data analysis, after which the results are provided.

Sampling Procedure

In total eight constructs with each containing a minimum of three items from SAMAS, REALS, bystander attitudes and willingness to intervene were tested. The items from SAMAS and REALS were taken together to form one scale with five constructs. This scale was named Sexual Violence Myth Acceptance Scale (SVMAS). To find the statistical significance, a minimum of 24 respondents were required to fill in the online Qualtrics survey. For the pilot-survey there was no criteria for the characteristics of the participants. Therefore, everyone was welcome to participate. In total 31 completed the survey. One respondent only finished the first 15 items, which belonged to SVMAS, and was therefore included for the analysis of this particular survey. Respondents were found over a period of two weeks by sending requests to friends, family, and by reaching out people in WhatsApp groups. Friends from TU Delft that participated in the pilot-survey, were excluded from participation in the experiments to limit bias. Moreover, an email was sent to the employees of the faculty TPM to participate in the pilot-survey.

Data Analysis

First, data was cleaned from incomplete datasets and irrelevant columns, such as the column for the date of participation. Then, an exploratory factor analysis (EFA) was conducted to determine the underlying structure of the three scales. An exploratory factor analysis is normally carried out, when the survey has never been used before, which is also true for this study. Moreover, the Cronbach's Alpha was calculated to determine the reliability of the scale (Mooi et al., 2018).

SEXUAL VIOLENCE MYTH ACCEPTANCE (SVMAS). It was hypothesized that SVMAS would result in a five-factor solution as is presented in Appendix *B.1.1. Sexual Assault Myth Acceptance Scale* and *B.1.2. Rape Excusing Attitudes and Language Scale.* Construct analysis for SVMAS was carried out with principal component analysis (PCA) and Varimax rotation to explore for patterns in the scale and to verify the hypothesis. Varimax rotation is a common measure of PCA, which maximizes the sum of the variance of the squared loadings (Mooi et al., 2018).

Before PCA could conducted, the data needed to fulfil several requirements, such as: the use of appropriate scales, sufficiently large sample size, independent observations and variables which are sufficiently correlated (Mooi et al., 2018). Scales are considered appropriate if they have five or more response categories. The adapted SVMAS is an ordinal 5-point rating scale, thus fulfilling the first requirement. Second the sample is considered large enough, when all communalities are above .60. As is shown in Table 16 in Appendix *C.1. Results SPSS of Sexual Violence* Myth Acceptance Scale, all

items fulfil this requirement. Next, the observations can be found to be independent, as the respondents were not aware of the other respondents and filled the survey in independently from each other. Finally, variables can be said to be sufficiently correlated if the Kaiser-Meyer-Olkin (KMO), which is a measure of sampling adequacy, is found to be above .600. The higher the KMO score, the more adequate the data sampling is. PCA resulted in a KMO of .459, which is found to be 'unacceptable' (Mooi et al., 2018). Moreover, conducting the initial PCA with Varimax resulted in a five-factor solution with a determinant lower than .00001, which also was found to be unacceptable. Therefore, the reliability analysis was conducted to determine which items needed to be deleted.

The reliability analysis resulted in α = .853. Removing item 1 increased Cronbach's alpha from .853 to .865. PCA was then repeated without item 1 but resulted again in a five-factor solution with a determinant lower than .00001. Therefore, reliability analysis was repeated, and this time item 9 was removed, which increased Cronbach's Alpha from .865 to .872. After deleting item 9, PCA was again repeated and resulted in a four-factor solution with a determinant of < .00001 and a KMO of .429. Furthermore, the PCA showed a cross-loading in the rotated component matrix of item 6 with values of .588 and .575, and item 7 with values of .560 and .499. First, item 6 was removed and PCA was repeated. The determinant could still not be accepted. Cross-loading was still present for item 7 and item 7 was therefore removed from analysis. The reliability analysis showed that the Cronbach's Alpha would increase the most when item 11 was removed. Conducting PCA without item 11, resulted in acceptable determinant and KMO scores. However, the communality of item 2 was lower than .400 and was therefore removed.

The final PCA resulted in a three-factor solution with a determinant score of .002, a KMO score of .773, and all communalities above .40. These scores were acceptable. The hypothesis that EFA would results in a five-factor solution as was presented in in Appendix *B.1.1. Sexual Assault Myth Acceptance Scale* and *B.1.2. Rape Excusing Attitudes and Language Scale* was found not to be true.

The three-factor solution explained 80.4 percent of the total variance. A total variance score above 60 percent was also found to be acceptable (Hooper, 2012). There was still some cross-loading present for item 10 and 4, but since the second value of these scores were close to the threshold value it was decided to keep them. The final results can be found in Table 17, Table 18, Table 19 in *Appendix C.1. Results SPSS of Sexual Violence* Myth Acceptance Scale. The final reliability analysis resulted in an overall Cronbach's α = .850 (*M* = 11.23; *SD* = 3.78). The reliability scores for each construct are presented in Table 5.

The first factor (FACT1) explains 30.50 percent of the variance and exists of the following variables:
7. E3: "If a woman doesn't physically resist, she must have thought it wasn't that bad."
8. E8: "If a woman is sexually assaulted while drunk, she is partly to blame for having lost control."
9. E15: "Unless she audibly says "no," she cannot claim that she was raped."

Cronbach's α = .843; *M* = 4.29; *SD* = 1.99.

The second factor (FACT2) explains 15.09 percent of the total variance and exists of the following variables:
10. E5: "A woman who has had many sexual partners has less credibility if she reports an assault."
11. E12: "Alcohol is often the cause of a man raping a woman."
12. E14: "If a woman has no intention of having sex with a man, she should not flirt with him"

Cronbach's α = .849; M = 4.71; SD = 1.99.

The third factor (FACT3) explains 13.98 percent of the total variance and exists of the following variables:

13. E4: "A woman who dresses sexy should not be surprised if a man touches her inappropriately."
14. E10: "If a woman is sexually harassed, she must have done something to provoke it."
15. E16: "If the man was drunk when the woman didn't want to have sex, it cannot be called rape."

Cronbach's α = .684; M = 3.58; SD = 1.03.

Table 5 | Pilot-Test Reliability Scores of Constructs for Sexual Violence Myth Acceptance Scale

FACTOR	RELIABILITY
FACT1	Cronbach's α = .843
FACT2	Cronbach's α = .849
FACT3	Cronbach's α = .684

BYSTANDER ATTITUDES SCALE (BAS). Before analysis could be conducted, three items needed to be reverse coded, as the sentences were negatively phrased. This approach is used when there are negatively and positively worded items in the scale. The items that were reverse-coded are E2: 'I don't think there is much need for me to think about sexual violence on campus'; E3: 'I don't think sexual violence is a problem on campus', and E5: I don't think there is much I can do about sexual violence on campus'. It was hypothesized that the new adapted version of the Bystander Attitudes Scale exists of two factors (i.e. constructs) as represented in Appendix *B.1.3. Readiness to Help Scale.* This hypothesis is based on that one factor has been excluded and the remaining items have not been removed from their original constructs.

An exploratory factor analysis (EFA) was conducted with principal components analysis (PCA) and varimax rotation to explore the underlying latent variables. EFA helped to identify the number of constructs and the underlying factor structure of a scale. This method did not rely on previous theories or assumptions of the factor structure. As the scale of Banyard et al. (2014) was adapted and reduced, this method was deemed appropriate. PCA was used to help find the interrelationships between the items by finding a unity of items that represents one factor. Moreover, PCA extracts factors to account for the variables variances. Lastly, Varimax rotation is a common measure of PCA, which maximizes the sum of the variance of the squared loadings (Mooi et al., 2018).

Before PCA could be conducted, the data needed to fulfil several requirements, such as: the use of appropriate scales, sufficiently large sample size, independent observations and variables which are sufficiently correlated (Mooi et al., 2018). Scales were considered appropriate if they had five or more response categories. The adapted BAS of Banyard et al. (2014) was originally an ordinal 5-point rating scale. Next, the sample is considered large enough, when all communalities are above .60. As is shown in Table 20 in Appendix *C.2. Results SPSS* of Bystander Attitudes, all items fulfil this requirement. Furthermore, the observations can be found to be independent, as the respondents were not aware of the other respondents and filled the survey in independently from each other. Finally, variables can be said to be sufficiently correlated if the Kaiser-Meyer-Olkin (KMO), which is a measure of sampling adequacy, is found to be above .60. Table 21 in Appendix *C.2. Results SPSS* of Bystander Attitudes shows that the KMO was .756, which is said to be 'middling'.

Conducting PCA with Varimax resulted in a determinant of .055, which is greater than .00001 and can therefore be deemed acceptable. Moreover, the Scree plot in Figure 53 and the Total Variance Explained Table in Table 23 indicate a two-factor solution that explains 73.0 percent of the Total Variance. A total variance score above 60 percent was found to be acceptable (Hooper, 2012). The rotated component matrix in Table 26 in Appendix *C.2. Results SPSS of Bystander Attitudes* shows the factor loadings of each item for each component. A factor loading above .50 was deemed to be acceptable. Table 26 shows that component one includes four items, and component two three items. It is recommended to have a minimum of three items per factor. However, cross-loading can be found for item 6, which can make it difficult to make a distinction between the components. Therefore, item 6 is removed. Excluding item 6 resulted in a determinant of .203, KMO of .711 and total variance of 73.8 percent, which all fulfils the requirements. Therefore, the two-factor solution is accepted. The new rotated component matrix can be found in Table 25 in Appendix *C.2. Results SPSS of Bystander Attitudes*. After conducting EFA, the two-factor solution was analyzed for internal consistency. The overall Cronbach's Alpha was .777 (*M* =18.19; *SD* = 3.67). Cronbach's alpha values above .700 indicate acceptable internal consistency (Taber, 2018). The reliability scores for each construct are presented in Table 6.

The hypothesis that EFA would return a two-factor solution was found to be true. FACT1 was found to be similar to the construct 'No Awareness' of (Banyard et al., 2014), and the items of FACT2 were also found in the construct 'Taking Responsibility' of (Banyard et al., 2014). Therefore, these factors have been named accordingly.

The first factor 'No Awareness' of Bystander Attitudes Scale explains 53.1 percent of the total variance and exists of:
1. E2: "There is not much need for me to think about sexual violence on campus."
2. E3: "I don't think sexual violence is a problem on campus."
3. E5: "I don't think there is much I can do about sexual violence on campus."
Cronbach's α = .744; *M* = 11.03; *SD* = 2.59.

The second factor, 'Taking Responsibility' explains 20.7 percent of the total variance and it exists of:
4. E1: "I plan to learn more about the problem of sexual violence on campus."
5. E4: "Sometimes I think I should learn more about sexual violence."
Cronbach's α = .766; *M* = 7.16; *SD* = 1.68.

Table 6 | Pilot-Test Reliability Scores of Constructs for Bystander Attitudes Scale

FACTOR	RELIABILITY
No Awareness	Cronbach's α = .744
Taking Responsibility	Cronbach's α = .766

WILLINGNESS TO INTERVENE SCALE (WIS). To create the one-factor solution Willingness to Intervene Scale of Banyard et al. (2014), items have been only removed, not added. Therefore, it was hypothesized that the exploratory factor analysis would result in a one-factor solution. An exploratory factor analysis (EFA) was conducted with principal components analysis (PCA) and varimax rotation to explore the underlying latent variables. Varimax rotation is a common measure of PCA, which maximizes the sum of the variance of the squared loadings (Mooi et al., 2018).

Before PCA can be conducted, the data needed to fulfil several requirements, such as: the use of appropriate scales, sufficiently large sample size, independent observations and variables which are sufficiently correlated (Mooi et al., 2018). Scales are considered appropriate if they are an interval scale, which is the case for WIS. Furthermore, the observations can be found to be independent, as the respondents were not aware of the other respondents and filled the survey in independently from others. Finally, variables can be said to be sufficiently correlated if the Kaiser-Meyer-Olkin (KMO), which is a measure of sampling adequacy, is found to be above .60. Table 28 in *Appendix C.3. Results SPSS of Willingness to Intervene Scale* shows that the KMO is .728, which is said to be 'middling'. The determinant score is .042 which is also acceptable.

The PCA resulted in a one-factor solution that explains 68.30 precent of the total variance. This one-factor solution confirmed the hypothesis. Table 30 shows the factor loadings of each item for each component in the matrix. A factor loading above .50 is deemed acceptable. Table 31 shows that all communalities were above .40 which was accepted. Lastly, the internal consistency was measured and resulted in a Cronbach's Alpha of .881 (*M* = 380.94; *SD* = 103.80), which is considered to be very good.

4.3.4   Procedures

This section discusses step by the step the process of the experimental research. The experimental group received the game session as intervention, while the control group received nothing. Five phases can be differentiated for the experimental group, and two for the control group. The five phases are the following: pre-survey, physical game session (experimental phase), first post-survey, interviews, and follow-up survey. The control group was excluded from the interviews and follow-up survey due to time limitation. Figure 26 shows an overview of the phases for both groups and their place in time.

Assigning Participants to Group
The study used a quasi-experimental between-subjects design. With quasi it is meant that participants were not randomly assigned to either the experimental or control group. Instead, a conscious decision was made to assign participants to one of the groups to ensure that there was an equal number of men and women joining the game sessions, as was determined in *3.2.2 Step 1: Specifications.* If this was not possible, then a group of three women and two men were made. In addition, the first participants that signed-up were invited for the game sessions, as conducting the physical experiments was a priority over creating a control group. If participants refused the invitation for the game sessions, then they were invited to only fill in two surveys. It was attempted to mask the control group, by offering participants another option to join the study. The words 'control group' and 'pre- and post-surveys' were never used, but instead participants were offered to fill in 'two surveys' a week apart from each other. Due to the posters participants knew that there was an experiment conducted with a game, so the control group was given the option additionally to play the game after the second survey. The effectiveness of this masking was however not assessed.

Pre-and Post-Survey
Both the experimental as the control group received the pre- and post-survey which allowed for a within-subjects design. Both groups were tested before and after a condition, meaning in this case either the game or nothing, to compare within the respective group and analyse whether the condition has led to change. All participants were invited to the online pre-survey in Qualtrics

(www.qualtrics.com) eight days before the experimental phase started or before the control group received their second survey. Participants had to fill in the pre-survey within 24 hours after receiving the invitation to the pre-survey, and had to send a confirmation that they filled the survey in. This survey took approximately 10 minutes and started with an opening statement, which also included a warning that the sensitive topic of the survey might trigger the participants. Participants agreed to the opening statement by completing the survey. The experimental group also received a follow-up survey, which was a duplicate of the pre-survey one month after the game session.

The survey consisted of 32 items about sexual violence myth acceptance, bystander attitudes and the willingness to intervene. These items were answered on a five-level Likert scale. Furthermore, the survey excluded the demographics questionnaire to limit the possibility for re-identification in Qualtrics, as data was not stored locally in Europe, but in the United States. Lastly, participants were asked to fill in the last three digits of their phone number in the pre- and post-surveys to compare the results before and after the serious game session. As there was a chance that participants in the experiments had the same last three digits of the phone number, these digits were be coupled with the corresponding game session code. This game session code existed of the date of the game session together with the number of the game session of that day. The overall code looked as follows: *last three digits -- date game session + number game session.*

Seven days after participants from the control group filled in the pre-survey, they received the post-survey via email. The post-survey for the control group was the same as the pre-survey. In the respective email the control group was also requested to fill and sign in an explicit consent form and the demographics questionnaire. The participants were requested to fill both the survey as the forms in within 24 hours. Furthermore, they were requested to either hand the forms in via email or if they preferred to hand the forms in physically in real-life. A few participants did not fill in the second survey together with the forms for unknown reasons. Therefore, they were excluded from further research. The rest of the participants chose to send the forms back via email. The participants from the experimental group received the post-survey after the game session. This survey had 20 additional items with a five-level Likert scale about the communication process, and eight open questions about the game experience of the participants. In total the participants from the experimental group were asked 60 questions in the post-survey.

Face-to-face Experiments
Six experiments in total were conducted. The participants in the experimental group were assigned to the game session groups based on their gender. It was attempted to create game session groups of six participants with an equal number of women and men. However, this was only succeeded for four out of six game sessions that were organised. The other two game sessions existed of five participants with three women and two men. Eight days after the participants received the pre-survey, they joined the physical experiments in a project room in the faculty of TPM.

DAY 1 - 3

Phase 1:
Pre-Survey

Experimental Group (EG).
N ≥ 30.
Participants have 3 days to fill in the survey

Phase 1:
Pre-Survey

Control Group (CG).
N ≥ 30.
Participants have 3 days to fill in the survey.

Phase 2:
Experiments

EG.
N ≥ 30.
Participants will be observed while playing the serious game 'Boxing the Boxes'.

DAY 8

Phase 3:
Post-Survey

EG and CG.
N ≥ 30.
Participants fill in the survey after the experiment.

Phase 2:
Post-Survey

Control Group (CG).
N ≥ 15.
Participants fill in the pre-survey after a week.

DAY 15

Phase 4:
Interviews

EG.
N ≥ 7.
Participants will be interviewed after the post-survey.

DAY 18

DAY 39

Phase 5:
Follow-Up

EG.
N=30.
Participants fill in the survey again after 28 days.

Figure 26 | Procedure of experimental Research Design

All game sessions were organised in the same manner. Each was facilitated by two students, a woman and man, including the corresponding researcher, and was held in the same room, which was fitted to the group size, had good lighting, had arranged seating in a circle around a table, and was situated in a quiet area of the faculty, as was specified in 3.2.2 *Step 1:* Specifications*. The researcher was the head facilitator and was supported in documentation of the physical experiment by a second facilitator.

The sessions took 1.5 hours and existed of three parts including a break: filling in the forms, briefing and time for game play, and the debriefing together with the post-survey. See Figure 27 for an overview including timing for each part. Each session started with a short introductory round of every participant and facilitators. Everyone was asked to state their name, study, and reason for joining the participant. The introduction was followed by part one. As was agreed with HREC, consent forms needed to be signed by the participants before the game session was allowed to start. Hereafter, the participants were asked to fill in the demographic's questionnaire, which was not allowed to be filled in online in Qualtrics, as was previously mentioned. The second part that followed, started with the debriefing in which the set-up and the rules of the game were explained. Additionally, the ethical guidelines were discussed with the participants. Participants were first asked to reflect about ways to create a safe space during the game, before additional guidelines were given by the head facilitator. Moreover, before the game play started, participants were made again aware that they were free to either skip a card, not answer the card of someone else, or leave the room when it gets too much.

Each game time started with a short demo round to ensure that participants understood how the game was played. After 30 minutes of playing participants received a 10-minutes break which they could use as a bathroom break or to simply relax. However, they were instructed not to talk with anyone other than the people in the experiment room, to limit external influence. After the break they were first asked questions about their experience of the game. Next, they were informed about the system of sexual violence and the new Dutch rape law and were additionally given statistics about the prevalence of sexual violence among students in the Netherlands. During the game session and debriefing the participants were observed and notes were made either by hand or on the computer by both facilitators. The physical experiment ended with a 15-minutes post-survey.
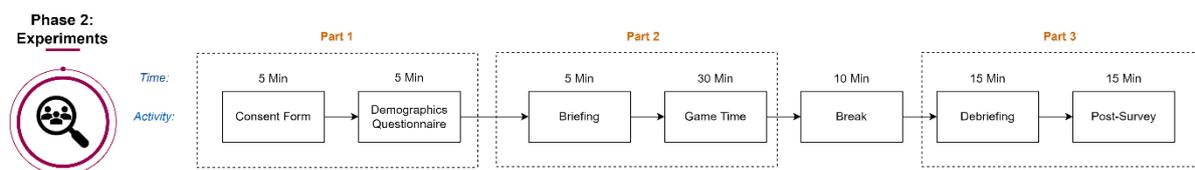
Figure 27 | Process of Physical Experiment

Interviews
At the end of the game session participants were asked if they would like to be interviews within seven days after the physical game session. Before they agreed, they were told that the 30-minutes telephone interview was going to be pseudo-anonymous, and that questions were going to be asked about their surveys. By giving their telephone number they could voluntarily sign-up, and their telephone number could be linked to their surveys. Before the interview started participants were send the opening statement of the interview by phone, which they needed to verbally consent to on the telephone at the beginning of the interview. The interview was recorded by the Windows Voice Recorder app on the computer. The verbal consent was also recorded.

4.4 Data Analysis of Experimental Data

Data analysis was conducted on the data from the surveys, the physical game sessions, and the interview. This section first explains how quantitative data analysis is conducted, after which qualitative data analysis is discussed. An explanation of data analysis is provided for each hypothesis developed in *4.1 Variables & Hypotheses*.

4.4.1 Quantitative Data Analysis

This section will first provide an explanation on data preparation, after which the data analysis for hypotheses are discussed.

Data Pre-processing

DATA CLEANING AND PRPEPARATION. Quantitative data acquired from the surveys was downloaded from Qualtrics and saved in a suitable format for further analysis. The data derived from the experimental and control group existed of the pre- and post-surveys of the four scales mentioned in *4.3.2 Materials 1: Development of Scales* Willingness to Intervene Scale (WIS), Bystander Attitudes Scale (BAS), Sexual Violence Myth Acceptance Scale (SVMAS), and the Communication Process Scale (CPS). The data from the experimental and control group were collected in separate surveys from the Qualtrics platform. The surveys were first saved in an excel format to check for missing data, clean out empty rows, to look for inconsistencies in the telephone numbers, and to add a column with either the game session code or the control group code. These codes allowed to create a unique identifier for each participant while maintaining anonymity. The unique identifier was needed to later conduct paired statistical analysis. Thereafter, it was further cleaned and processed in the programming software Python. Each formulated hypothesis was primarily tested with the numpy and pandas libraries in python.

The demographics questionnaires from the experimental group were collected after the game sessions on paper. The control group could fill in the questionnaire either online, or on paper offline. Two data frames, one for the experimental group and one for the control group, in excel was created to process all questionnaires. These data frames existed of columns for each respective item in the questionnaire, including the last three digits of the phone number and additionally with a column containing the respective experimental or control group code.

For the preparation of data analysis in python, the surveys of the experimental group were first aggregated into two data frames, one containing all the pre-surveys, and one of all the post-surveys. The surveys of the control group were already separated for the pre-and post-surveys. Then the headers of all surveys and demographics were renamed, the session code and digits merged to create a column with all the unique participant identifiers, and the game experience questions dropped from the post-survey of the experimental group. Finally, from the pre-and post-survey data separate data frames with the unique identifiers were created for each scale.

COMPARING UNIQUE IDENTIFIERS BETWEEN SURVEYS AND QUESTIONNAIRES. Once read and cleaned in Python, the demographic questionnaire and the pre- and post-surveys of the experimental and control group were initially compared to ensure that the unique identifiers of the participants in all surveys and questionnaires matched. Furthermore, it was ensured that both the

experimental as the control group contained an equal number of participants with an equal number of men and women.

CREATING CONSTRUCTS. Lastly, before data analysis was conducted, the scales were divided into their respective construct, and when applicable changed to numerical data. Changing ordinal data to numerical data makes it easier to conduct descriptive and inferential analysis. Furthermore, an overall mean score was assigned to each construct. The response scores of each construct for each participant was summed and divided by the number of items included in the respective construct.

For the items of the constructs of the Bystander Attitudes Scale (BAS), Sexual Violence Myth Acceptance Scale (SVMAS) and the Communication Process Scale (CPS), a 5-point Likert Scale was used and recoded. The one-dimensional construct of WIS did not need to be recoded as the scale existed already of numerical data. The response of 'Strongly Disagree' was recoded in 1, 'Disagree' in 2, 'Neutral' in 3, 'Agree' in 4, 'Strongly Agree' in 5, and 'No Answer' in 6. The response 'No Answer' was provided to give participants an option not to answer when feeling uncomfortable. Low scores for the construct 'No Awareness' of BAS reflect high awareness; for the construct 'Taking Responsibility' of BAS, low scores reflect little responsibility; for the three-dimensional constructs of SVMAS low scores reflect low acceptance; for the three-dimensional construct of CPS low scores reflect low quality of communication during the game session, and for the one-dimensional construct of WIS low response scores reflected little willingness to Intervene (see Table 7).

Table 7 | Interpretation of Scores per Construct and Scale

Scale	Construct	Low Score	High Score
BAS	No Awareness	High Awareness	Low Awareness
	Taking Responsibility	Low level of responsibility	High level of responsibility
SVMAS	Three-Dimensional Construct	Low Acceptance	High Acceptance
CPS	Three-Dimensional Construct	Negative communication	Positive communication
WIS	One-Dimensional Construct	Little willingness to intervene	High willingness to intervene

Data Analysis for Hypotheses 1 and 2: Effect of Game Design on Dependent Variables

CONDUCTING DESCRIPTIVE ANALYSIS. To test the effect of the game design on the dependent variables, a within-and between-subjects tests have been performed to compare the pre-and post-surveys and the experimental group with the control group. For both tests, descriptive and inferential statistical analysis have been conducted to describe the data and determine the statistical significance of the effect of the game design on the dependent variables. For descriptive analysis the distribution, central tendency, and variability have been reported and the frequency and average response visualized in boxplots.

CHOICE FOR INFERENTIAL ANALYSIS. To conduct inferential statistics, a choice has been made between non-parametric and parametric tests. To use parametric tests the data needs to meet three assumptions about the population from which the data has been obtained: independence of observation, homogeneity of variance, and normality of data. The first assumption requires

independent observations of each participant from the observations of the other participants, even where there are multiple observations per participant. The second assumption implies that the variance within each group is equal with the other groups. The third assumption expresses the need for a normal distribution of the data. Non-parametric tests on the other hand are not based on any assumptions and can therefore be used for data that violate any of the three assumptions. Moreover, the type of variables included in the analysis can help to determine the type of inferential analysis used. Categorical variables that include ordinal data are normally analysed with non-parametric tests, while quantitative variables that include numerical continuous data can be analysed with parametric tests.

A discussion can be had about testing Likert Scale data with parametric tests. While some experts discuss that Likert Scale data, which is ordinal data, can never generate normally distributed data, and therefore always need to be analysed with non-parametric tests, other experts have found that parametric tests can be used with ordinal data such as the Likert Scales and are even generally more robust (Ellison, 2017; Sullivan & Anthony R. Artino, 2013). The study of Sullivan & Anthony R. Artino (2013) which is cited 2291 times, refers to the work of Dr. Geoff Norman who has found that parametric tests can provide reliable results when applied to ordinal data even when the assumption of normal distribution is violated to an extreme degree. Furthermore, Mircioiu & Atkinson (2017) found that data with more than 15 responses that was not normally distributed, resulted in similar results for parametric and non-parametric analyses, as long as the sample is large and the distributions are similar.

Moreover, according to the central limit theorem the means of the samples move towards normal distribution as the sample size gets larger, regardless of the population's distribution. From sample size 30, the data is said to near a normal distribution (Kwak & Kim, 2017). The normality of the data can be visualized with histograms and tested with the Shapiro-Wilk Test. However, according to le Cessie et al. (2020) the Shapiro-Wilk test is not a good indicator to decide between parametric and non-parametric methods. For small samples, for which the assumption of normality is important, the Shapiro-Wilk test has little statistical power, whereas for large samples, the test often shows statistical significance, which then dismisses the use of parametric tests. Therefore, the Shapiro-Wilk Test often suggests the wrong test. According to le Cessie et al. (2020), parametric tests can generate valid results when the sample size is sufficiently large and has no extreme outliers.

Parametric tests have clear advantages over nonparametric tests. The advantage of parametric tests is that they have greater statistical power, meaning that they are more likely to detect an effect. Therefore, there is a preference of using parametric tests for data analysis. As the sample size in this study is greater than 30, it can be seen as a sufficiently large sample according to the central limit theorem. Thus, it can be determined based on the previous mentioned arguments, that parametric tests can be applied to the Likert Scales used in this study and non-normally distributed data. However, before a parametric test can be conducted the data needs to meet the other two assumptions. It can already be concluded that the first assumption is being met, as there will be independent observations of the participants. The second assumption, the homogeneity of variance across the different groups, will be tested in Python. If the data is normally distributed, the Bartletts test will be performed to test the variance. If the data is not following a normal distribution, the Levene's test will be performed, which is more commonly used for non-normal distributed data. If the data does not meet the assumption of the homogeneity of variance, non-parametric analyses will be performed.

PERFORMING INFERENTIAL STATISTICS. The within subject's test will be performed to compare the means of dependent variables from paired pre-, post- and follow-up surveys. Respectively, for parametric tests, the paired t-test and independent t-test will be conducted, and for non-parametric tests, the Wilcoxon Signed Rank test and the Mann-Whitney U Test will be used for data analysis. To conduct a paired test, the data will be compared based on the Code of the participants. An significance level of $\alpha = .05$ is used for all inferential analyses.

Data Analysis for Hypothesis 3: Effect of Game Design on Intergroup Dialogue

To determine whether the game has had an effect on encouraging an intergroup dialogue, which is measured with the communication process scale, only descriptive analysis has been conducted. No inferential analysis has taken place as there is only a single sample of the intergroup dialogue. For descriptive analysis the distribution, central tendency, and variability have been reported, by visualizing the frequency of the average response scores for each construct in boxplots.

Data Analysis for Hypothesis 4: Effect of Intergroup Dialogue on Dependent Variables

To evaluate the effect of an intergroup dialogue on the dependent variables, the relationship between the communication process and the dependent variables has been explored. The difference in the scores between the pre-and post-survey of BAS, SVMAS and WIS from the experimental group were analysed in relation to the communication process, which represents the intergroup dialogue. A correlation tests with either the parametric test Pearson's R or the non-parametric test with Spearman's R, depending on the choice for statistical test in Data Analysis 1, was conducted to find the effect of intergroup dialogues on the dependent variables. The correlation between the scales were visualised in a scatterplot matrix and a correlation matrix that gives a score between -1 and 1. The scores indicate the direction of correlation. Minus one indicates a strong negative correlation, while plus one indicates a strong positive correlation. Thus, the closer the score to (minus) one the stronger the variables are correlated.

4.4.2   Qualitative Data Analysis

Qualitative analysis was complementary and secondary to quantitative data analysis. Performing qualitative analysis on the field notes, the surveys and the interviews helped to gain greater understanding of the quantitative results and helped to answer the last two data analysis steps needed to answer the main research question: effect of the game design on the safe space, and the effect of the safe space on the intergroup dialogue in the game session. Recordings of the interviews with the participants of the game sessions were written out and together with the field notes analyzed with the software program MaxQDA. With MaxQDA, a list has been made with findings that could help to explain the observations made in the quantitative analysis. With each finding the most important quotes were extracted from the interviews and the survey. These findings and quots were then structured accordingly. The disadvantage is that this approach is very sensitive to bias from the researcher. That's why findings will be presented as suggestions about the effect of one variable on another.

Data Analysis for Hypothesis 5: Effect of Game Design on Safe Space

Additional questions were asked in the survey of the experimental group to understand how the game was perceived and if participants felt safe in the space created for the game. Two questions were asked about the safe space. The question "Did you feel safe to answer and discuss honestly during the game?" was asked first, followed by the second question "Why (not)?". Additionally, the interviews of the participants were used to explore the effect of the game design on the safe space,

by asking questions such as "Why or why not did you feel safe during the game?". Performing qualitative data analysis, these questions could be explored, and the results reported. For the closed question participants could respond yes, no, or else. The frequency of these answers has been outlined and has been supported by the interviews and the answers given to the second question.

Data Analysis for Hypothesis 6: Effect of Safe Space on Intergroup Dialogue
Interviews were again used to explain the effect of the safe space on the communication process of the participants during the game. Questions such as "How did the communication between you and the other participants go during the game?", "Could you express your opinions honestly (Why not)?" and "Do you think you could play this game with anyone?" were asked to get a broad idea of how the safe space could have affect the intergroup dialogue.

5

RESULTS

In addressing SQ6, this chapter aims to provide an answer on what the effect of a persuasive game is on bystander behaviour. This answer can be provided by testing the five hypotheses developed in section *4.1.2 Hypotheses* in respective order with quantitative and qualitative analysis. Before these results are reported, the results of the characteristics of the participants are provided. Next, the effect of the game on the dependent variables after the game session and one month after playing the game is analysed quantitatively. These results are followed by testing the effect of the game on intergroup dialogue, the effect of intergroup dialogue on dependent variables, the effect of the game on creating a safe space, and the effect of the safe space on intergroup dialogue. When qualitative data was present, the quantitative results were supported with qualitative analysis.

5.1   Participant Characteristics

This section discusses the characteristics of the participants recruited and included the data analysis. In total 113 students signed-up for to participate in the game. An invitation was sent to 109 students. The other four students did not meet the criteria. Five students did not want to participate anymore after initial contact. Thirty-two out of the 109 did not respond to the invitation. Four did respond in the beginning but dropped out of the study after not responding anymore to the emails later in the process for unknown reasons. Overall, the response rate was 71 percent, and the participation rate was 58 percent. Figure 28 provides a flowchart of the sampling process. After participation in the game session, thirteen participants from the experimental group signed up to be interviewed. Out of thirteen, seven were eventually available for a semi-structured interview, which was used to collect for qualitative analysis.
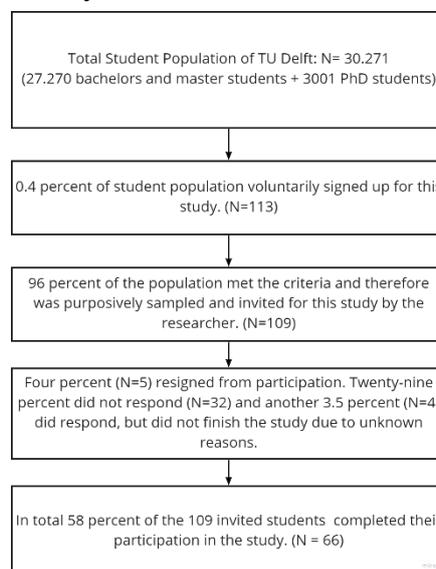
Figure 28 | Flowchart of Sampling Procedure and Participant Recruitment

In total, 66 students between 18 and 30 years from Delft University of Technology were recruited for this study, meaning that the sample fulfilled the requirement of the central limit theorem. Out of the total, 34 participants were assigned to the experimental group and 32 to the control group. The data of two participants from the experimental have been left out to make the group equal. The exclusion of these two participants was decided based on gender, so the two groups are as similar as possible. Thus, in total, the data of 64 participants have been included. Figure 29 provides an overview of the total participant population based on age. In Figure 31 and Figure 30, an overview is provided for the experimental and control group.
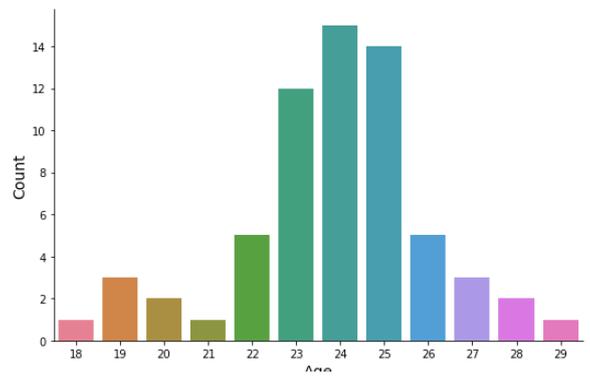
Figure 29 |Overview Participants - Age
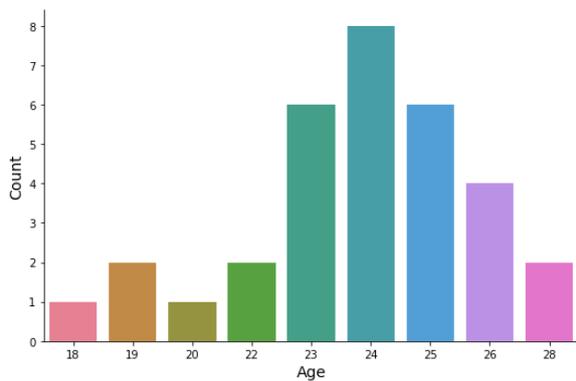
Figure 31 | Overview Participants Experimental Group - Age
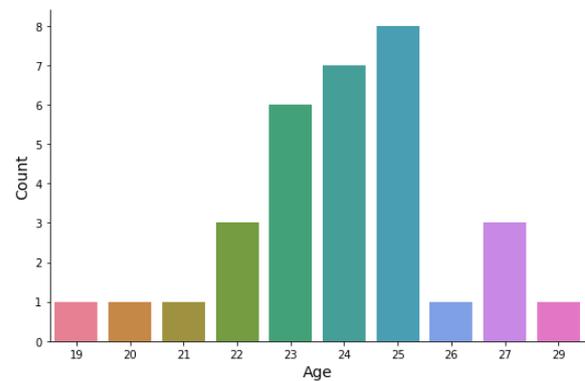
Figure 30 | Overview Participants Control Group - Age

GENDER. The participants included in total 32 female students, 30 male, and two students who preferred not to answer their gender. The experimental and control group both included 16 women, 15 men and one person who preferred not to answer.

NATIONALITY. In the study 23 Non-EU (Non-Western), 21 Dutch, 17 EU, and three Non-EU (Western) students are included, which is shown in Figure 34. The experimental group included 11 Dutch, 10 Non-EU (Non-Western), nine EU, and two Non-EU (Western) students (see Figure 33). The control group included 13 Non-EU (Non-Western), 10 Dutch, 8 EU, and 1 Non-EU (Western) students (see Figure 32).
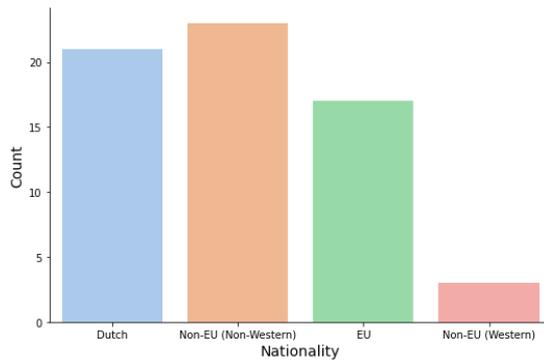
Figure 34 | Overview Participants - Nationality
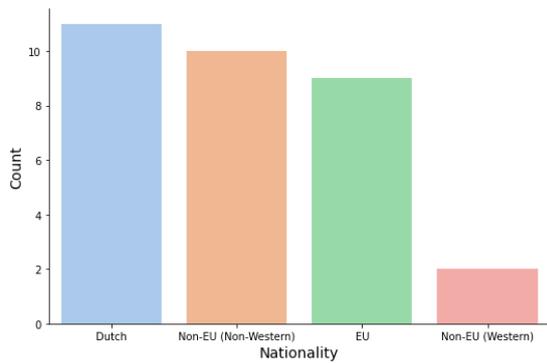
Figure 33 | Overview Participants Experimental Group - Nationality
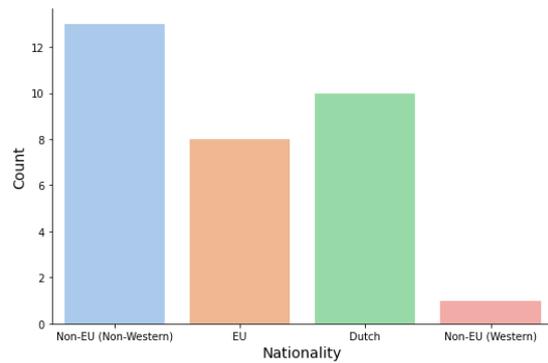
Figure 32 | Overview Participants Control Group – Nationality

DEGREE. From the participants 52 were following a master's degree, nine a bachelor's degree, and three a PhD. In the experimental group 26 students were following a master's degree, five a bachelor's, and one a PhD degree. Moreover, in the control group, 26 students are following a master's degree, four a bachelor's, and two a PhD degree. See Figure 40, Figure 39, and Figure 38 for an overview of the participants for the experimental and control group, and both. Table 78 in Appendix *H.4. Demographics Results* provides an overview of the Education results for the experimental and control group.

FACULTY. Out of the eight faculties at TPM, participants were following their degrees at seven different faculties: Technology, Policy and Management (TPM), Electrical Engineering, Mathematics & Computer Science (EEMCS), Civil Engineering and Geosciences (CEG), Applied Sciences (AS), Industrial Design Engineering (IDE), Aerospace Engineering (AE), and Mechanical, Maritime and Materials Engineering (3mE). Twenty-three students were following a degree at TPM, nine at EEMCS, eight at CEG, eight at AS, six at AE, six at IDE, three at 3mE, and one at another TU Delft building. Students from the faculty of Architecture did not sign-up as participants. See Figure 35, Figure 37, and Figure 36 for an overview of the participants for the experimental and control group. Table 77 in Appendix *H.4. Demographics Results* for an overview of the Faculty results for the experimental and control group.
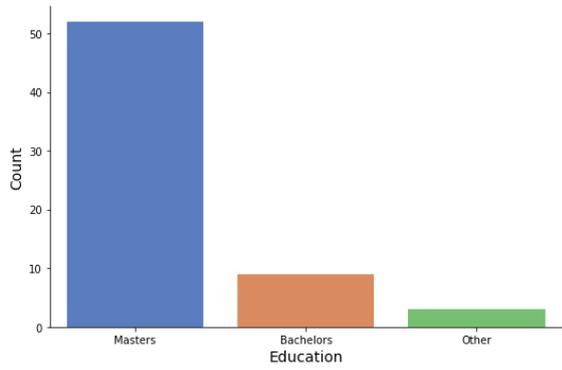
Figure 40 | Overview Participants - Education
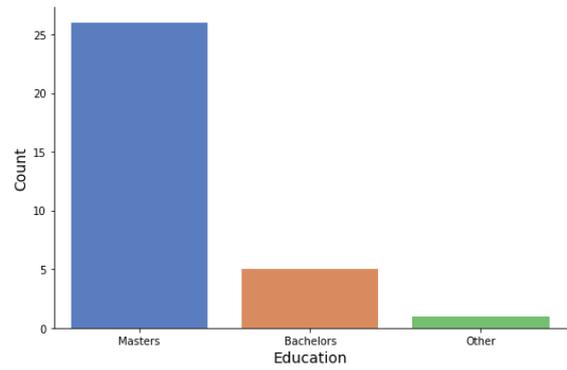
Figure 39 | Overview Participants Experimental Group - Education
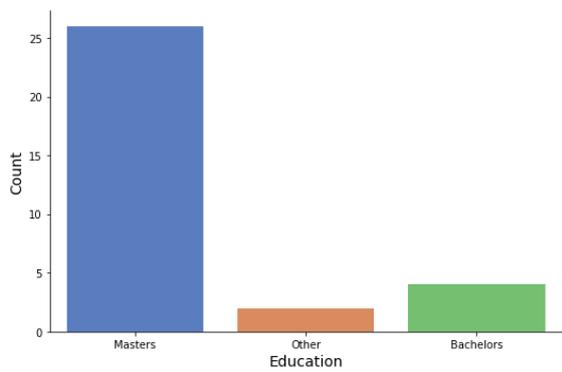
Figure 38 | Overview Participants Experimental Group - Education
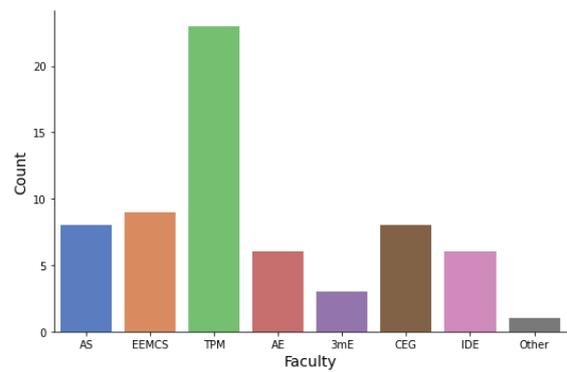
Figure 35 | Overview Participants - Faculty
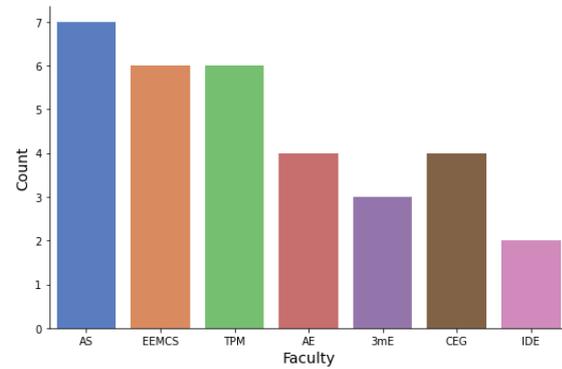
Figure 37 | Overview Participants Experimental Group - Faculty
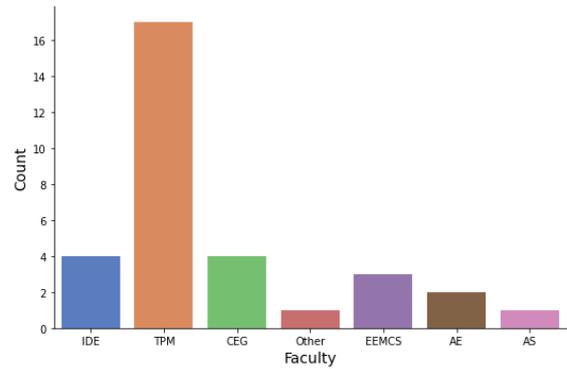
Figure 36 | Overview Participants Control Group - Faculty

5.2 Effect of Game Session on Dependent Variables

Quantitative and qualitative analysis was conducted to test the first and second hypothesis:

Hypothesis 1: *"The game session increases the willingness to intervene in primary bystander opportunities, reduces SVMA, and raises awareness and level of responsibility (or bystander attitudes) about sexual violence in female and male students."*

Hypothesis 2: *"The effects of the game session on the dependent variables will fade over time."*

For quantitative analysis descriptive and inferential statistics were used to summarize the data and make valid statistical inferences. Descriptive statistics of the data is visualized with horizontal stacked bar-plots and boxplots. Inferential statistics is performed with paired group tests to compare the difference the pre-, post and follow-up results. Before inferential statistics could be performed, a choice was made between either parametric or non-parametric tests. Based on the homogeneity of variance test across the groups shown in *Appendix H.1.1. Homogeneity of Variance*, parametric tests were chosen for analysis. All results from quantitative analysis can be found in *Appendix H.1. Effect of Game Design on Dependent Variables*. Furthermore, the quantitative data analysis of the first hypothesis is supported by qualitative analysis, from which the results are extracted from interview notes, game session notes and open-survey questions. Figure 41 shows which relationship will be analysed in this section.
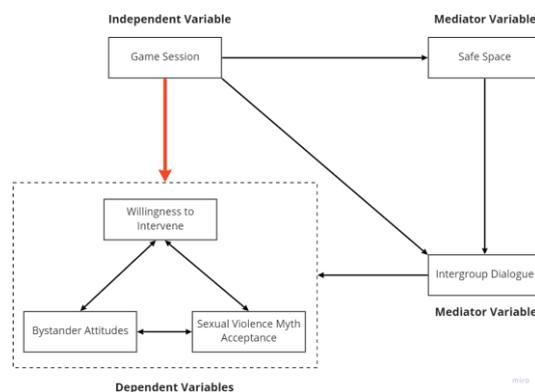
Figure 41 | Effect of Game Design on the Dependent Variables

5.2.1 Willingness to Intervene

Quantitative Results

The boxplots of the experimental and the control groups are visualized in Figure 42 and show the differences between the pre-and post-surveys of the Willingness to Intervene Scale (WIS). High scores of WIS mean high willingness to intervene. Based on the participants unique ID, the mean difference between paired data of the pre-and post-surveys have been tested with the paired t-test to determine if the null hypothesis can be rejected or not. The results of the pre-, post- and follow-up Survey have been compared for each participant on the basis of the unique assigned code. An overview of the p-values for all surveys is provided in Table 8.
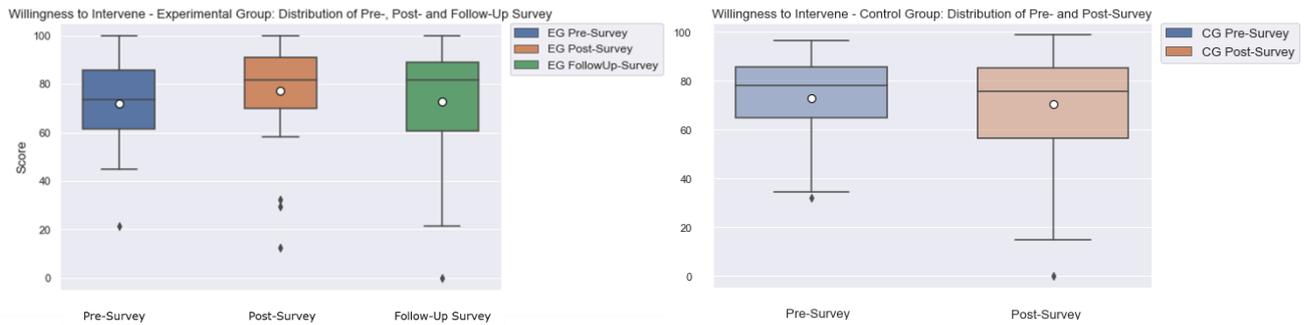
Figure 42 | Willingness to Intervene - Experimental (left) and Control Group (right): Boxplot of Pre-and Post-Survey

HYPOTHESIS 1. The mean value of the willingness to intervene for the pre-survey ($M = 71.88$; $SD = 17.88$) in the experimental group was found to be significantly lower than the mean-value of the post-survey ($M = 77.11$; $SD = 20.58$), which means that the game had a significant effect on the willingness to intervene, $t(32) = -2.46$; $p = .019$. These results are supported by the findings of the control group. It was found that the difference of the mean value of willingness to intervene for the pre-survey (M = 73.09; $SD = 17.68$) and post-survey ($M = 70.56$; $SD = 23.02$) of the control group was not significant ($t(32) = .33$; $p = .742$), while the boxplot does indicate a small decline in the willingness to intervene. Therefore, it can be concluded that hypothesis 1 is true and the game does have a significant effect on the willingness to intervene.

HYPOTHESIS 2. The mean value of the follow-up survey ($M = 72.79$; $SD = 25.24$) in the experimental group does not significantly differ from the mean-values of the pre-survey ($M = 71.88$; $SD = 17.88$) and post-survey ($M = 77.11$; $SD = 20.58$), respectively $t(32) = -.77$; $p = .447$ and $t(32) = -.38$ $p = .707$. These findings indicate and the boxplots show that the willingness to intervene does decrease compared to the post-survey, but that the scores are still higher than in the pre-survey. Therefore, while no significance was found, the results suggest that the game does diminishes the willingness to intervene one month after playing the game, confirming hypothesis 2.

VISUALIZATION OF BOXPLOTS. It appears that there is more distribution of the scores in the follow-up survey of the experimental group and the post-survey of the control group, with a median score lower than in the pre-survey. For both the experimental as the control group, outliers are present.

Table 8 | Overview p-values of Paired t-test of Willingness to Intervene Scale

Variable	Comparison	Experimental Group	Control Group
Willingness to Intervene	Pre and Post	$p = .019*$	$p = .742$
	Pre and Follow-Up	$p = .447$	
	Post and Follow-Up	$p = .707$	

Note. An asterisk * indicates that the p-value is ≤ .05, meaning that it is significant; The number of asterisks indicated represents the significance level; p = p-value; Variable = construct of survey.

Qualitative Results

When asked in the interviews how the game influenced the participants willingness to intervene, most participants initially mentioned that the game did not change their position in this regard that much. To quote one of the participants: *"I don't think it changes the behaviour that I do, because if I were in those positions, I would choose the same options that I would have chosen before playing the game, as those are the options that I think are right to do".* However, the answers in the interviews

of almost all participants indicate a shift in either their attitude or awareness towards intervening. While one of the participants mentioned that the game was more of a reminder to intervene, another realized during the game that doing anything is better than nothing, having initially felt obliged to react in extreme ways to the scenarios presented. The game helped the second participant to think of some middle options they were comfortable with. Other participants also acknowledged that the game provided different ideas for ways to intervene and made one think about what a bystander can do or should do. One participant even mentioned that the game empowered them to act when a situation of sexually transgressive behaviour occurs. These positive indications of an increase in the willingness to intervene can also be found in the quantitative results.

Furthermore, there is an indication that the game inspired critical thinking about intervening in situations of sexually transgressive behaviour, quoting: *"After hearing everyone's response of how they want to interfere, I thought why am I not willing to interfere? I don't like conflicts, I don't like confrontation, so I shy away from that, but I shouldn't in all cases.".* A few participants made it clear in the interviews and the surveys with additional feedback questions that while the game session encourages the willingness to intervene, it does not teach them the bystander intervention skills for how to safely step in when witnessing a harmful situation. This finding might explain why there are more outliers in the bottom part of the boxplots, thus more negative responses, in the post-survey after playing the game, than in the pre-survey of the experimental group and the pre- and post-survey results of the control group. To quote the participants:

- *"There is one aspect that I was missing, which is what to do next. You learn about the different perspectives of people on these types of situations, but it would be nice to also gain insight on how to act when something like that does happen. I feel like if you are better prepared on how to respond to these situations, the better you can intervene".*
- *"I don't know how to take that [the game] to real life. Cause if something happens, it's like, okay, sure. This is a big situation, but then I don't know what to do about that."*
- *I thought it would be nice to also have the opportunity to talk about what would be good to do in in some of the situations that were described. Cause that [the game] was more about learning about the different perspectives of people when they're in such a situation and how they would handle it. But then it would also be nice to learn how you could help yourself to do it better."*
- *"I really would want to [intervene]. Like I want to be able to intervene and everything, but I know for a fact that once the situation gets there, it's like really, really difficult. So I would say yes [my willingness has changed], but then I don't think I would do it yet because I don't know how to [intervene], while still feeling safe and comfortable myself as well."*

The results support the observations and findings of qualitative analysis and help explain how the game significantly positively affected the willingness to intervene. However, the qualitative analysis cannot help to answer why there is no significant difference between the experimental and the control group.

5.2.2 Bystander Attitudes

Quantitative Results

The boxplots in Figure 43 illustrate the difference in mean construct scores between the pre-, post and follow-up survey for the constructs "No Awareness" and "Taking Responsibility". Negative responses, or low scores for the constructs "No Awareness" indicate high awareness, while negative scores for the construct "Taking Responsibility" indicates low responsibility levels. Paired t-tests have been conducted to compare the pre-, post-, and follow-up survey in the experimental group and the pre-and post-survey in the control group. An overview of the p-values for all surveys and constructs is provided in Table 9.
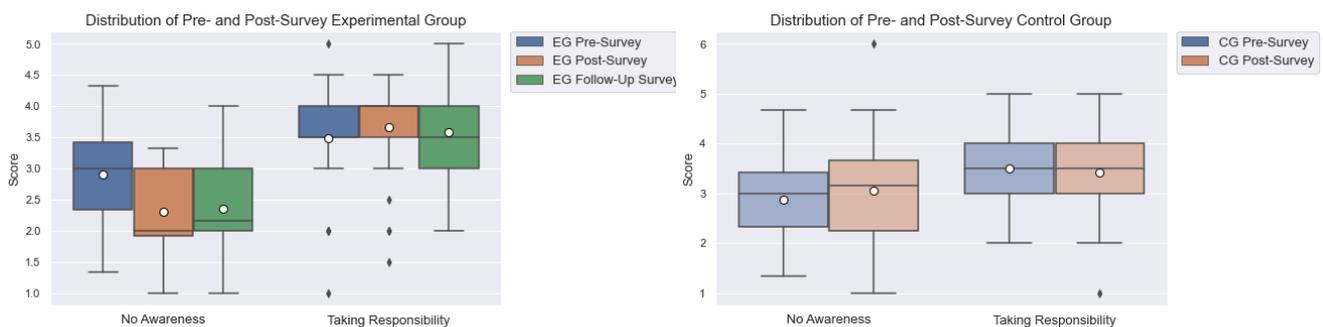
Figure 43 | Bystander Attitudes - Experimental (left) and Control Group (right): Boxplot of Pre-and Post-Survey

HYPOTHESIS 1. The boxplots of the construct "No Awareness" in the experimental group indicate a strong significant negative difference in the mean values between the pre-survey (M= 2.91; SD= .80) and the post- (M= 2.30; SD= .71), t(32) = 4.78; p< .001. Moreover, a significant positive difference was found between the pre-survey (M= 3.48; SD= .82) and post-survey (M= 2.67; SD= .77) for the construct 'Taking Responsibility', t(32) = -2.25; p = .032. In contrast, no significant finding was found between the pre-survey (M = 2.86; SD = .80) and post-survey (M = 3.05; SD = 1.03) of 'No Awareness' and between the pre-survey (M = 3.50; SD = .89) and post-survey (M = 3.42; SD = .87) of 'Taking Responsibility' in the control group, respectively t(32) = -1.18; p= .247 and t(32) = .482; p=.663). The findings fit with the first hypothesis that the game increases raise awareness and levels of responsibility.

HYPOTHESIS 2. The results for the follow-up survey in the experimental group indicate a strong significant difference between the pre-survey (M= 2.91; SD= .80) and follow-up survey (M= 2.36; SD = .85) for the construct 'No Awareness', t(32) = 3.35; p= .003. However, no significant effect was found for 'No Awareness' between the follow-up (M= 2.36; SD= .85) and post-survey (M= 2.30; SD= .71), t(32) = -1.36; p = .187. Therefore, it can be concluded that awareness does not diminish one month after playing the game, meaning that hypothesis 2 is not true.

Insignificant findings were also found for 'Taking Responsibility' between the follow-up survey (M= 3.58; SD= .70) and the pre-survey (M= 3.48; SD= .82) and post-survey (M= 3.67; SD= .77), respectively t(32) = -.41; p= .685 and t(32) = .68; p= .511. While no significant effect was found, the boxplots and the findings do indicate that 'taking responsibility' is diminished one month after playing the game. Thus, it can be said that hypothesis 2 is true.

VISUALIZATION OF BOXPLOTS. Outliers could be found for the pre- and post-survey of 'taking responsibility' in the boxplot of the experimental group in Figure 43. These surveys also do not show any median lines. Instead, the median lines falls with the lower quartile. This means that the data is skewed to the right, which can be explained by that most participants chose the highest scores for the items of 'Taking Responsibility'. Outliers can also be found for 'No Awareness' of the post-survey in the boxplot of the control-group. This outlier can be explained by the response "No Answer", which was scored a 6, and therefore created a wider dispersion of the responses. Finally, one outlier was also present for the construct "Taking Responsibility" in the post-survey for the experimental and control group.

Table 9 | Overview p-values of Paired t-test of Bystander Attitudes Scale

Variable	Comparison	Experimental Group	Control Group
No Awareness	Pre and Post	$p < .001$***	$p = .247$
	Pre and Follow-Up	$p = .003$**	
	Post and Follow-Up	$p = .187$	
Taking Responsibility	Pre and Post	$p = .032$*	$p = .634$
	Pre and Follow-Up	$p = .685$	
	Post and Follow-Up	$p = .511$	

Note. An asterisk * indicates that the p-value is ≤ .05, meaning that it is significant; The number of asterisks indicated represents the significance level; p = p-value; Variable = construct of survey.

Qualitative Results

One of the most given responses to how the game influenced the participants in the interview was awareness, either situational awareness provided by the cards, or awareness of the magnitude of the problem provided by the statistics in the debriefing. This finding explains why the quantitative results show a significant positive effect on participants' awareness. Awareness was further created by the discussions the cards generated, with one participant mentioning: *"When somebody had an extremely different opinion. It made me think and questioned my own assumption.".* When asked in the survey when awareness was raised the most, most people contributed their awareness to the debriefing (11 out 34 participants) and the discussions generated during the game (9 out 34), quoting the participants:

- *"I think the debriefing was the best part of the whole game. I really liked the debriefing, because I can imagine that the numbers you gave are new for some people, I also didn't know all of them but that was interesting to me."*
- *"The debriefing was especially informative because it covered topics that I wasn't well informed about."*
- *"I had no idea about the statistics that you gave. I never really heard stories around me so far of anything happening, that really surprised me."*
- *The statistics were alarming to me. I wouldn't think the numbers were so high."*
- *"I was surprised to know how common these things are, and that small things are not oke."*
- *"Debriefing, because most of the scenarios discussed during the game were scenarios I've experienced or heard of myself, while the facts given during the debriefing were new."*

And:

- *"We each explained how we perceived the statements / questions, and almost all rounds the perspectives varied in the group. This does show how everyone views transgressive behaviour differently, which also results in people acting differently or not even perceiving something as sexually transgressive whereas someone else would."*
- *"The game play, because discussing with peers gives more insights than just numbers."*

The last quote shows that both game play and the debriefing are necessary for raising awareness, as one part of the game session is not as effective without the other. To paraphrase a participant, the discussions raise awareness as they provide different viewpoints. However, the briefing made the phenomenon more concrete and provided new numbers for some participants. Thereby, it provided a moment of cooling down after discussions about a highly sensitive topic. Not everyone agreed with this point of view. For some the debriefing was unnecessary, while others wanted even more statistics than the ones provided, such as about the trend of sexual violence among students over time, and the effect of interventions. One participant also thought the game play helps to understand people, but not to become more aware. However, these opinions were not shared by many participants. One, participants said: *"I learned that it honestly depends on the situation, but either case you need to be very aware of these things and you should respect and you should help people that need it".*

When asked the question how effective the game was on the behaviour of the participants, one of the female participants responded with "*As a girl from India I am aware of sexual assault, patriarchy and all that. So it doesn't necessarily induce a difference in perspective in me, but I can imagine it can do for someone else.",* indicating that gender might influence the level of awareness raised during the game session. Lastly, no statements or quotes could be found in support for the significant effect of the game on 'taking responsibility'.

5.2.3   Sexual Violence Myth Acceptance

Quantitative Results

A paired t-test was conducted between the survey of the experimental group and the survey of the control group. Moreover, the boxplots of the three constructs of the sexual violence myth acceptance scale (SVMAS) are visualized in Figure 44 for the experimental (right) and control group (left). Negative responses, or low scores, indicate less acceptance of sexual violence myths, while positive responses, or high scores indicate high acceptance of sexual violence myths. Paired t-tests have been conducted to compare the pre-, post-, and follow-up survey in the experimental group and the pre- and post-survey in the control group. An overview of the p-values for all surveys and constructs is provided in Table 10.
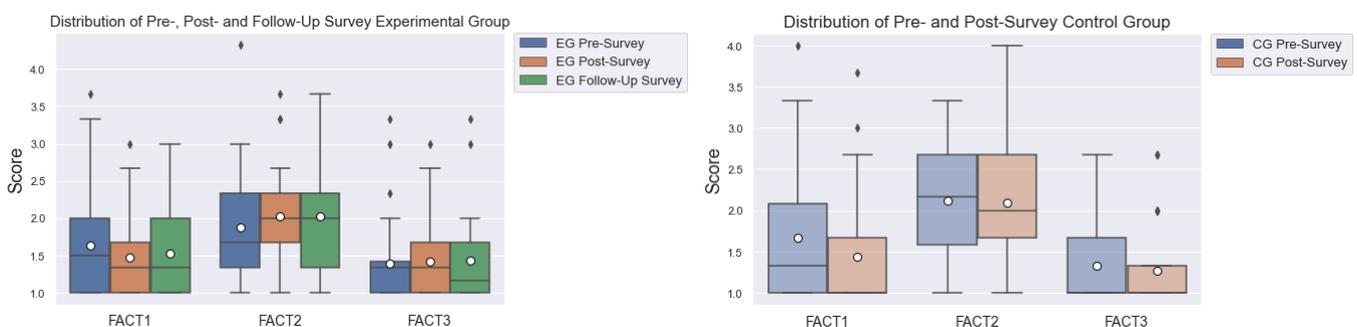
Figure 44 |SVMAS - Experimental (left) and Control Group (right): Boxplot of Pre-and Post-Survey

HYPOTHESIS 1. The left boxplot illustrates a significant decrease in acceptance between the pre-survey ($M = 1.64$; $SD = .71$) and post-survey of FACT1 ($M = 1.47$; $SD = .56$) in the experimental group (t (32) = 2.22; $p = .034$). The control group shows a small significant decrease in acceptance for FACT1 (t (32) = 2.92; $p = .006$) between the pre-survey ($M = 1.67$; $SD = .85$) and the post-survey ($M = 1.44$; $SD = .67$). The significant finding of FACT1 for the control group, makes the significant finding of FACT1 for the experimental group invalid. It can therefore be concluded that the game session did not have an effect on FACT1, disproving hypothesis 1.

The construct FACT2 shows on its turn a small non-significant increase (t (32) = -1.75; $p = .090$) in the mean acceptance for the post-survey ($M = 2.02$; $SD = .66$) compared to the pre-survey ($M = 1.88$; $SD = .71$). Additionally, no significant difference was detected for FACT2 (t (32) = .19; $p = .850$) between the pre-survey ($M = 2.11$; $SD = .71$) and post-survey ($M = 2.09$; $SD = .75$). Therefore, the game has no effect on FACT2 and thus hypothesis 1 is disproven.

Moreover, no significant difference in the mean values (t (32) = -.26; $p = .797$) was detected for FACT3 between the pre-survey ($M = 1.39$; $SD = .58$) and the post-survey ($M = 1.42$; $SD = .53$). In the control group no significant effect was found either for FACT3 (t (32) = 1.44; $p = .161$) between the pre-survey ($M = 1.33$; $SD = .45$) and post-survey ($M = 1.27$; $SD = .50$). Thus, hypothesis 1 is found to be not true for FACT3.

HYPOTHESIS 2. Comparing the results of the follow-up survey for FACT1 ($M = 1.53$; $SD = .62$) with the pre-survey ($M = 1.64$; $SD = .71$) and post-survey ($M = 1.47$; $SD = .56$), resulted in the non-significant findings t (32) = .15; $p = .885$ and t (32) = -1.35; $p = .186$ respectively. Non-significant results were also found for FACT2 between the follow-up survey ($M = 2.03$; $SD = .85$) and the pre-survey ($M = 1.88$; $SD = .71$) and post-survey ($M = 2.02$; $SD = .66$), respectively t (32) = -1.49; $p = .148$ and t (32) = -.214; $p = .832$. Finally, for FACT3 no significant effect was found as well between the follow-up ($M = 1.44$; $SD = .62$) and the pre-survey ($M = 1.39$; $SD = .58$) and post-survey ($M = 1.42$; $SD = .53$), t (32) = -.37; $p = .718$ and t (32) = -.49; $p = .637$. The boxplots do indicate that the scores for FACT1 and FACT2 of the follow-up survey are higher than the scores of the pre-survey, and that they are close to the scores of the post-survey. Thus, the results, though not significant, do indicate and the boxplots do show that hypothesis 2 is not true, and that the effect does not diminish one month after playing the game. For FACT3 no hard conclusions can be drawn, as the mean values of the pre-, post- and follow-up survey are very close to each other.

Table 10 | Overview p-values of Paired t-test of Sexual Violence Myth Acceptance Scale

Variable	Comparison	Experimental Group	Control Group
FACT1	Pre and Post	$p = .034$*	$p = .006$**
	Pre and Follow-Up	$p = .885$	
	Post and Follow-Up	$p = .186$	
FACT2	Pre and Post	$p = .090$	$p = .850$
	Pre and Follow-Up	$p = .148$	
	Post and Follow-Up	$p = .832$	
FACT3	Pre and Post	$p = .797$	$p = .423$
	Pre and Follow-Up	$p = .718$	
	Post and Follow-Up	$p = .637$	

Note. An asterisk * indicates that the p-value is ≤ .05, meaning that it is significant; The number of asterisks indicated represents the significance level; p = p-value; Variable = construct of survey.

VISUALIZATION OF BOXPLOTS. The boxplots in Figure 44 presents no whiskers for FACT1 and FACT3 in the control group, meaning that the minimum mean response scores of the constructs are equal to the first quartile. For FACT3 post-survey of the control group, the absence of two whiskers means that the minimum and maximum mean construct scores are equal to the first and third quartile. Furthermore, it can be noted that no median line is visible for the constructs FACT1 post-survey and FACT3 pre-and post-survey in the control group. This can be explained by the non-normally distributed data that are skewed to one side, meaning that most of the answers can be found at the bottom of the box. Outliers are present for all boxplots except those for FACT2.

Qualitative Results

Participants did not mention much in the interviews about the effect of the game on their acceptance of sexual violence myths. However, one of the female participants mentioned that because of the game session, she wants to become more aware and less dismissive of sexually transgressive behaviour. When asked what she meant, the participant responded that *"For example, before my natural instinct would be to give boys who are talking about women in a negative way, the benefit of the doubt.",* indicating that there was a slight shift from taking away responsibility from the victim to placing more responsibility on the perpetrator. Another female participant had a similar shift but then with the focus on the victim: "*The game helped me to look at other perspectives, and how people think. It helped me to have more empathy, think from all sides of an issue, and don't go with the blame game of the victim.*". These shifts might explain why FACT1 had a significant decrease in response scores, thus less acceptance.

5.2.4   Conclusion Hypothesis 1 and 2

Two hypotheses were tested for WIS, BAS and SVMAS. The first hypothesis stated that the game significantly increases the willingness to intervene and improves bystander attitudes, while it reduces the acceptance of sexual violence myths. Hypothesis 2 stated that any of these effects would fade some time after playing the game. Paired t-tests were conducted between the pre-, post- and follow-up survey of the experimental control group, after which the results of these two groups were compared. Based on the analysis hypothesis 1 was found to be true for WIS and BAS, but no valid significant effect was found for SVMAS.

The results for WIS, the bystander attitude 'taking responsibility' and for FACT1 and FACT2 of SVMAS indicate that hypothesis 2 is true, though no significant effect was found between the pre- and post-survey with the follow-up survey. For the BAS construct 'No Awareness' significant effects were found between the pre-and follow-up survey and not between the post- and follow-up survey, thus rejecting hypothesis 2. Lastly, no definite conclusions can be drawn for FACT3 of SVMAS, as the mean-values of the pre-, post- and follow-up survey were very close to each other.

The qualitative results support the quantitative results for WIS and BAS. Participants contributed their increased willingness to intervene to several mechanisms. For example, the game was said to be a good reminder to intervene and to make people realize that doing anything is better than nothing. In addition, the game also was said to inspire critical thinking about one's own attitude to intervene and that the cards are a source of inspiration to empower to act in situations of sexually transgressive behaviour. Moreover, most participants in the interviews responded that their awareness was changed after playing the persuasive game. Based on the qualitative data retrieved from the additional questions in the survey, awareness seems to be raised by either the debriefing with information about sexual violence, or the discussions generated during the game.

5.3 Effect of Game Session on Intergroup Dialogue

Qualitative and descriptive quantitative data analysis were conducted to test the third hypothesis: *"The game session encourage a positive intergroup dialogue."*

Descriptive analysis is visualized with boxplots. Moreover, qualitative analysis supports the quantitative analysis with data extracted from interviews, game sessions notes, and open survey questions. Inferential descriptive analysis could not be conducted as only the experimental group received an intervention. All results from quantitative analysis can be found in Appendix *H.2. Effect of Game Design on Intergroup Dialogue*. Figure 45 presents an overview of which relationship will be analysed in this section.
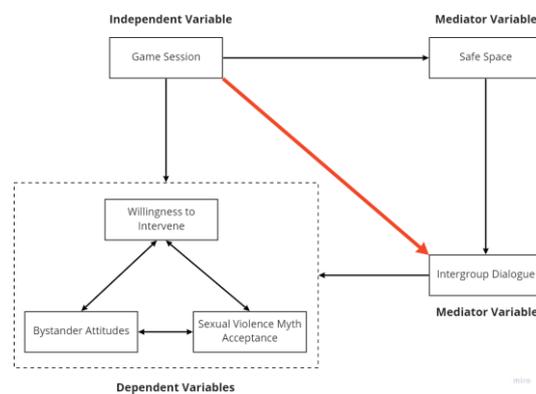
Figure 45 | Effect of Game Design on Intergroup Dialogue

5.3.1 Data Analysis

Quantitative Results
The communication process scale (CPS) exists of four constructs: "Alliance Building", "Engaging Self", "Critical Self- Reflection", and "Appreciating Difference". Positive answers, or high response scores, on the constructs indicate a positive intergroup dialogue between the participants and suggest that the game encourages an intergroup dialogue. The boxplot shown in Figure 46 shows a clear tendency of positive responses. Especially the construct "Appreciating Difference" seems to elicit the strongest positive answers, whereas the construct "Critical Self-Reflection" evoked the most distributed answers. The construct "Appreciating Difference" misses a whisker above the box, meaning that the maximum of the plot is equal with the third quartile, which was too be expected, as the construct generated the most positive responses on a 5-point Likert-Scale. Finally, outliers were only present for "Alliance Building".

It is clear that the construct "Appreciating Difference" has the highest mean values (M = 4.42; SD = .54), while the construct "Critical Self-Reflection" elicited the lowest response scores (M = 3.98; SD = .61). The mean values of "Critical Self-Reflection" are however very similar to the mean values of "Alliance Building" (M = 4.04; SD = .44). Finally, together with the findings for "Engaging Self" (M = 4.19; SD = .46), the results confirm that the game sessions encouraged a positive intergroup dialogue between the participants.
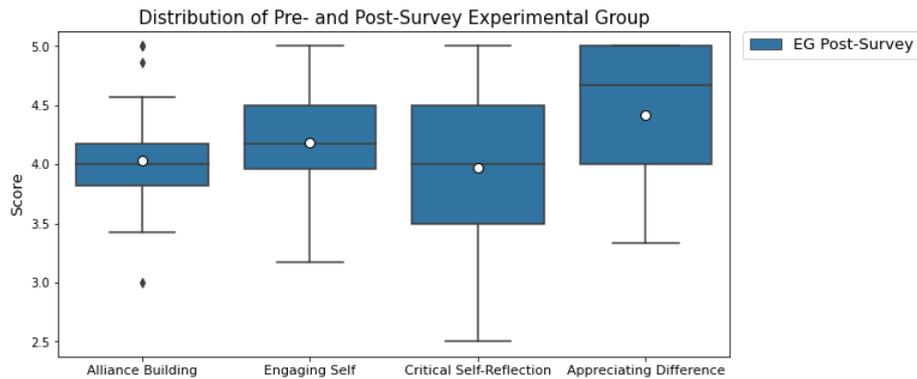
Figure 46 | Communication Process Scale - Experimental Group: Boxplot of Pre-and Post-Survey

Qualitative Results

GAINING DIFFERENT PERSPECTIVES. All interviewees indicated that because of the game they gained an understanding of different perspectives, indicating that the game has had an effect on the constructs "Alliance Building" and "Appreciating Differences". They also found the discussions to be the most interesting part of the game. This finding might explain why "Appreciating Differences" in the results of CPS scored the highest.

- *"The game itself was super interesting. It required thinking and somehow challenging your point of view and different opinions, but at the same time I think it was super valuable to have this discussion, and such a discussion would not have been available without such an environment.*
- *"I find it generally very nice to hear about different opinions and perspectives of people, because I feel like you learn a lot from it."*
- *"I learned from the game that people can interpret situations in very different ways."*

Overall, it seems that the cards were a good discussion starter, inspiring the participants to discuss topics they find difficult discussing with their peers in real life:
- *"The questions and answers were also inspiring. Normally if people sit together, the topic of sexual violence won't appear. So, I think the game and the cards were needed to actually start a conversation."*
- *"Well, I, I got very into it [the game]. I genuinely thought it was a nice game to play and to discuss these things. Because I usually don't ever discuss these things really. I mean, sometimes with friends, if something is in the news or something happened, but never in a very deep context and I thought that was super nice."*

In addition, some participants found that the inspiring cards empowered them to act in situations of sexually transgressive behaviour. This sense of hope in being able to challenge harmful situations is a marker for the construct "Alliance Building", as the participant was able to feel a sense of hope in being able to challenge observed injustices.

INSPIRATION FOR DISCUSSION. The participants might have felt inspired by the cards, because they created a moment for role-playing according to the participants and put the players *in "quite a vulnerable position, because you were witnessing the situation from close proximity of some form*

of sexually transgressive behaviour, which helped to empathize". In fact, half of the experimental group indicated that they felt inspired and empathetic during the game. While these emotions can contribute to a positive intergroup dialogue, the vulnerable position that participants are placed in, might elicit triggers. It is therefore not surprising that nine participants indicated that they felt challenged during the game. Triggers can put one in an extreme position in the discussion according to one female participant. These trigger reactions happen when people relate to the card and connect it to an experience that evokes a strong negative emotion, for example. By taking on an extreme position, the game might not only be harmful to the participant but also to the dialogue, as the participant might not be able to "appreciate difference", which is one of the constructs of CPS. Luckily, the concerning participant could turn the situation around for herself:

"In that situation the emotions are so high, so I took my very extreme position, and thought that no other answers are correct or right. But then we discussed it and I saw the others' perspectives, which helped me to also see the others' ideas to it. In that context the situation was super valuable to me."

Talking through disagreement and conflict fits with the construct "Alliance Building". Another marker for "Alliance Building" and "Appreciating Differences" is the ability to listen to and learn from others. One interviewee expressed that her openness to share her opinions in the game could be attributed to these markers, quoting:
- *"Initially I thought maybe I'll be very uncomfortable, but okay. However, everyone was asking during the game this happens and how do we tackle this? What is your opinion about it? So, it was an open discussion".*
- *"I felt open about talking about my experience with the group, because I also felt like nobody was there to try to win the argument to be the better opinion. It was just an exchange. I liked that."*

SELF-CONSCIOUSNESS. One third of the participants indicated that they felt self-conscious during the game, which fits the construct "Critical Self-Reflection", quoting: *"Overall, I really like the game and like the idea of discussing each other's answers, and predicting each other's answers. It really increases your self-consciousness, and you learn a lot about yourself".* As noted in the qualitative analysis of *5.2 Effect of Game Session on Dependent* Variables, the participants were challenged to change their attitudes towards victims and perpetrators, and some did question their perspective on bystander intervention or on how they viewed others with opposing views:

"I've learned that even though people might have extreme opinions, the opinions might not be led by the same negative emotions that I thought. There is another motivation than what is in your head. For me an opposite and extreme opinion, led to me thinking initially in the game "you're a sexist", but then I realized there might be another reason that actually drives that person. This thinking helped me a lot, because it was the first situation someone disagreed with me on this topic. So that was really valuable."

However, some participants did not feel challenged to examine their perspectives or positions on the options chosen during the game. Instead the game reinforced their initial perspectives, quoting:
- *"We all stood more or less in similar ground, so I won't say that my perspective has changed, but it [the game] did reinforce it. It it's like everyone acknowledges that this is a bad problem, you know."*

- *"I don't think it changes the behaviour that I do, because if I were in those positions, I would choose the same options that I would have chosen before playing the game, as those are the options that I think are right to do."*

One reason might be that the three-minute limit on the discussions did not provide enough time to go into depth about the scenario or statement, to actually being challenged in ones' perspective: *"I think my friends are more open, than this. The discussions are much longer than this. We discussed around 3 minutes with each topic, and there were not a lot of arguments in this case."*

VAGUENESS AND LENGTH OF THE CARDS. On the survey, several participants (6 out of 34 from the survey) also commented that they found the scenarios, questions and answers sometimes too vague. Some participants, either from the survey or the interviews thought that this was positive, exclaiming "I like that it is vague, so please keep that!". Another participant noted that some real-life situations are also vague and also do not give you time to think about it three or four times. It also contributes to generating more discussions according to the respective participant. One participant commented: *"the situations were very clear and the different answers as well, but they also left enough room to discuss, and left the scenario open for interpretation, which made the game a good talking place".* Other participants found it really frustrating to figure out what some things meant, with one saying that the relatively vague questions are not as interesting as the ones that provide more context.

Frustration on the vagueness of the cards was probably exacerbatd by the lengthiness of some scenarios and statements on the cards. Almost a third of the participants expressed that they would like to see the cards' text put on a screen to improve readability and understanding of the cards, as *"a way to share it with others instead of having one person read it out loud might be nice."*, with another stating *"Questions were really thought provoking. To have the questions written and shown to everyone would help. I am not a good listener".*

RELIABILITY OF THE CARDS. Many participants expressed that they felt engaged (26 out of 34) and calm (15 out of 34) during the game. Furthermore, the participants felt that they could express their opinions openly without feeling judged, which is an indicator for the construct "Engaging Self", with one contributing to the openness of the other participants to a safe environment (more in that in *5.5. Effect of Game Session on Safe Space),*

One contributed their engagement during the game to the relatability of the scenarios and statements presented on the cards. Overall, two-thirds of the participants thought that the scenarios were very much relatable:

- *"I've been in some scenarios like a bar or a party when these things have occurred and me and friends had to take action."*
- *"They were virtually all situations that I've found myself in which I know people close to me have found themselves in."*
- *"Most of the statements of the cards were something that I as a woman could relate to in the sense that I have had first-hand experience with most of those, and for the ones that I did not I have heard of situations from my friends."*
- *"Because a lot of 'student like' situations were involved and that relates to my current situation."*

However, the game was not relatable for everyone, particularly for the male participants as the game did only focus on female victims and male perpetrators and excluded other forms of intersectionality. Quoting one male participant: *"I was engaged, but I think if there was a scenario more recognizable for me, I would have been more invested. This doesn't need to be a bad thing that you didn't include other types of sexual violence, it can maybe make it less interesting for some. It was still engaging enough"*. Another male participant thought it would be interesting to specify the gender of the bystander to encourage players to think from the other gender's perspective. To quote this participant: *"It would be interesting to see if you could gender specify the bystander. For example, my answer will be very different in the bar scenario if I knew that I. as a bystander, will be a woman"*. According to the respective participant, this would be interesting as the struggles of male bystanders differ from those of female bystanders.

DIALOGUE WITH OTHER GENDERS. Lastly, participants were asked how they liked playing the game with the other gender in the interviews. One female participant contributed most of her perspective change due to playing with men, as there is a natural difference in perception. This statement was reiterated by other women, saying:

"I thought that it was very nice to also have men because I think they had different perspectives in the game compared to each other. At least a little bit. And because different perspectives are part of this game it is very nice to have both men and women. I feel like we can learn from each other, because men and women have very different perspectives on situations."

No female or male student expressed hesitance to play the game with the other gender. All were in favour. Especially the women thought it was important to include the men in the conversation to *"get the perspective of the woman, so they [the men] empathize or sympathize"*. The male participants expressed in their turn that they did not mind having discussions with women about this topic, and some acknowledged that men also need to be involved in the discussions. There does seem to be a limitation to the empathy that male participants can generate. One male participant mentioned that while he found the point of view of the women interesting, as it was a different way of thinking about how to act in certain situations, the women in his group found it intuitively easier to empathise and place themselves in the shoes of the victim on the cards because the victims were women. According to him, gender influences how one position themselves in a particular situation and thus how one would respond as a bystander. Thus far, as a man, he had to only act to a threat happening to someone else instead of reacting to it. Therefore, it would also be interesting for him to include the struggles of men in the game, either as a bystander or a victim.

DURATION OF THE GAME. The discussions in the game were greatly enjoyed. So much so, that participants would have liked to play it longer and more often:
- "Loved the game. Would love to play it for a longer time".
- "I wanted to go longer to play, like, at least maybe ten rounds or. Yeah. To have all types of cards gone by at least once. I would have liked to see all the types of cards at least once."
- "I'm willing to play the game more often. I think it's very important and it's a nice way of starting the topic."

The relatively short duration of the game play and the time limit on the discussions might have contributed to that not many discussions could be generated during the game, which was addressed by one participant in the interview saying:

- *"Three minutes were not enough to discuss it, because we did not have enough time to discuss it, and also because of politically correct answers, there was nothing to argue. Nobody really had conflicting answers."*

PLAYING WITH STRANGERS. The last quote from *'Duration of the game'* reflects that politically correct answers might have been present, which might be attributed to that participants played mostly with other strangers. Participants acknowledged that playing with strangers requires a level of comfort to speak one's mind and that it takes time to understand what the other person is saying, whereas, with friends, this is much easier. Quoting one participant: *"I feel people won't open up to strangers, even if they know you won't meet them again. You have to have a level of comfort actually to say what you think"*. Moreover, participants also expressed that playing with strangers also depends on how respectful they are of other opinions. One participant, in particular, spoke about how he thinks it would be good for his student association to play the game, especially for some guys walking around. At the same time, he is unsure how comfortable he would be sharing his views, as these are 'certain types of people'. Another participant who had experienced a conflicting perspective with someone in the group thought it helped that she knew the person to overcome the disagreement with, quoting:

"I think it also helped a lot, because I was working with the guy that disagreed with me. So, I know him and I think the fact that we spend some time together, helped me to open up. So, in that sense I could trust him. I'm not sure I would react the same way if the person was a complete stranger to me."

However, other participants found it beneficial to play with other strangers and seemed to have no problem at all playing with people they do not know:

- *"I knew some players vaguely. For me it was fine, but I'm also quite open for conversations with anyone also about difficult topics, so I think that was nice."*
- *"it was better, because it would have changed the dynamic if I brought someone I know. So, fear of judgement, because someone knows you. For me personally I don't really care if someone thinks I have weird views. It was not a place to judge people, and to answer honestly."*

5.3.2   Conclusion Hypothesis 3

The quantitative descriptive results indicate that the game encouraged an intergroup dialogue, thus proving hypothesis 3. All constructs (i.e. Variables) has a rounded mean response score of 4, indicating that most participants agreed that the game contributed to "Alliance Building", "Engaging Self", "Critical Self- Reflection" and "Appreciating Difference" and therefore encouraged a positive intergroup dialogue. The most positive responses were given for "Appreciating Difference", which was also confirmed by the interviewees.

5.4 Effect of Intergroup Dialogue on Dependent Variables

A correlation test is conducted between the four constructs of the Communication Process Scale (CPS) to test the following fourth hypothesis: *"The intergroup dialogue in the persuasive game has a positive correlation with the willingness to intervene in primary bystander opportunities, a negative correlation with 'No Awareness' and a positive correlation with 'Taking Responsibility' of bystander attitudes, and a negative correlation with sexual violence myth acceptance."*

Before testing the hypothesis, a choice was needed to be made between the parametric tests Pearson's r and the non-parametric test Spearman's r. Based on the homogeneity of variance test results shown in *Appendix H.3.1. Homogeneity of Variance*, the Pearson's r test was chosen to perform the correlation test between the variables of CPS and the dependent variables. The results of the correlation tests were then supported with qualitative data when available. All results from quantitative analysis can be found in Appendix *H.3. Effect of Intergroup Dialogue on Dependent Variables.* Figure 47 presents an overview of which relationship will be analysed in this section.
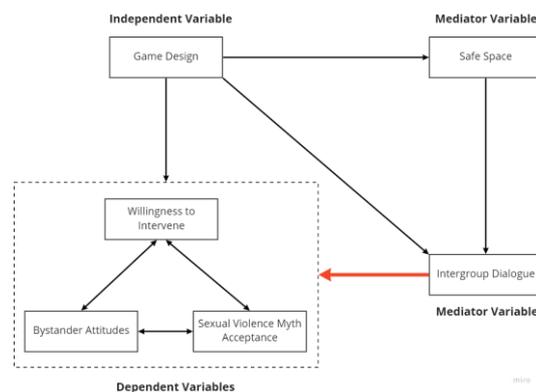
Figure 47 | Effect of Intergroup Dialogue on Dependent Variables

5.4.1 Relationship between CPS and WIS

Quantitative Results

Figure 48 displays the computed Pearson's correlation coefficient between CPS and the difference in mean construct scores of WIS of the experimental group in a heatmap. In the heatmap the size of the squares indicates the strength of the relationship, and the colors indicate either a positive (i.e. blue) or negative (i.e. orange) direction of correlation. The red square encircles the most important results of the figure. An overview of the p-values for correlation between CPS and WIS is provided in Table 76 in Appendix *H.3. Effect of Intergroup Dialogue on Dependent Variables.*

The heatmap demonstrates that there is a negligible positive correlation between WIS and "Alliance Building" ($r(32) = .01$; $p = .966$), between WIS and "Engaging Self" ($r(32) = .13$; $p = .485$), and between WIS and "Critical Self-Reflection" ($r(32)= .26$; $p= .158$). Furthermore, a negligible negative correlation was found between WIS and "Appreciating Difference" ($r(32) = -.13$; $p = .478$). No correlation was significant, which means that the small amount of correlation was found by chance. Thus, no significant effect of the intergroup dialogue on WIS was found, disproving hypothesis 4.
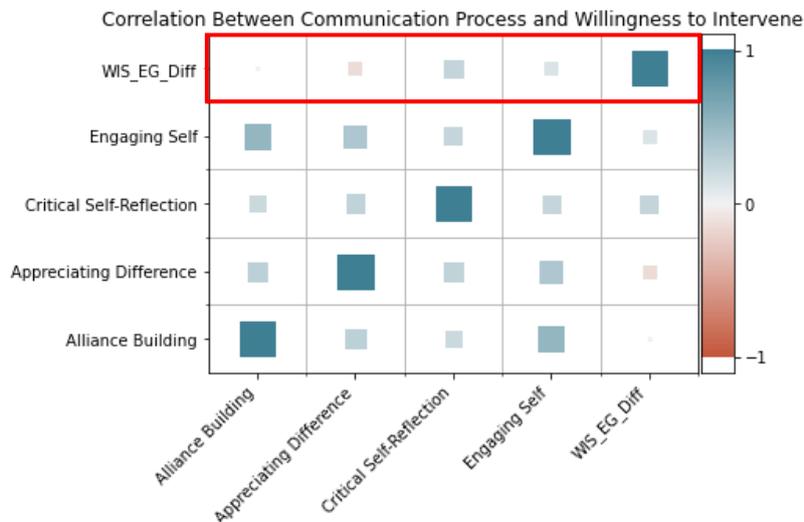
Figure 48 | Heat Map Communication Process and Willingness to Intervene

Qualitative Results

Not many results could be found to connect the intergroup dialogue with the willingness to intervene. However, one participant did mention that hearing different perspectives had a positive effect on the willingness to intervene, quoting: *"I found it very interesting to hear all points of views. That was interesting to me. It made me more aware of what you might do or maybe should do"*.

5.4.2   Relationship between CPS and BAS

Quantitative Results

The heatmap in Figure 49 visualizes the correlation coefficient between CPS and the difference in mean response scores of the constructs "No Awareness" and "Taking Responsibility" of BAS. In the heatmap the size of the squares indicates the strength of the relationship, and the colors indicate either a positive (i.e. blue) or negative (i.e. orange) direction of correlation. The red square encircles the most important results of the figure. An overview of the p-values for correlation between CPS and BAS is provided in Table 76 in Appendix *H.3. Effect of Intergroup Dialogue on Dependent Variables.*

The construct "No Awareness" appears to be only negligibly negatively correlated with "Alliance Building" ($r(32) = -.25$; $p = .168$), "Engaging Self" ($r(32) = -.147$; $p = .422$), and "Appreciating Difference" ($r(32) = -.01$; $p = .946$) of CPS. No significance was detected for these correlations. For the correlation between "No Awareness" of BAS and "Critical Self- Reflection" ($r(32) = -.37$; $p = .037$) of CPS however, a low negative correlation was found, which is also significant. This means that when critical self-reflection increases, 'No Awareness' significantly decreases. Thus, the results indicate that the intergroup dialogue significantly influenced the awareness level of the participants because of critical self-reflection, proving hypothesis 4.

Only negligible negative correlation was found between "Taking Responsibility" for Critical Self-Reflection" ($r(32) = -.21$; $p = .245$) of CPS. Negligible positive correlations were found for and "Alliance Building" ($r(32) = .15$; $p = .404$), "Engaging Self" ($r(32) = .21$; $p = .245$) and "Appreciating Difference" ($r(32) = .0.90$; $p = .626$). No significant correlation was found between the constructs of CPS and the construct "Taking Responsibility" of BAS. Thus, the critical dialogue did not have an effect on "Taking Responsibility", making hypothesis 4 untrue for bystander attitudes.
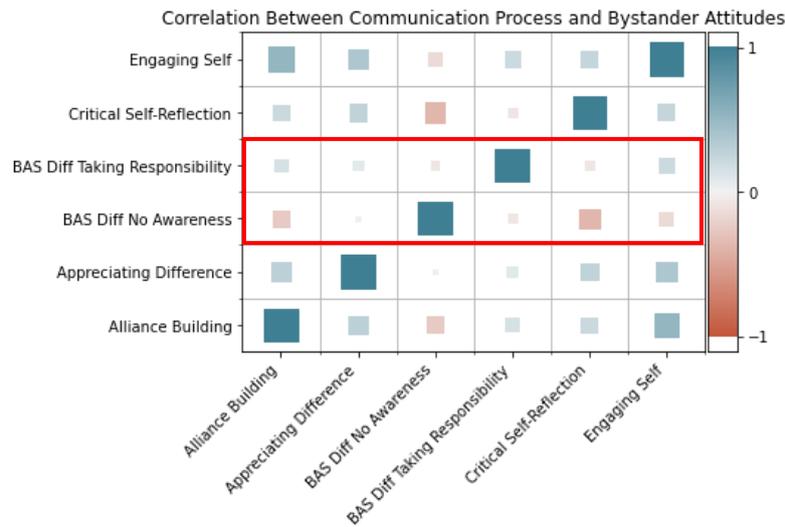
Figure 49 | Heat Map Communication Process and Bystander Attitudes

Qualitative Results

In the qualitative results of *5.3 Effect of Game Session on Intergroup Dialogue,* on the bystander attitudes, it was discussed that many participants contributed their increased awareness to the discussions in the game. When asked in the survey how the participants gained awareness, one responded:

"During the discussions after the cards had been picked, we each explained how we perceived the statements / questions, and almost all rounds the perspectives varied in the group. This does show how everyone views transgressive behaviour differently, which also results in people acting differently or not even perceiving something as sexually transgressive whereas someone else would."

For more results regarding intergroup dialogue, see the results of *5.3 5.3 Effect of Game Session on Intergroup Dialogue.*

5.4.3   Relationship between CPS and SVMAS

Quantitative Results

The correlation coefficients for CPS and the difference in mean construct scores of SVMAS are displayed in a heatmap in Figure 50. In the heatmap the size of the squares indicates the strength of the relationship, and the colors indicate either a positive (i.e. blue) or negative (i.e. orange) direction of correlation. The red square encircles the most important results of the figure. An overview of the p-values for correlation between CPS and SVMAS is provided in Table 76 in Appendix *H.3. Effect of Intergroup Dialogue on Dependent Variables.*

FACT1 of SVMAS shows a negligible and non-significant negative correlation with constructs "Alliance Building" (r (32) = -.10; p = .577), "Critical Self- Reflection" (r (32) = - .40; p = .839), and "Appreciating Difference" (r (32) = - .19; p = .300) of CPS, while it shows a small positive significant correlation with "Engaging Self" (r = .35; p = .046). This means that hypothesis 4 is untrue for FACT1 and that the intergroup dialogue does increase acceptance of FACT1.

Furthermore, FACT2 of SVMAS has non-significant negligible negative correlations with "Alliance Building" (r(32) = - .27; p = .140), "Engaging Self" (r(32) = -.11; p = .533), and "Critical Self- Reflection" (r (32) = - .01; p = .965), and a non-significant negligible positive correlation with "Appreciating Difference" (r(32) = .06; p = .729) of CPS. As no significant effect was found for FACT2, hypothesis 4 was refuted.

Finally, FACT3 of SVMAS only presents negligible positive correlations with "Alliance Building" (r(32) = -.05; p = .774), "Engaging Self" (r(32) = -.01; p = .959), "Critical Self- Reflection" (r(32) = .05; p = .808), and "Appreciating Difference" (r(32) = .003; p = .985) of CPS. Based on the findings it can be concluded that the intergroup dialogue did not have any effect on FACT3, thus disproving hypothesis 4.
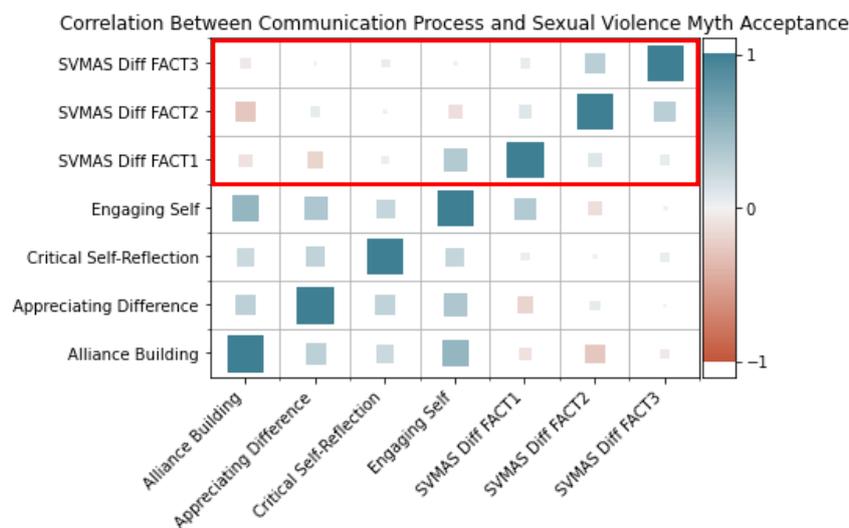
Figure 50 | Heat Map Communication Process and Sexual Violence Myth Acceptance

Qualitative Results

No qualitative results were found to connect intergroup dialogues with the sexual violence myth acceptance scale.

5.4.4   Conclusion Hypothesis 4

The Pearson's correlation test was conducted to test the correlation between the responses to intergroup dialogue and the dependent variables. Hypothesis 4 was only confirmed for the bystander attitude 'No Awareness' and FACT1 from SVMAS. Significant negative correlation was found between 'Critical Self-Reflection' from CPS and 'No Awareness' from BAS, and a small significant positive correlation between 'Engaging Self' from CPS and FACT1 from SVMAS. These results indicate that critical self-reflection encouraged by the intergroup dialogue increases awareness about sexually transgressive behaviour, but that engaging oneself in the intergroup dialogue can increase acceptance in sexual violence myth acceptance.

5.5   Effect of Game Session on Safe Space

Only qualitative data analysis was conducted to test and confirm the fifth hypothesis: *"The game session creates a safe space"*. Figure 51 presents an overview of which relationship will be analysed in this section.
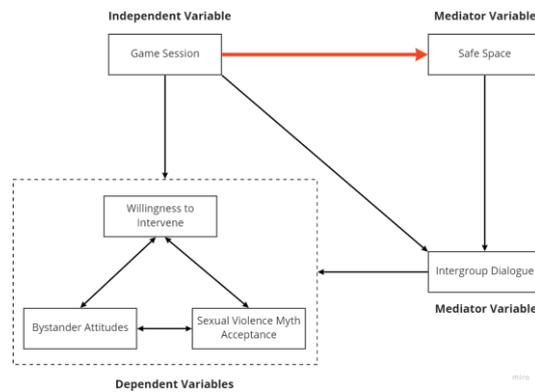
Figure 51 | Effect of Game Design on Safe Space

5.5.1   Qualitative Data Analysis

Out of the 34 participants, 25 indicated in the survey that they felt safe to express their thoughts during the game. This feeling of safety contributed to the discussion of the ethical guidelines in the briefing, the type of participants present, the presence of consent forms, the facilitators, the scoring system, the snacks and drinks, and the small group.

BRIEFING. When asked in the interviews about the cause of the open environment in the game session, participants attributed it most frequently to the discussion of the guidelines or the guidelines themselves in the briefing:

- *"I think the discussion [about the guidelines] was very helpful, because everyone got a chance to say what they understand of a safe environment. So, the discussion before was more helpful than the ethical guidelines that you set in place afterwards."*
- *"You [the coordinator] also asked, what is a safe space or how do you create a safe space. I think that was really, really nice. Because then people could say what feels good to them and then you, you [the participant] hear that as well. You take it into consideration with how you answer questions or discuss things."*

Moreover, some participants could also appreciate the statement in the briefing before the gameplay about leaving the room without explanation when one gets triggered, with one saying that that was very important to disclose for this topic.

PARTICIPANTS. Some participants also recognized that selection bias played a role in creating an open environment. According to some, the game attracted open-minded people willing to share their opinions. People had enough time beforehand to consider whether to join the game or not, so the conversation the game generated was voluntary. Consequently, there was already a consensus on what constitutes as good behavior: *"Basically, you know, nailed it down very thoroughly what were the rules of the game beforehand. So, everybody who came apparently wanted to do that. This made it from the start destined for success"*.

CONSENT FORMS. According to some interviewees, the safe space was created initially with the consent forms, which gave confidence to the participants about their privacy and data and was a good start. Quoting one participant: *"There are always issues of data and privacy. What is right now might not be right in a few years. When you are being quoted somewhere and you are wrong here. Then later you realize you're wrong but then everyone is already being stuck up".* Furthermore, another participant recognized that the consent forms were an additional step to ensure that people wanted to talk about the topic, which made it clearer what the participants were going to do.

FACILITATORS. Attention was also brought to the presence of the facilitators, while some mentioned that they could play without a facilitator, others contributed the safe environment to the nice and calm facilitator, also recognizing that facilitators are important in cases when emotions run high:

"If there is no facilitator, then there is also no one that ensures that there is a safe space and a safe conversation."

SCORING SYSTEM. One participant also mentioned that the scoring system with the scoreboard and pawns created a safe climate, as there was no judgement behind the scoring. The point system also made the topic less heavy and provided moments of breaks between the serious discussions. The game element was necessary to create the playfulness of the game, quoting:

"It was super nice to actually relief your tense or stress that comes from the situation. Sometimes the discussions were not hard, but really opposite opinion, but when you take it serious, you take it serious. This scoring between the rounds were you can focus on the pawns, dices, scoreboards, colours, all these can relief that seriousness. You can start somehow with a fresh mind in the next round and you don't feel like there is too much on your shoulder. I can imagine if all the topics would be next on next one next one, that it would be too much for mental state. So I think it was necessary for the game purpose and game flow, rather than necessarily starting the discussion".

Moreover, many participants in the interviews did mention that not much attention was paid to the scoring board, with one participant acknowledging that it was not about winning but about sharing different opinions. For a few participants winning was important but did not affect their focus on the discussions. While some found it disappointing that the game play was too short to finish the scoreboard, others mentioned that their experience was not affected that much by the scoreboard.

SNACKS AND DRINKS. Providing cookies with tea and coffee at the beginning of the game session also lightened the gameplay atmosphere. According to two interviewees, the snacks and drinks added to the comfortable environment: *"That [the cookies] made it more home, I guess. So, it added extra sweetness to the game".* In addition, the snacks and drinks provided an opportunity for the participants to relax and become acquainted with each other:

- *"I think especially the tea gives it more a good environment to play the game. That you have some time to drink and small talk with each other before you play the game."*
- *"I think for people that struggle more to have conversations; I think the tea can help to relax the conversation."*

SMALL GROUP. One interviewee mentioned that the small group size, also made the environment more comfortable, and made him more open to discuss the issues and to the questions that were asked, as they put the participants in quite a vulnerable position.

5.5.2   Conclusion Hypothesis 5

Seven game elements and design choices were attributed to creating a safe space: briefing, selection bias, consent forms, scoring system, facilitators, snacks and drinks, and small groups. Most participants thought that the briefing, with the discussion of the guidelines and the disclosure statement (i.e. participants can leave any time), helped create a safe space and was necessary to start the game. Together with the consent forms that provided security, the briefing helped the participants to feel safe and confident in sharing their opinions. One mentioned that the drinks and snacks before the start of the game made the setting feel comfortable and provided the participants with an opportunity to get acquainted. Moreover, the facilitators' calm presence added to creating a safe environment. Many participants also believed that the experiment attracted open-minded people with a similar consensus about what good behavior constitutes, which made sharing of opinions easy. Furthermore, participants felt that there was no judgement in the scoring system, which put the participants at ease. Lastly, one participant noted that the small group made the participant feel more comfortable openly discussing the issues and questions raised during the game, as the game put the participants in a vulnerable position. Because of these results, the hypothesis can be accepted.

5.6   Effect of Safe Space on Intergroup Dialogue

Only qualitative data analysis was conducted on interviews, open survey questions and game session notes to answer the final hypothesis: *"The safe space encourages an intergroup dialogue."*. Figure 52 shows which relationship will be analysed in this section.
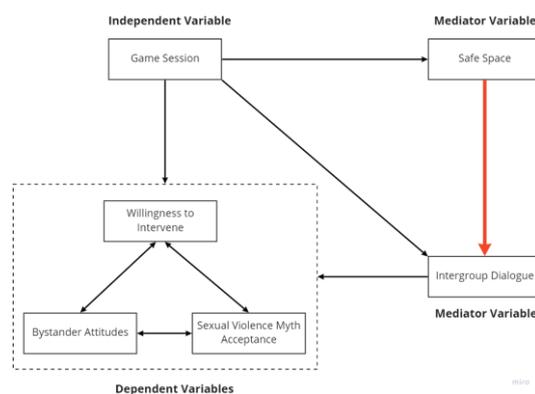
Figure 52 | Effect of Safe Space on Intergroup Dialogue

5.6.1 Qualitative Data Analysis

"It was a really nice and open environment for sharing different points of views and different perception of the problem and situations. I think this is the strongest one."

As mentioned before, out of the 34 participants, 25 indicated in the survey that they felt safe expressing their thoughts during the game. The most commonly frequently cited reason was that there was an open and safe environment with no judgement. Furthermore, participants also found that the other participants listened well and were respectful to each other. To quote the participants:

- *"People were listening, embodied being open-minded and seemed to be truthful."*
- *"Everybody was open and non-confrontational."*
- *"I felt that everyone in the room respected others' opinions and views."*
- *"Everyone was really understanding and ready to listen."*
- *"I thought that the discussions were very open, and I think everyone felt very comfortable sharing their experiences and opinions. Everyone was also very, open about the opinions other people had and were very respectful. So, the environment created there was very safe. I think that's very nice."*
- *"There was a safe environment, no judgement and stuff. At the end the opposite opinions appeared. So, the safe environment was able to induce this."*

As the interviews made clear, this type of open environment was not always expected. One participant thought that the game would generate politically correct answers, with another expecting that the game would be more 'rigid', quoting: *"I expected more of an educational experience. We were going to sit there and discuss what is rape. I thought we would come out with more education on knowing exactly where the line is. But now I realize it is more complicated".*

5.6.2 Conclusion Hypothesis 6

Qualitative analysis from the survey and interviews found many quotes, supporting the existence of a safe space and its positive effect on intergroup dialogue, thus accepting the hypothesis. Out of the 34 participants 25 indicated in the survey that they felt safe during the game, which was attributed most frequently to an open and safe environment free from judgement.

6

DISCUSSION

Dutch universities are in need of evidence-based intervention to stimulate cultural change and to prevent sexually transgressive behaviour among students. Bystander intervention is a popular instrument for bringing a cultural change around sexual violence on campus, as it can encourage students to intervene in cases of sexual violence (Coker et al., 2011). One type of intervention tool that was interesting to consider for bystander intervention are games. Games provides opportunities for experiential learning, meaning that participants learn by engagement and reflection on the experience in the game (Pho & Dinscore, 2015). One game that was found promising in promoting cultural change with bystander intervention, is the persuasive game of Hoobroeckx et al. (2021).

the persuasive game of Hoobroeckx et al. (2021) aims to encourage critical reflection about sexually transgressive behaviour by encouraging intergroup dialogue between female and male students through gameplay. No evaluation of the persuasive game has however been conducted thus far. Therefore, this study attempted to evaluate the persuasive game of Hoobroeckx et al. (2021) as a bystander intervention tool for addressing sexually transgressive behaviour among students in Dutch universities. This attempt was led by the main research question:

"How can a persuasive game promote a qualitative intergroup dialogue between female and male students in Dutch universities in order to encourage bystander intervention in situations of sexually transgressive behaviour?"

In answering the main research question, this study first defined what bystander intervention, persuasive game and intergroup dialogue is, after which the processes and practices of a persuasive game and intergroup dialogue that can lead to bystander intervention were explored. Next, the context of sexual violence among students in the Netherlands was researched. Based on the literature study the prototype of the persuasive game of Hoobroeckx et al. (2021) was redesigned. Following the redesign of the persuasive game, the method and experimental design for measuring the effectiveness of the game and game session was provided. Data was gathered from the surveys, physical experiments and interviews. Finally, the data could be analysed with quantitative and qualitative analysis, providing the results.

This sixth chapter aims to provide an in-depth understanding of SQ6: *"What can be inferred from the measured effects about persuasive games in general?"*. This is done by providing a discussion and interpretation of the key results based on the six hypotheses developed in *Chapter 4.1 Variables & Hypotheses.* Additionally, the implication of the findings are discussed and a small reflection on the process of this study is provided. This chapter ends with a conclusion answering SQ6.

6.1 Discussion and Interpretation of Key Results

This section aims to discusses and interpret the most important findings of the results found in Chapter 5. The most important results will be discussed in the same consecutive order as the developed hypothesis in *section 4.1 Variables & Hypotheses*. In doing so, an answer is inferred from the measured effects about the persuasive game in general, answering SQ6.

The following six hypotheses are:

H1. The game session increases the willingness to intervene in primary bystander opportunities, reduces SVMA, and raises awareness and level of responsibility (or bystander attitudes) about sexual violence in female and male students.
H2. The effects of the game session on the dependent variables will fade over time.
H3. The game session encourages an intergroup dialogue.
H4. The intergroup dialogue in the persuasive game has a positive correlation with the willingness to intervene in primary bystander opportunities, a negative correlation with 'No Awareness' and a positive correlation with 'Taking Responsibility' of bystander attitudes, and a negative correlation with sexual violence myth acceptance.
H5. The persuasive game creates a safe space.
H6. The safe space encourages an intergroup dialogue.

6.1.1 Effect of Game Session on Dependent Variables

Hypothesis 1: The game session increases the willingness to intervene in primary bystander opportunities, reduces SVMA, and raises awareness and level of responsibility (or bystander attitudes) about sexual violence in female and male students.

According to Coker et al. (2011) and Mujal et al. (2021) bystander intervention programmes can change bystander behaviour, attitudes and rape myth acceptance. Moreover, it was found that an effective bystander intervention program increases the knowledge and awareness about sexual violence and its prevalence, helps participants to recognize signs and risky situations of sexual violence, stimulates responsibility, and teaches bystander skills to intervene safely and with safely and with confidence (Labhardt et al., 2017; Coker et al., 2019). In addition, a lack of responsibility and acceptance of rape myths hinders bystander intervention (Yule & Grych, 2017; Bennett et al., 2014). Therefore, it was expected and hypothesised that the game would increase the willingness to intervene, which is a predictor of bystander behaviour, would reduce sexual violence myth acceptance (SVMA), and would raise bystander attitudes (i.e. awareness and level of responsibility) (Pomery et al., 2009).

In line with the hypothesis and literature, the game design proved to be effective on increasing the willingness to intervene, raising awareness and level of responsibility. However, the persuasive game did not seem to have a (valid) significant effect on reducing acceptance in sexual violence myth acceptance (SVMA). Behavioural willingness seems to be however unaffected by the latter by SVMA and the variable "taking responsibility". An explanation for these findings has been provided in *Findings 1 and 2.*

Finding 1: The willingness to intervene significantly increased, but no significant effect was found for sexual violence myth acceptance.

Lesser rape myth acceptance has been linked to greater willingness to intervene in situations of sexual violence (Bennett et al., 2014). While it is true that a significant increase was found for behavioural willingness after playing the game, a significant reduction was only found for construct FACT1 of SVMAS for the experimental group, meaning that there was a shift to less acceptance of sexual violence myths. However, a significant reduction was also found for the control group, making it unlikely that the game session was responsible for the reduced acceptance. Thus, the results indicate that the game did not contribute to a change in sexual violence myth acceptance.

One reason for this finding can be found in the results of SVMAS. The descriptive results indicated already low acceptance of sexual violence myths in the pre-surveys of both the experimental as the control group, which hardly changed in the post-surveys. The overall low acceptance of the sexual violence myths could have made the experimental group already more receptive to change its behavioural willingness. One participant from the control group took the initiative to provide a clear explanation for why the results showed such a low overall acceptance of sexual violence myths, quoting:

"I feel most questions are quite leading and will entice socially desirable answers from the participants. Even though it is anonymized, the questions have an obvious "right" answer. I agree with that answer, but I don't think many people would go against this, even though their true opinion might lie elsewhere".

Based on this quote, a possible explanation for the skewed answers might be that the questions are leading and stimulate participants to give a politically correct answer. Another reason might be selection bias. Some participants from the experimental group in the interviews already pointed out that the type of people the experiments attracted were people that found the topic important and shared relatively similar values and beliefs. These findings indicate, that if the survey introduced more subtle attitudes and beliefs towards sexual violence and that if the promotion for the recruitment of participants would be less transparent about the topic of the experiment, the likeliness to find an effect could have been increased.

Finding 2: The willingness to intervene, awareness and levels of responsibility about sexual violence significantly increased.

While no significant effect was found for SVMAS, the significant positive effects of the game on bystander behavioural willingness and bystander attitudes validate a part of the model of the outcome variables of *Figure 12 | Conceptual Model of Independent, Dependent and Mediator Variables* in *Chapter 2 Literature Review*. The increase in the willingness to interview can likely be attributed to the fact that the game raised the awareness and responsibility levels of the participants (McMahon & Banyard, 2012).

According to McMahon & Banyard (2012) bystanders that become more sensitive, or more aware, to situations of sexual violence, can become active and responsible peers who can interfere in bystander opportunities. The qualitative results from BAS support this theory, as one interviewee did mention that her situational awareness was raised by the game. Most participants attributed their raised awareness level either to the cards or to the explanation and the statistics provided in the debriefing. When reflecting on the specifications of the set-up in section *3.2.2 Step 1: Specifications* and section *4.1.1 Conceptual Model of Variables* and on the literature review, these responses were

to be expected. According to Zuniga et al. (2007) questions can promote critical reflection. Moreover, providing an explanation and statistics of the prevalence of sexual violence, and explaining why it is important to change attitudes and behaviour in the debriefing, can contribute to changing bystander attitudes (Yusoff & Kamsin, 2015).

Literature studies also validate the increase in bystander responsibility. Bennett et al. (2014) found a relationship between greater perceived responsibility and greater willingness to intervene in situations of sexual violence. However, qualitative results that were found, were limited in support of the significant findings of 'taking responsibility', which was surprising. Some participants mentioned that while they did learn why it is important to intervene, they would have liked to learn how to (safely) intervene in the situations as well, retrieving one quote from the results:

"I really would want to [intervene]. Like I want to be able to intervene and everything, but I know for a fact that once the situation gets there, it's like really, really difficult. So, I would say yes [my willingness has changed], but then I don't think I would do it yet because I don't know how to [intervene], while still feeling safe and comfortable myself as well."

This quote indicates that while the game did increase the participants willingness to intervene as they got aware of why and when it is important to intervene, they would not take the responsibility to intervene yet, as they would not know how. This finding is also supported by Pomery et al. (2009) who recognized that if an individual has relatively little experience with engaging in a behavioural opportunity, there is little chance that it might plan or intend to perform a behaviour beforehand. Compared to behavioural intention, behavioural willingness, or the openness to engage with a situation, requires little experience in a behavioural opportunity, and instead requires that the individual already has an idea on how it would like to behave in a particular situation (Pomery et al., 2009). This is also the reason why in this study behavioural willingness was chosen as an outcome measure, and not behavioural intention.

One interviewee however did mention that she felt inspired to act because of the cards, quoting: *"I learned that I can do something and that will be better than nothing. I was really surprised I got this insight".* Some other interviewees from the experimental group mentioned that the game helped them to provide ideas of how to intervene and made them realize that doing anything is better than nothing. This finding is also supported by literature. According to Nagda et al. (2009; 2012) and intergroup dialogue can help to develop personal and social responsibility to address issues in the community. Therefore, the ideas participants got from the game of how to intervene, might have added to levels of responsibility. These levels of responsibility were, however, already quite high for the participants in the experimental group before playing the game. This finding might be another reason why no supportive qualitative results have been found for 'taking responsibility'.

6.1.2 Effect of Game Session on Dependent Variables over Time

Hypothesis 2: The effects of the game session on the dependent variables will fade over time.

The effects of the persuasive game were again measured one month after playing the game. Comparing the follow-up survey with the pre-and post-surveys of the participants, yielded in accepting the hypothesis only for WIS, 'Taking Responsibility' of BAS, and two constructs of SVMAS. The main findings of the follow-up survey are discussed in *findings 1,2 and 3.*

Finding 1: No definite conclusions can be drawn for FACT3 of SVMAS.
This finding is unsurprising, as the acceptance of FACT3 was already quite low and did not to change after playing the game. Therefore, no statements could be made for this finding.

Finding 2: The effects of the game session on the Willingness to Intervene, Taking Responsibility, and the constructs of SVMAS do not significantly decrease, but hypothesis is still accepted.
The boxplots show that most effects of the game session on the dependent variables do decrease, but not enough to find a significance. Moreover, the levels of the dependent variables are still higher than before playing the game. Thus, the game had still an effect one month after playing the game, while the effects did diminish.

According to Lamade et al. (2018) any positive effects of an intervention will fade over time. In order for interventions to be effective over time, they need to be frequently repeated and the program must be longer than an hour (Jozkowski & Ekbia, 2015). The game session with the redesigned persuasive game 'Talk That Talk' took approximately 1.5 hours. While the duration is not great, based on the literature it could be hypothesized that the effect would last longer. However, for the experiments, the persuasive game "Talk That Talk" was only played once. Therefore, it was still expected that the effects would fade one month after playing the game. Participants expressed a wish to play the game longer in the session and showed an interest in playing the game more often. Therefore, to limit the fading of the positive effects of the persuasive game, the game should be played longer and more frequently.

Finding 3: The effects of the game session did not significantly decrease the awareness level one month after playing the game.
Solid statements can be only made for the effect of the game session on the awareness level one month after playing the game. A significant difference was found between the pre-and follow-up survey, but not between the post-survey and follow-up survey. This is not surprising as the most significant effect of the game session was on the awareness level. Awareness is the first important step in recognizing risks and gaining responsibility (Labhardt et al., 2017; Coker et al., 2019). Awareness might have been the variable that had the most influence on all the other variables. Is therefore not surprising that no significant decreases in the follow-up survey results have been founds. The findings also indicate that awareness more robust against time.

6.1.3   Effect of Game Session on Intergroup Dialogue

Hypothesis 3: The game session encourages an intergroup dialogue.

The results of the communication process scale (CPS), which is a measurement tool for intergroup dialogue, showed a positive response for all four constructs: "Alliance Building", "Engaging Self", "Critical Self- Reflection", and "Appreciating Difference". Therefore, the hypothesis is accepted. The average response for all constructs was 'agree', which indicates that most participants thought the intergroup dialogue contained all four attributes. The highest average responses are found for the construct "Appreciating Difference", and the highest variance in responses can be found for the construct of "Critical Self- Reflection". The main findings for the results of CPS are mentioned in *Findings 1, 2, 3 and 4.*

Finding 1: The highest average responses are found for the construct "Appreciating Difference".

Interviewees in general indicated that they learned the most about and gained the most understanding of different perspectives on the topic because of the game. This finding fits with the statement of Nagda et al. (2009; 2012), that explains that an intergroup dialogue in a structured environment increases awareness by encouraging critical reflection on group identities and societal inequalities, and perspective -taking of 'the other group'. Participants did express that they liked the structure and set-up of the game, quoting *"I enjoyed it so much and the game was so well structured",* and indicated that they felt inspired to broaden their horizon. It is therefore not surprising that the highest number of positive responses was reserved for the construct "Appreciating Differences". However, the many positive responses on this construct can also be attributed to selection bias. Participants showed during the interviews already pre-existing interest to listen to other opinions and perspectives and share their own, quoting:

"I like such games, where you discuss and not about the points. I like playing with points and all that, but apart from that I was excited to know what the other person was thinking".

Finding 2: The highest variance in responses can be found for the construct of "Critical Self-Reflection".

In almost all groups an equal number of men and women from TU Delft with different national and educational backgrounds participated. According to Zuniga & Nagda (2001) a diverse group contributes to more critical dialogues and helps to expand the worldviews of the participants. While the study found this to be true for some participants, it did not contribute to "critical self-reflection" for others. One participants provides a reason for why this construct elicited a greater variety of responses, quoting:

"Overall, I really liked the game and I like the idea of discussing and predicting each other's answers. It really increases your self-consciousness, and you learn a lot about yourself".

Another female participant mentioned, that she liked that men were included in the discussion, as they brought different perspectives on situations from which they could learn from. Supporting this statement, another male participant expressed that he found the point of view from the women interesting, as it was a different way of thinking about how to act in certain situations. However, as it turns out, learning about different perspectives and critically reflect one's own perspective are not the same. In fact, for some the game reinforced their perspectives, quoting from the results:

"We all stood more or less on similar grounds, so I won't say that my perspective has changed, but it [the game] did reinforce it. It it's like everyone acknowledges that this is a bad problem".

This quote also reinforces the idea that there is selection bias and that the experiment attracts students with similar values and beliefs. This might also help to explain why the lowest scores in responses could be found for the construct "Critical Self-Reflection". Additionally, for some participants the short time limit for each discussion round, and the short gameplay limited critical-self-reflection.

More reasons could be found in the fact that participants played mostly with other strangers. While some participants thought this was beneficial for expressing their opinions, others mentioned that

they felt more comfortable sharing their perspectives with people they know. This finding also fits with the findings of Holley & Steiner (2013). Holley & Steiner (2013) stated that encouraging a meaningful dialogue between strangers and people with different group identities with different power levels and statuses in society, is quite challenging, due to prejudices. Especially complex topics such as sexual violence is difficult as it can elicit triggers to the topic and others. Moreover, there might be a cultural discrepancy in the interpretation of behavior and language and what is or not appropriate to share or how to behave (Holley & Steiner, 2013).

Finding 3: High positive responses for the constructs "Alliance Building" and "Critical Self-Reflection".
When one participant mentioned to have experienced a strong emotional reaction to a card, she took an extreme position, which initially blocked her to listen to others and thus build alliances and critically reflect. For her it helped that she knew the person who she was disagreeing with, as she already trusted him in a sense and therefore, she could open up easier, than if he would have been a stranger. This shows that while having strangers in the group has benefits and provides more and diverse perspectives, it does sacrifice the comfort of the players due to differences between group identities that can be exposed because of the game. The game therefore requires a balance between comfort and diversity of opinions. Without comfort people don't dare to share their opinions to begin with, but without a diversity of opinions people are not challenged to critically self-reflect on their own worldviews.

Finding 4: A high positive response for the construct "Engaging Self".
Many participants expressed that they liked the game as it was fun and engaging. Moving with the pawns, the scoreboard and the colours made the game playful, while the cards were inspiring and thought-provoking and added the level of seriousness that was needed for the game. According to Nagda et al. (2012) posing questions can stimulate participatory engagement and can promote critical reflection, analysis and dialogue. Moreover, Pho & Dinscore (2015) mentioned that games provide opportunities for experiential learning, and therefore participants can learn by engagement and reflection on the experience in the game.

It seems that the persuasive game in this study succeeded in engaging the participants by making the game fun, yet stimulating. Many attribute their engagement in the game to the relatability of the cards, and to the fact they felt safe to openly express their opinions (more on that in *Hypothesis 3).* While male participants did express that they were engaged, some commented that the game was not as relatable or was not as empathy inducing as for the women who could more easily and intuitively place themselves in the shoes of the female victims in the cards. The statement of these participant adds weight to the importance of the relatability of the cards and places more value to the inclusivity of the game.

6.1.4   Effect of Intergroup Dialogue on Dependent Variables

Hypothesis 4: The intergroup dialogue has a positive correlation with the willingness to intervene in primary bystander opportunities, a negative correlation with 'No Awareness' and a positive correlation with 'Taking Responsibility' of bystander attitudes, and a negative correlation with sexual violence myth acceptance.

Based on the results, the hypothesis can be rejected. Only a negative correlation was found between "Critical Self- Reflection" from CPS and "No Awareness" from BAS, which is too low to accept.

Thereby, no significant correlation was found between CPS and WIS and a significant low positive correlation between FACT1 from SVMAS and "Engaging Self" from CPS, which was not expected. An explanation for these findings has been provided in *Findings 1, 2 and 3.*

Finding 1: A low significant negative correlation was only found between "Critical Self-Reflection" from CPS and "No Awareness" from BAS.
The finding was expected and fits with Nagda et al., (2009; 2012) that found that an intergroup dialogue increases awareness by encouraging critical reflection. Many participants attributed their awareness to the discussions the cards generated, which is likely to have led to the significant correlation. Moreover, the article found that intergroup dialogues encourage participants to develop social responsibility. While responsibility did significantly increase because of the game session, no significant correlation was found between integroup dialogue and 'Taking Responsibility'. A reason for this finding was not found.

Finding 2: No significance was found between CPS and WIS.
It was surprising that no significant correlation was found between CPS and WIS. According to the health communication model theory of Kincaid & Figueroa (2007), health communication can lead to behavioural change, which is indicated by behavioural willingness in this study. Some participants did indicate that the different points of view resulted in gaining more insight in what to do, most attributed their inspiration to act to the different answers on the cards and not to discussions in the game session. This might explain why no significant correlation was found between CPS and WIS.

Finding 3: A significant low positive correlation was found between FACT1 from SVMAS and "Engaging Self" from CPS.
Based on the developed model of (intermediate) outcome variables in Figure 12 in Chapter 2, it was hypothesised that an intergroup dialogue over bystander intervention would lead to lesser rape myth acceptance (Bennett et al., 2014). However, the results indicate either no correlation or even a small positive correlation between intergroup dialogues and sexual violence myth acceptance. One explanation can be provided by selection bias. If there are people in the group session with similar attitudes and beliefs, the discussions that follow the cards either don't change anything in one's attitude or can even reinforce the status quo, quoting one participant:

"*We all stood more or less in similar grounds, so I won't say that my perspective has changed, but it [the game] did reinforce it*".

The quote might explain why almost no change was found in sexual violence myth acceptance after game play. However, it does not explain why a low positive correlation was found between FACT1 from SVMAS and "Engaging Self" from CPS. FACT1 proved to significantly decrease for both the experimental as the control group.

6.1.5   Effect of Game Session on Safe Space

Hypothesis 5: The game session creates a safe space.
At least two thirds of the participants indicated that they felt safe during the game, supporting the hypothesis. Participants attributed their experience of a safe space to five game session design choices, one game element, and in addition the participants themselves. Consent forms, facilitators, scoring system, snacks and drinks and small groups were found to have an effect on a safe space. The positive effect of facilitators and small groups on creating a safe environment, was expected and

was consciously integrated in the game session (see Table 1 in section *4.1.1* Conceptual Model of Variables).

According to Holley & Steiner (2013) facilitators who are calm, open, friendly and non-judgemental contribute to a safe environment. This was also recognized by the participants as one commented *"If there is no facilitator, then there is also no one that ensures that there is a safe space and a safe conversation".* Moreover, it is important for the facilitators to develop and discuss ethical guidelines with the participants and set the ground rules (Holley & Steiner, 2013). Most participants attributed a safe space to the discussion about the guidelines in the briefing, and thought it was very helpful in making everyone understand what a safe space, and what this means to the others in the group, thus confirming the literature.

Another frequently mentioned reason on feeling safe during the game session was the participants themselves. Holley & Steiner (2013) found that the most important characteristics for the individual participants are open-mindedness; sharing honest ideas, views, and values; actively participating in the discussions; and being respectful towards the others. Unsurprisingly, the participants described the other participants who contributed to a safe space as respectful, having good listening skills, open to share their opinions, open-minded. This can also be attributed to selection bias, as the study can attract people with the similar attitudes and behavioursural.

New insight into what contributes to a safe environment, was also provided by the participants. Consent forms, snacks and drinks and the scoring board were not mentioned in the literature but seemed to be effective. Consent forms seemed to reassure participants that their data was safe, ensured them that the game session was voluntarily, and provided additional information and risk warning of what the game session was about. The snacks and drinks provided a level of comfort that reminded some participants of home. In addition, a moment to drink creates an opportunity for participants to get acquainted. As mentioned before, meaningful dialogue between strangers can be challenging due to prejudice and unfamiliarity with the behaviour of the other (Holley & Steiner, 2013). Thus, getting to know one and other can make initial strangers less strange to each other and therefore create more comfortability. Lastly, one participant noticed that the scoring system did not judge participants for their choices, which made the participant feel comfortable to choose an answer honestly and have an open discussion.

Finally, participants were also asked about their experience playing the game with the other gender. According to Flood (2006) and The Roestone Collective (2014) female and male participants tend to feel more comfortable or safe to have an honest and open conversation in a single-gender group. However, none of the participants from the interviews seemed to have had a problem playing the game with the other gender, which might be because a safe environment was created with the above-mentioned elements.

6.1.6   Effect of Safe Space on Intergroup Dialogue

Hypothesis 6: The safe space encourages an intergroup dialogue.

Qualitative analysis found many quotes from the interviews linking the safe space to an intergroup dialogue, and therefore accepting the hypothesis. According to Zuniga & Nagda (2001) a safe space can invite people to share their perspectives and experiences with others. This might also have been the reason why participants with conflicting ideas were able to overcome differences, and which therefore contributed to 'alliance building'.

6.2 Implications of Results

The results have implications for the model of the outcome variables developed in *Chapter 2* (see Figure 11). The qualitative results suggest that the persuasive game is effective in promoting an intergroup dialogue by creating a safe space. Moreover, it was proven that the game is able to encourage bystander behaviour by increasing the willingness to intervene in bystander opportunities and positively impact bystander attitudes (i.e. awareness and responsibility). However, no evidence was found for the effect of intergroup dialogue on reducing sexual violence myth acceptance. Therefore, the conceptual model of variables in Figure 12, seems not to be entirely valid. The implication of the conceptual model are discussed in this section. Moreover, the implications of stimulating critical thinking and the consequences for theory and practice of the game design and organisation choices, are provided.

Validating the conceptual model of variables
First of all, the conceptual model has been proven to predict the effect of the persuasive game and intergroup dialogue on raising awareness, responsibility, and willingness to intervene. Therefore, the results validate the conceptual model and indicate that it can be used to develop an intervention tool that aims to increase awareness to encourage bystander intervention. Thereby, a significant correlation was found between "critical thinking", an indicator of intergroup dialogue, and the awareness of participants, which also fits with the theory of Nagda et al. (2009; 2012). According to Nagda et al. (2009; 2012) an intergroup dialogue can increase awareness in a structured environment by encouraging critical reflection and perspective-taking of the 'other group'. Perspective taking was reflected by the variable "Appreciating Difference" of the Communication Process Scale. While no significant correlation has been found for this variable, the results did find the highest scores for "Appreciating Difference". Therefore, the results and literature indicate that when developing a bystander intervention tool, researchers should focus on stimulating critical thinking and encouraging participants to appreciate difference in order to raise awareness.

Second, the developed model could not prove the effect of the persuasive game and intergroup dialogue on sexual violence myth acceptance. However, since the sexual violence myth acceptance was already low among the participants and as this study did find a significant increase of the willingness to intervene, these findings do fit with the theory of Bennett et al. (2014). According to Bennett et al. (2014) lesser rape myth acceptance is linked with greater willingness to intervene. This means that the conceptual model could still be valid and used in future research to predict how bystander behaviour could be influenced via sexual violence myth acceptance. However, this would need to be verified first, to give more validity to the model. The results do suggest that when researching sexual violence or rape myth acceptance, it is important to formulate the survey items as subtle and unbiased as possible, to prevent leading questions and instead stimulates honest responses from the respondents. However, it is then still not a given, that the game will influence sexual violence myth acceptance, as according to De La Hera et al. (2021), games can have a different rhetoric effect than was initially intended.

Third, the intergroup dialogue only was significantly correlated with awareness, and not with 'taking responsibility'. It seems that another variable influenced the responsibility levels of the participants. As the qualitative results suggest, the cards provided inspiration for how to intervene, which stimulated the responsibility levels of the participants. Therefore, in future research, bystander skills are interesting to be taken into account when developing an intervention to encourage bystander

behaviour through bystander responsibility. The supportive qualitative findings also shows the interest of the students to learn more about *how* to intervene, and not only why it is important to intervene. While behavioural willingness did increase, the one-time game session might currently not be enough to actually change bystander behaviour in the long term as participants do not know how to safely and comfortably intervene.

Stimulating critical thinking by posing questions, providing information, creating diverse groups, and safe space.

POSE QUESTIONS. A few ways to stimulate critical thinking was to pose questions, provide information, making conscious efforts for diversity in the group, and to provide a safe space (Nagda et al., 2012; Graffer et al., 2019; Zuniga & Nagda, 2001). The persuasive game "Talk That Talk" provides cards, that pose questions to the participants on how they would react to a scenario or statement. The idea was that this would raise intergroup dialogue by creating discussions based on these cards. According to the results, participants found these discussions the most interesting part of the game. The cards inspired the participants to discuss and think about difficult topics, which also resulted in them feeling self-conscious. Therefore, posing questions was found to be a good start in practice to stimulate critical thinking.

PROVIDE INFORMATION. Results suggest that information about sexual violence and its implications together with the statistics of sexual violence in the debriefing helped to stimulate critical thinking and to raise awareness. These results build on existing evidence of Yusoff & Kamsin (2015). According to Yusoff & Kamsin (2015) information and argumentation can influence attitudes, beliefs and behaviour. Therefore, providing information about sexual violence is another approach in stimulating critical thinking.

CREATE DIVERSE GROUPS. According to Zuniga & Nagda (2001), diverse groups contribute to more critical dialogue and helps to expand the worldview of the participants. Graffer et al. (2019) suggests to consciously make an effort for diversity in the group. In this study a conscious effort was made to make the group as diverse as possible, by ensuring as much as possible game sessions with an equal number of women and men from different nationalities and backgrounds. It was especially important to have as many women and men joining the game session, which was achieved. No female or male student expressed hesitance to play the game with the other gender and even were in favour of it. Especially the women thought it was important to include the men in the conversation, while men expressed on their turn that they would not mind to have discussions with women about this. Moreover, Interviewees mentioned that they found the perspective of the other gender very interesting and gained different perspectives. These findings are in contrast with literature research that found that female and male participants tend to feel more comfortable or safe to have an honest and open conversation in a single-gender group (Flood, 2006; The Roestone Collective, 2014). Therefore, the result in this study suggests that interventions with the other gender on topics of sexual violence might not only be important but are also possible. Future intervention programs could therefore consider having mixed-gendered interventions.

The finding that all participants were comfortable enough to discuss sexual violence with the other gender might also be explained with selection bias. Participants voluntarily chose to participate in the study, knowing the topic beforehand, which already could indicate they found the topic important. Therefore, future research could consider blinding the participants before participation. This is however not recommended as the topic could be very triggering for victims of sexual violence

(Holley & Steiner, 2013). Moreover, not blinding the participants has the advantage that the intervention implementation reflects the real-life impact of the intervention (Bärnighausen et al., 2017). To blind participants in future research is also a question whether universities want to make the intervention mandatory or voluntary. Making the intervention mandatory could be more harmful for the victims as there is a greater risk that the game session includes their perpetrator or includes people that are more prone to victim blaming.

CREATE SAFE SPACE. The results suggest that another reason why participants were comfortable, is because a safe space was created. According to Zuniga & Nagda (2001) safe spaces are important to ensure that people feel comfortable to share their perspectives with others. The results indicate that most participants felt safe to express their thoughts. This was contributed to the ethical guidelines discussion in the briefing, the small group, the presence of facilitators, and the type of participants present which was also supported by literature (Holley & Steiner, 2013). Moreover, this study found that the presence of consent forms at the beginning of the session was helpful as it gives confidence to the participants in that their privacy and data are protected. Moreover, the scoring system in the game seemed to contribute to a safe climate as there was no judgement behind the scoring. Additionally, the snacks and drinks provided a moment to get acquainted and comfortable with the other participants before the game session started. These new findings provide new ways to create a safe space, and could be used for future research to measure their effect more specifically on encouraging an intergroup dialogue.

Playing the game longer and more frequently

Participants expressed a wish to play the game longer and more often, as they found the discussion interesting and would have liked more discussions. During the experiments they played the game only for 30 minutes. Thereby, one-hour sessions that are not frequently repeated over long-term have been proven by existing literature not to be as effective. Attitude and behaviour change is a process and therefore it can take some time before the impact can be measured (Jozkowski & Ekbia, 2015). The short duration of game play might therefore have affected the results and might provide a reason for why the effect of the game on willingness to intervene, bystander responsibility and sexual violence myth acceptance seemed to decrease one month after playing.

The choice for the short game play has been made deliberately, as longer game sessions could have attracted less students with packed study schedules. The results and literature indicate that a longer game session not only could have had more effect on the outcome variables, but that this was also preferred by the participants. For future research it is recommended to experiment with a longer and/or more frequently organised game session. In that case, the participants do need to be fairly financially compensated. According to Eriksen et al. (2021) in order to create cultural change to, all members of the institution are needed. Especially, members at the top have the power to facilitate change. This is also true for this study, as sponsoring was provided by the faculty and support was gained from the university board members. The financial and verbal support gained from the ones in power, helped to recruit participants for an intervention that is developed to contribute to cultural change. Therefore, research for cultural change should be supported by the ones with financial or verbal power in the institution.

Addressing Intersectionality

More than two thirds of the participants thought the game was relatable, which helped them to feel more engaged. However, the results do suggest that more engagement could have been gained if the cards included the intersectionality of sexual violence with gender orientation and other gender

victim and perpetrator roles. These intersectionalities should therefore be taken into consideration when designing an intervention about sexual violence for a specific focus group.

6.3   Reflection on Process

This section provides a reflection on three processes of this study: determining the includitivity of the cards, determining the outcome variables, and the phrasing of the sexual violence myth acceptance scale (SVMAS).

Inclusivity of the Cards

First, for next research the game could have been made more inclusive. This can be done by using gender neutral words in the scenarios and statements of the cards, for example. Participants can then decide for themselves whether the scenario reflects a woman, man, or other. Perhaps, to prevent that the cards are too vague, an open question could be provided at the end of the scenario or statement, asking the participants what they would do if it was a woman, a man, or other. This would however change the game elements, as it would make it more difficult to guess the other participant's answer. Nevertheless, it would have the added benefit that more people can relate to the cards and consequently feel more engaged.

Another possibility to make the game more inclusive could be to leave the scenarios and cards gendered, but to include other cards with other gender roles. For example, other cards could be included with a male victim and female perpetrator, or male victim and male perpetrator. The main research question and the surveys would then need to be adapted accordingly.

Less Outcome Variables

The second process related change that could have been executed differently, is to choose less outcome variables. This has the added benefit of having more time to conduct in-depth analysis. For example, next time the research could only focus on awareness level and behavioural willingness. Moreover, next time one already existing framework could be used to determine the outcome variables. This has the benefit of having time free to focus more on developing the surveys and executing the experiments. For example, the transtheoretical framework of Prochaska (2020) could have been used. This framework discusses the six stages to behaviour change that happens over time: 1. precontemplation (unaware of the problem), 2. contemplation (aware of the problem and desired behaviour), 3. preparation (intend to help), 4. action (practice desired behaviour), 5. Maintenance of behaviour, 6. Termination of unhealthy behaviour. By focussing on the first three of these stages, this study could have focussed on the awareness, taking responsibility and intention to help. Additionally, this could have saved some time developing a new framework. Around this framework, surveys could have been found.

Phrasing of SVMAS among Students

The third and last related change, has to do with the phrasing of the Sexual Violence Myth Acceptance Scale. Next time, I would be consider using only one existing survey that already incorporates most of the items of interest. Moreover, the time saved could then be used to rephrase, and test the phrasing of the scale, to prevent that the phrasing of the items are leading the respondents to a politically correct answer.

6.4   Conclusion Discussion of Results

In answering SQ6, the results from Chapter 5 were discussed, interpreted, and reflected upon. From the discussion it can be inferred that persuasive games can be effective in encouraging bystander intervention by raising the awareness and responsibility of the participants and consequently, the bystander behavioural willingness. Moreover, the results indicate that persuasive games are effective in increasing awareness when critical self-reflection is promoted in an intergroup dialogue.

The game design choices of posing questions with the card games and providing statistics in the debriefing was found to contribute to stimulate critical thinking, suggesting that these game elements achieved their goal. Additionally, the results have proven that game design choices, such as including the facilitators, playing the game with a small diverse group, and discussing the guidelines in the briefing contributed to a safe environment. Qualitative results suggest that a safe environment on its turn stimulates intergroup dialogue. Furthermore, findings on the effect of other game design choices on creating a safe environment were unexpected. It was found that consent forms, snacks and drinks before game play, and the scoring board added to a safe environment.

The effect of the game session on awareness was still significant one month after playing the game. This finding suggests that persuasives game and game session can provide the greatest contribution in awareness, as no hard statements could be made about the other effects. As consequence, awareness might slow down the fading of the effect of the other variables such as the willingness to intervene and bystander responsibility over time. Moreover, the qualitative results suggest that responsibility levels and willingness to intervene could have been more significant, or more long-lasting if bystander skills were taught during the persuasive game. Additionally, if the game would have played longer and/or more frequently, the impact of the game on the dependent variables could have been greater and long lasting. Lastly, from the results it can be deduced that persuasive games are not effective in reducing sexual violence myth acceptance. Selection bias might have contributed to this limited effect.

7

CONCLUSION

Throughout this study the persuasive game of Hoobroeckx et al. (2021) was redesigned and evaluated to answer the following main research question:

"How can a persuasive game promote a qualitative intergroup dialogue between female and male students in Dutch universities in order to encourage bystander intervention in situations of sexually transgressive behaviour?"

Six sub-questions were formulated that guided this study. This final chapter aims to summarize and reflect on each sub-question, and to consequently answer the main research question. Moreover, a summary is provided on the limitations & recommendations, followed by the strengths and contribution to the scientific field. Next, recommendations are given for universities for which this study is relevant. This chapter ends with a concluding summary.

7.1   Summary Research

For the evaluation of the game, the study first established in *Chapter 2 Literature Review* how bystander intervention, persuasive games and intergroup dialogue can be defined (SQ), which processes and practices of a persuasive game and intergroup dialogue lead to bystander intervention (SQ2), and which situations of sexually transgressive behaviour can be derived from the system of sexual violence (SQ3). Thereafter, the study aimed to design a persuasive game for the purpose of encouraging bystander intervention encouraging among students in the Netherlands (SQ4) in *Chapter 3 Re-design of the Persuasive Game.* Next, a systematic methodology for the evaluation of the persuasive game and session was developed in *Chapter 4 Method & Experimental Design.* The game session was evaluated with a quasi-randomized controlled trial and a mixed-method approach to explore the effectiveness of the game on the dependent variables 'the willingness to intervene', 'bystander attitudes' (i.e. awareness and taking responsibility) and 'sexual violence myth acceptance'. By conducting quantitative and qualitative data analysis, the results of the surveys, interviews and game session notes were reported in *Chapter 5 Results.* From the results and discussion answers were inferred about what the measured effects say about persuasive games in general in *Chapter 6 Discussion* (SQ6). This section summarizes the results of each sub-question and answers the main-research question.

SQ1: How are bystander intervention, persuasive game, and intergroup dialogue defined?
Three approaches for cultural change were defined to answer SQ1. The first approach that was defined, is bystander intervention. Bystander intervention programs address bystanders as potential allies in creating a cultural change around sexual violence in the student community. The program has been proven in reducing sexually transgressive behaviour, but was found effective in

encouraging ethical bystander behaviour, attitudes, and knowledge of the participants. Another approach in promoting cultural change, are persuasive games. The next definition is provided for persuasive games. Persuasive games are games that can stimulate attidinal and behavioural change by persuading the player towards a specific end message. While persuasive games can help to represent and embrace the complex socio-political systems of the world and can through rhetoric tell others how these systems should look like or work, the effect of the game is dependent on the narrative and attention the game receives. This study looks at how the newly developed persuasive game of Hoobroeckx et al. (2021). This game aims to stimulate an intergroup dialogue to influence the participant's attitudes and behaviour. An intergroup dialogue can be defined as an interactive and student-centred approach that can bring peers from different identity groups, such as gender identities, together in a facilitated and supported face-to-face environment for participatory learning about societal inequalities in the community.

SQ2: What are the processes and practices behind a persuasive game and intergroup dialogue that can lead to encouraging bystander intervention?

Two additional questions were asked to answer SQ2: how persuasive games affect intergroup dialogue, and how these two approaches affect bystander intervention. To answer the first question, persuasive games can promote intergroup dialogue in three ways: posing open questions, providing structured facilitation and discussing ethical guidelines, and presenting two facilitators, one from each identity group in the game session. Moreover, it was found necessary to have an equal number of women and men in the intervention group, as more diversity in the group not only was found to spark more discussions, but also because women tend to be interrupted more frequently by other men and have less speaking time. Furthermore, creating a safe space was deemed to be very important for participants to feel invited and safe enough to share their perspectives and experiences with others.

In answering the second sub-question, Research found that the entertaining medias, such as persuasive games, and dialogues can promote communication that can influence attitudes and beliefs, which can consequently influence behaviour. Behavioural willingness was considered to be a better indicator for bystander behaviour as little experience is required to increase behavioural willingness, while behavioural intention requires a planned reaction beforehand. Moreover, research linked lesser rape myth acceptance and greater bystander attitudes, such as high awareness and responsibility level, to greater willingness to intervene. Therefore, rape myth acceptance, renamed to sexual violence myth acceptance, bystander attitudes and behavioural willingness were taken as dependent variables. Communication process and safe space were considered to be intermediator variables through which the persuasive game session can influence the dependent variables.

SQ3: Which situations of sexually transgressive behaviour can be derived from the system of sexual violence from literature?

Answering SQ3, required three steps in *2.3 The System of Sexual Violence.* First, the identification of the system of sexual violence, second the context of sexual violence among students in the Netherlands, and third describing bystander opportunities. The pyramid of sexual violence was deemed a useful tool in understanding the system of sexual violence and scoping the problem. It exists of four layers: Attitudes and Beliefs, Normalization of Violence, Removal of Autonomy, and Physical Expressions. Based on literature research these layers have been expanded. Moreover, document research found the five contextual factors that could help to scope the problem even further. These are age and gender of actors, relationship between perpetrator and victim, sexual orientation, location of sexual violence, and behaviours preceding sexual violence. Of each of these

five factors the five most common contextual characteristics have been chosen for inclusion. Lastly, different bystander opportunities have been discussed, leading to concluding that examples of primary bystander opportunities (before the assault) will be considered to scope the problem as peers find it more difficult to intervene in these types of situations. These three steps helped to scope the problem and were used as a source of inspiration to create the game content for SQ4. Lastly, Brainstorm sessions in *Chapter 3. Game Design* with female and male students have also be organised to derive real-life examples of sexual violence among students.

SQ4: How can a persuasive game be designed to promote bystander intervention?

The findings of SQ3 could be used to answers SQ4, of ow to design a game to promote bystander intervention. The prototype persuasive game of Hoobroeckx et al. (2021) needed to be redesigned to fit the game to the context of sexual violence among students in the Netherlands as the game first focussed on gendered stereotypes among high school students. It was decided to only redesign the categories of the decks of cards, the scenarios and statements of the cards, and the (de)briefing. Seven steps were taken to redesign the game. First, the specifications of the game were developed based on the findings of SQ1 in Chapter 2. Second, based on the scope decided to answer SQ3 in Chapter 2 components of the problem could be selected and planned to include in the game. Examples of primary bystander intervention were categorized based on the layers of the pyramid of sexual violence. Next, the game elements were described and designed. The situations of sexually transgressive behaviour, provided by SQ3 could be used to create scenarios and statements for the cards of the game. Finally, the game could be built.

SQ5: How can the effectiveness of a persuasive game be systematically measured?

Quasi-randomized controlled trial and mixed-method approach were takes as methods to evaluate the game session, with the persuasive game as focal element. A quasi-controlled trial was deemed necessary to reduce selection bias and internally validate the experiments so that any evidence could be attributed to the intervention and not an alternative explanation. However, full randomized-controlled trial was not desired to be achieved, as based on the game specifications it was desired to have an equal number of women and men in game sessions. Therefore participants were allocated to a game session based on their gender. Moreover, a mixed-method approach was chosen to analyse the persuasive game from multiple perspectives. The experimental design made use of physical game session experiments, interviews and surveys, which were analysed quantitatively and qualitatively. More emphasis was however put on quantitative analysis. Game sessions of 1.5 hours were organised for the experimental group. The game session welcomed 4 to 6 students of TU Delft from various study and nationality backgrounds. After the game session, some participants were interviewed. The control group did not receive an intervention. Both groups however did fill in a pre-and post-survey. One month after playing the game, the participants from the experimental group received a follow-up survey, which was similar to the pre-survey. The survey were developed based on existing evidence-based scales and were then pilot-tested.

SQ6: What can be inferred from the measured effects about persuasive games as a means for bystander intervention in general?

The sixth sub-question was addressed in Chapter 5 and Chapter 6. From the discussion and interpretation of the results it can be inferred that persuasive games together with the game session can be effective in encouraging bystander intervention by raising the awareness and responsibility of the participants and consequently, the bystander behavioural willingness. Moreover, the results indicate that persuasive games are effective in increasing awareness when critical self-reflection is promoted in an intergroup dialogue. Critical self-refection can be promoted with a persuasive game

by posing questions and providing a safe space. Safe spaces could be created by organising small groups, including facilitators, and discussing ethical guidelines with the participants. Additionally, a safe space could be created by developing a non-judgemental scoring system, and by presenting consent forms and providing a moment for snacks and drinks at the beginning of the game session. Together with posing open questions and including diverse groups, the safe space could stimulate critical self-reflection. Critical self-reflection was significantly correlated with raising awareness among the participants about sexual violence. Moreover, the game session proved to significantly increase bystander responsibility. As follows, behavioural willingness in primary bystander opportunities significantly increased after playing the persuasive game.

MRQ: How can a persuasive game promote an intergroup dialogue between female and male students in Dutch universities in order to encourage bystander intervention in situations of sexually transgressive behaviour?

In answering the main research question, this study found that a safe space is a prerequisite for encouraging an intergroup dialogue. This safe space can be provided by involving trained facilitators, incorporating consent forms at the start of the game session, and discussing ethical guidelines with the participants. For the persuasive game it is important to pose open questions about sexually transgressive behaviour that students can relate to. These open questions are then able to stimulate critical thinking, and as follows contribute to intergroup dialogue. By stimulating critical thinking, awareness was found to significantly increase. Thereby, this study suggests that game cards with different scenarios can provide a source of inspiration for how to intervene and therefore can contribute to increased levels in bystander responsibility. By positively impacting the bystander attitudes (i.e. awareness and responsibility) the persuasive game and its game session were found to consequently increase the willingness to intervene, which is an indicator for bystander behaviour. Therefore, a persuasive game has the potential to encourage bystander intervention.

7.2 Limitations & Recommendations

This section presents the limitations of this study. Each point of limitations can be used as a guideline for recommendation for future research.

1. **Selection Bias and Masking:** It was clear from the results that selection bias played a role in this study. Due to limited masking in the communication channels for the recruitment of participants, the controlled trial attracted similar type of students, therefore failing to meet a proper representation of the student population and creating skewed and insignificant results. This study has attempted to mask the topic of the experiment, by avoiding explicit words, such as "sexually" in 'sexually transgressive behaviour', and 'social dilemma game' instead of 'bystander intervention game'. However, less masking was used when participants signed up for participation. It is important to inform participants about the topic of the research, given its sensitivity. However, masking can be implemented till further in the recruitment stage. Once the participants receive the first survey, participants can be informed about the topic and can still voluntarily withdraw from participation. Bias will not be entirely removed but can with this approach be reduced. It is therefore recommended for future work to use more masking in the recruitment of the participants with the given approach.

2. **Sexual Violence Myth Acceptance Scale:** The Sexual Violence Myth Acceptance Scale did not result in many significant results, which can be explained by the leading answers that

provoke politically correct answers. If the items in the scale would have been more subtlety phrased, the likeliness of finding significance could have been increased. Therefore, it is recommended for future work to test the phrasing of the survey multiple times among students before implementation, after which the feedback can be implemented, and leading answers can be prevented.

3. **Bystander Skills:** A lack of significance was found for the construct 'Taking Responsbility' from the bystander attitudes scale. Existing theories place a great importance on bystander responsibility and have found repeatedly its influence on bystander behaviour. One reason why bystander responsibility of the participants did not increase could be explained by the absence of bystander skills. Literature has found that bystander responsibility and bystander skills are important for effective bystander intervention programs. While this study did find that the persuasive game was successful in increasing behavioural willingness, including bystander skills either in persuasive games or in supportive programs could even further promote bystander behaviour. For future work it can be therefore interesting to include education about bystander skills either in the game or in additional programs supporting the game, measuring both responsibilities as behavioural willingness.

4. **Short and one-time game play:** Participants expressed a wish to play the game longer and more often, as they found the discussions interesting and would therefore have liked more time for the discussions. During the experiments they played the game only for 30 minutes. For the total game session of 1.5 hours, participants received a 10-euro voucher. Future research could include longer game play of an hour and could evaluate the outcome variables of the game when it's repeated more often. An additional advice is to compensate participants fairly for their time and effort.

5. **Long-term Evaluation:** Long-term evaluations has been found to be more effective. Attitude and behaviour change is a process and therefore it can take some time before the impact can be measured. This study evaluated the persuasive game in a relatively short time and found only the lasting effect of awareness. Therefore, it is advised for future research to focus on long-term evaluations in order to be able to measure actual behaviour change, and not just the indicators of behaviour. Moreover, long-term evaluation can investigate whether the intervention is still effective in a few years or might actually do more harm than good.

6. **Inclusion of intersectionality:** While participants did find the scenarios presented by the cards relatable, participants expressed that they would have been more engaged and interested if the scenarios also presented male victims, or homosexual violence, fitting more to their identity. Consequently, they would have gained more empathy. Including more intersectionality might therefore be more interesting and can affect the communication process during game play. Future research might look at including multiple types of intersectionality of sexual violence with for example, male victims and female perpetrators, or sexual violence committed and perpetrated by the same gender in the scenarios of the cards. These intersectionalities should then be researched separately or additionally to the already existing persuasive game with female victims and male perpetrators. Both can be interesting in determining whether the persuasive game should be focussed on specifiek intersectionalities or can be also made broad.

7.3 Strengths & Contributions

This section presents the strengths of this study. Each point is followed by a contribution that the strength of the study has on the scientific field.

1. **Method:** A rigorous methodology has been developed to systematically assess the outcome variables. Based on this methodology a total of 64 students could be recruited for participation in this study, to which it was possible to find reliable, significant and extensive results to back up any finding. Furthermore, a deliberate choice has been made between the available statistical tests, to ensure that the right statistical method was used for quantitative analysis. This provides future researchers with critical reflective choices on which statistical test to use for replication.

2. **Outcome Variables Model:** The study has found prove that a persuasive game and intergroup dialogue can affect the bystander attitude awareness through communication processes (i.e. critical self-reflection), which consequently can increase bystander willingness, which is an indicator for behavioural willingness. These findings prove that one part of the outcome variables model in Figure 11 in *Chapter 2* is valid. Therefore, this study provides a framework for future research that can be partially used to design a health communication persuasive game for promoting bystander behaviour in order to reduce sexual violence. In addition, for future work it might be interesting to repeat the work done, to verify the rest of the model.

3. **Safe Space:** This study has found additional game session design elements that can contribute to creating a safe environment, which have not been mentioned by papers in the literature review in Chapter 2. These additional game design elements are the addition of consent forms, snacks and drinks, and a non-judgemental scoreboard which can still make the game fun and provide a break in between the discussions. Letting participants sign a consent form before the starts of the game session, gives participants the confidence that their data is safe. Moreover, the consent form repeats the goal of the game session and verifies the seriousness of the topic. The snacks and drinks are preferably provided before the start of the game session as well, so that participants can get comfortable and acquainted with each other. A non-judgemental scoreboard is necessary, so participants don't feel judged for their answers, but instead feel free to answer honestly. In the future game researchers can use this knowledge to optimise the safe space for discussing sensitive topics.

4. **Game Design:** For the design of the game, the pyramid of sexual violence of Vandiver & Braithwaite (2022) has been elaborated in a model for each layer. These extended layers have been created with literature research. The expanded sub-models of the pyramid proved to be useful and practical in determining more easily the scope of the game design and consequently the survey design. In addition, the sub-models proved to be helpful in explaining participants in the debriefing of the game session how sexual violence is created and sustained in our society. This study therefore offers an improved framework of the Sexual Violence Pyramid, that can be used for scoping sexual violence interventions and additionally can be used in the debriefing or informative interventions to explain how sexual violence is created and sustained in society.

5. **Effective offline Persuasive Game:** This study has proved the significance of the first offline persuasive game that aims to encourage bystander intervention through intergroup dialogue. Therefore, this evidence-based persuasive game fills in a gap in the market game

for universities. The game was found not only to be effective, but also engaging and fun, which makes it more interesting for students to discuss about heavy topics such as sexual violence.

6. **Social Impact:** More than 100 students from various national and educational backgrounds have signed up for the quasi-randomized controlled trials and more than 30 people from outside of the TU Delft have participated in the pilot-surveys. Additionally, 13 close contacts from TU Delft who were excluded from participation in the controlled trial, joined the brainstorm sessions that would inspire the game design. Moreover, prominent members of TU Delft, such as the Executive Board, members from the Integrity Board, student associations, and confidential supervisors were contacted and interviewed to gain more insight into sexual violence in the student community. As a result, this study has had widespread reach in the student community and outside and has therefore been successful in bringing widespread attention to sexual violence among students.

7.4 Recommendation to Universities

Many participants, Bachelors, Master and PhD students from the TU Delft, enjoyed the game and would play it more often. To provide some quotes:

- *"I enjoyed it so much and the game was so well structured!"*
- *"Loved the game. Would love to play it for a longer time."*
- *"Very nice way to open discussions and talk the talk by the way!"*
- *"Nice design"*
- *"Questions were really thought provoking"*
- *"I was also telling my friends back home about this game. I really liked it, and I wish we could all play this together. I told them that this game is super fun."*

This study provides evidence for the effectiveness of the game on encouraging bystander intervention by increasing the willingness to intervene and improving bystander attitudes by encouraging intergroup dialogue. Together with the findings that participants enjoyed the game and would play it more often, the persuasive game "Talk That Talk" seems to be an effective and engaging new bystander tool for Dutch universities to bring about a cultural change among their students on campus. To Dutch universities it is advised to provide structures that enable the implementation of sexual violence intervention tools. When there is no or little support for change higher up in the system, the student community might face difficulties for helping to bring a cultural change among their peers, regardless of their motivation.

Rape prevention programs are most effective when they are tailored to the community. The expression of the continuum of sexual violence is socially constructed and influenced and therefore depends on the community. Thus, it is advised to policy makers of universities to research the manifestation of sexual violence among their students and to tailor the persuasive game to the context of their focus group.

In addition, based on the results it is advised to play the persuasive game longer than an hour and more frequently. This will ensure a long-term bystander intervention effect. Next, the study has found that facilitators are important to create and sustain a safe space. The game should therefore not be played without trained facilitators. The game can be played between strangers, but openness in discussions is more likely when the students get acquainted with each other beforehand. To put the participants at ease, an opportunity for drinks and/or snacks can be provided before playing the

game. Moreover, implementing short consent forms beforehand, provides assurance that the student's data will not be used against them and provides them additional information on what to expect. Finally, it is recommended to implement the persuasive game as part of a larger program that teaches bystander skills.

7.5   Concluding Summary

This study presents the scientific community the first evaluation of a newly developed persuasive game, that was proven to have a positive effect on bystander intervention by promoting an intergroup dialogue between female and male students in Dutch universities. The intergroup dialogue was be promoted in the game session by providing a safe space for discussion and by posing questions with the persuasive game "Talk That Talk". Consequently, the dialogue stimulated critical thinking which led to an increase in awareness and bystander responsibility. Moreover, the game session proved to significantly increase the willingness to intervene in primary bystander opportunities. The conceptual outcome variables model, the extended layers of the pyramid of sexual violence, the choices for game design, the organisation of the game session, and the evaluation measurements, provide the scientific community with new frameworks and tools to organise, design and evaluate persuasive games. Additionally, the study provides decision-makers of universities an interesting and engaging new evidence-based bystander intervention tool for their mission to bring about a cultural change on campus to reduce sexual violence among their students. However, the most important contribution of this study is that it provides prove to 'Talk That Talk'.

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Appendix A: Game Design

A.1. Brainstorm Session Results: Validation of Game Design

Participants were asked at the end of the session about their experience of the brainstorm session. A few participants mentioned that they felt safe to answer the questions honestly and share their experiences. Others mentioned the opposite and felt the need to give politically correct answers. According to one participant: *"There is chance in these dialogues that people will give a political correct answer, because you are afraid to be judged".* Especially, the male participants found it difficult to discuss the topic sexually transgressive behaviour with other men, as that was not common. Some male participants mentioned that talking with other men can feel unsafe, as unwanted jokes are made or can be made. Thereby, they found it also difficult to discuss this topic with male friends, as it can get very personal. Moreover, most of the men had already experience with intervening in situations of transgressive behaviour, and because of their experiences they know how unsafe it can feel to intervene. Most of the times there is a chance to be ridiculed by other men. This has often to do with questioning one's masculinity. One of the male participants mentioned "*If I say something against sexist remarks, they call me out for gay".* According to another male participant "*Men can become more macho if you speak up*". Participants have experienced hearing others say *"You are not a fag are you?"* or *"women like that".* Because of this another one male participant mentioned that he has lost a lot of male friends and has now more female friends. Sometimes the transgressors can get defensive saying things like "it was only a joke". Not only psychological safety, but also physical safety plays a role in determining whether or not to intervene. To quote one more male participant: *"You want to be a hero, but you don't know if you can be in these situations. Even if you would like to help someone that is being sexually harassed by a group of men, you will think three times before acting. It is scary."*

For all the above reasons, the participants mentioned that it is easier and feels safer discussing this topic with women as they take it more serious, and as long as they don't feel forced to talk about it. Including women in this brainstorm session or conversation could have helped to break the barrier to talk about this topic. Moreover, some also expressed the need for more diversity in the group. This finding is contradictive with the assumption that men would feel safer to discuss this topic with other men, which was one of reasons the sessions were divided by gender. However, these new findings strengthen the game concept of an intergroup dialogue between women and men, but do also emphasize the importance of a safe space.

Moreover, there were some similarities between women and men in experiences with bystander intervention. Both sexes mentioned backlash and have a sense of unsafety when intervening. With men it was expressed by questioning the masculinity. With women it had more often to with not taking her serious and making sexist comments. One of the female participants mentioned a story about her sister that once addressed her colleagues in the bar on their objectification of another female co-worker. The response she got was "are you on your period?". Another girl mentioned that when she says no to a guy who is dancing close to her in a club and tries to kiss her, he does not back back-off, but instead keeps trying. Moreover, both female and male participants mentioned the

importance of discussing consent. According to a female participant *"Understanding why something went too far, is important, especially if something is in the grey zone".* This understanding is shared by some male participant as well, with one mentioning that consent is a very difficult topic, and with another one saying that it depends on the person what sexually transgressive behaviour is. According to the male participants "a hand on the back" and a comment like "You look nice" can already be seen as sexually transgressive behaviour, which makes this topic so difficult.

The participants affirm that it depends on the person what transgressive behaviour is. The struggle to find what consent is, where the boundaries lie and when something is actually sexually transgressive behaviour, seems to be an important discussion for the participants. Especially behaviour that is deemed to be more in the grey zone such as sexualizing someone, or dancing very closely to someone on the dancefloor, seem to be very interesting to the participants. While the persuasive game designed does not dive deeper into consent, these findings do validate the importance of discussing sexually transgressive behaviour among students. Especially situations that are less clear and are more low risk seem to spark a lot of discussion among the participants. This again, validates designing the game for primary bystander opportunities.

While both sexes affirmed the importance of recognizing sexually transgressive behaviour for bystander intervention, a second motivation for discussing this topic can be differentiated for the two sexes. Male participant also mentioned recognizing sexually transgressive behaviour to prevent it themselves from doing it, with one sharing his own experience in transgressing the boundary of a woman: *"I once kissed a girl when being drunk that apparently didn't want to in hindsight. I can't remember anything about it, but she sent me a text. I felt guilty afterwards. Now, I only kiss people with explicit consent".* In contrast, the female participants mentioned the importance for recognizing your own boundaries to prevent someone from transgressing it. When asked moments before how you can stop sexually transgressive behaviour from happening, a female participant responded with: *"sometimes you know when someone has already passed it".* It seems that for women this discussion is important to prevent transgression happening to themselves, while for men it is important so they can prevent themselves from transgressing the boundaries of others.

Most participants seemed already quite aware of the problem of sexual violence against women. They also seem to be aware that peer acceptance and group pressure play a role in bystander intervention. However, this sample is not representative for the rest of TU Delft, as these participants are close contacts to the researcher, are all white except for one, most of them heterosexual, and all of them master students. Thus, there is bias selection. Nevertheless, a male participant did mention that he gained more awareness because of the session, despite finding it difficult talking about it. Another, female participant found it very interesting to hear the different perspectives on the topic and mentioned that she can now see more ways of how she could have handled a particular situation herself in which a guy made her feel uncomfortable. However small the sample, these findings do validate that discussions about bystander intervention increase awareness and the willingness to intervene.

A.2. Content Game Cards

A.2.1. The sound of Silence

<u>Card 1</u>
When going out with your friends to a bar, one of your single friends has been flirting and talking with a guy she has met there. She was having fun, but at the end of the evening she comes back upset. It turns out that he asked her to go home with him, and when she refused, he got angry because she was leading him on the whole evening. What do you think?

        A. It is not oke that he got angry, but I also thought she would go home with him. She has been spending the whole evening with him.
        B. I don't understand why he got angry.
        C. I understand why he is upset.

<u>Card 2</u>
One of your project group members reads an article about sexual assault on campus. You find out that 1 in 10 female students has experienced unwanted sexual penetration during college (compared to 1 in 100 men), and that in 79 percent of the cases the perpetrator is a man. Your group soon discusses why men rape. One of them says "Most of the time men rape because they have a strong desire for sex." What do you think?

        A. I agree.
        B. I don't agree.
        C. I don't know.
        D. I don't care.

<u>Card 3</u>
What do you think of the following claim? "You need to ask for explicit consent to go further when fooling around with your date or partner".

        A. Yes, you do.
        B. No you don't. The fact that you are making out with someone is enough consent to go further.
        C. No you don't. You know the other person, so you know how far you can go.
        D. No you don't. Your partner will indicate its boundaries.

<u>Card 4</u>
Your faculty is seriously considering limiting the amount of alcohol on parties that are given at the faculty. They are thinking of implementing a limitation because they think that alcohol is often the cause of unwanted sexual penetration. What do you think?

        A. I agree.
        B. I don't agree.
        C. I don't know.
        D. I don't care.

<u>Card 5</u>
What do you think of the following: "If a man asks a woman on a date, then he expects some form of physical contact with her"?

        A. Yes, usually he will expect that.
        B. No, usually he won't expect that.

C. Often, he would like that, but not expect that.

D. Depends on if the date went well

Card 6

One of your friends has been accused of sexual assault by a girl he went on a date with. He told you that she didn't resist or say no, so he thought he could go further. What do you think?

A. The fact that she didn't resist, makes me question whether what he did was that bad.

B. She probably froze, that's why she didn't resist him.

C. Whether she resisted or not, If she says he transgressed her boundaries, then he did.

D. It probably was due to communication problems from both sides.

Card 7

What do you think a woman will often do when she doesn't feel comfortable with having sexual contact or going further sexually?

A. She will clearly say "no".

B. She will push him back.

C. She will resist in subtle ways such as saying that "he has to wait" or trying to keep her distance to him.

D. She won't do anything.

Card 8

Just before your project meeting of starts one of your group members is discussing with another group member, whether she should or should not go home tonight with a guy she has been on a few dates with already. She would like to go, but she is afraid that he will expect them to have sex, for which she is not ready for. What do you think?

A. I agree that he might expect that, so I wouldn't go if she doesn't want him to think that.

B. It is true that he will expect that, but they can talk about their expectations before they do anything.

C. I don't think he will expect that. I think she can go with home him home if she wants to. They will both find out how far they want to go.

A.2.2. Thinking Out Loud

Card 1

You walk through the city and hear from nearby a stranger talking loudly with a friend about the 'tits' of a woman, saying that they are too big, and she should cover them up. The woman is wearing a tight top that reveals her cleavage. What do you think?

A. Maybe wearing such a revealing top was not the best idea.

B. It seems like a compliment.

C. I don't think much of it.

D. This is not an appropriate comment to make.

Card 2

Every Thursday the pub of your study association is open. One Thursday evening at the bar, you overhear three male students bragging about girls from the association they slept with. How do you respond?

      A. I don't do anything. I do not find it necessary.
      B. It makes me uncomfortable, but I don't do anything.
      C. It makes me uncomfortable, and so I say something about it.

Card 3

You are sitting with a group of people from your studies in the bar. One of them starts to make fun of a woman he knows and her body, making jokes about how she has a flat ass but great tits. Everyone else is laughing. However, you see the only (other) female friend in the group getting uncomfortable. How do you respond?

      A. Nothing. He is just joking.
      B. It makes me uncomfortable, but I still laugh, because otherwise it's awkward.
      C. He is just joking, but I tell him not to say such things in front of my female friend.
      D. I tell this person that it makes me uncomfortable.

Card 4

You are standing in the pub of your study association. This evening the board announces the new board of the association for the upcoming year. Your study doesn't have many girls, but one girl out of the six did become the new board member and is even announced as the president. One of the members you are standing with jokingly wonders who she slept with to get this position. How do you respond?

      A. I don't find the comment appropriate, and I let that person know that.
      B. I don't find the comment appropriate, but I don't say anything about it.
      C. I don't mind the comment, as I don't see the harm in it.
      D. I don't mind the comment, although I do see the harm in it.

Card 5

During an event at your association, you overhear some members you know and sometimes talk to rank the women that pass them by. You hear them laughing and having fun. What do you do?

      A. I don't mind them doing it, so I let them be.
      B. I do mind them doing it, but I let them be.
      C. I do mind them doing it, so I approach them and tell them that what they are doing is not oke.
      D. I know that these women would not like it, so I approach them and tell them that what they are doing is not oke.

Card 6

In your student house you live with 14 other people. One night just before a few of your roommates go out and drink and chill, you overhear their conversation. They are talking about wanting to get laid and making jokes about how they maybe can get someone drunk. How do you respond?

      A. They are just joking and entertaining themselves.
      B. I get uncomfortable and address them.
      C. I get uncomfortable and ignore them.
      D. I listen more closely, to hear or understand if they mean it.

A friend of yours makes sexist remarks about his ex-girlfriend, saying things like "all women are bitches" and "she is a slut". How do you respond?
- A. This is not oke. I address him on his behaviour.
- B. It is clear to me that he needs to vent about his ex-girlfriend.
- C. I don't think its oke, but who am I to say something about it.
- D. He needs to stop with this language, otherwise I can't be friends with this person.

A.2.3. Unseen

Card 1
You are out with your female friend to a dance party in a club. At some point during the evening, you don't know where is anymore. She was last seen with a guy she was hooking up with one the dance floor. You know she has been drinking a lot tonight. What do you do?
- A. I go look for her and check if she is doing oke.
- B. I keep dancing. She has been making out with guys at parties before. She is fine.
- C. I ask others where she is, and if they know, then I know enough.
- D. I go look for her to know where she is, but once I see she is still with the guy I leave them alone.

Card 2
When going out, you see near a club, two girls that are walking towards the club, being approached by two guys. You overhear one of the girls saying to leave them alone, but the guys don't leave, block their way and try to put their arms around them. How do your respond?
- A. I make pictures or start filming.
- B. I call the police or get the guards in front of the club.
- C. There are enough people near the club to help them, so I continue what I was doing.
- D. I approach the girls and distract the guys by pretending I know them.

Card 3
At a party of your association, you see a woman being surrounded by a group of men. After taking a quick glimpse of her face, you think you could see her being uncomfortable. How do you respond?
- A. She probably knows at least one of them, so I let her be.
- B. I'm sure she is safe. There are a lot of people here. If there really is something going on she would ask or look for help already.
- C. I go up to the group and check quickly if she is doing oke, or if she needs my help.
- D. I go up to the group and start making a conversation with (one of) the guys, to subtly distract them so she can leave if she would like.

Card 4
During dancing in a club, you see some guy who is looking at your female friend and who is dancing very closely to her. She looks very uncomfortable. How do you respond?
- A. I pay close attention to what he does next, just in case.
- B. I just keep dancing. She is capable to defend herself.
- C. I try to dance between him and her.
- D. I approach him and tell him to leave her alone.

Card 5

You are a member of an association. At a party you see one of the board members standing very close to another female member you don't know. By the look on her face, you can see she is very uncomfortable. What do you do?

     A.   I join them and start a conversation to distract him, so she can feel freer to create distance.

     B.   I don't know her that well, so I don't do anything.

     C.   I first check how she is doing, after which I start a conversation with her.

     D.   I don't do anything. If she doesn't want him standing so close, she would have made sure of that.

Card 6

You are at a house party. You see a very drunk woman who you saw earlier kissing a man, going upstairs with the same person, probably going to one of the bedrooms. What do you do?

     A.   I don't do anything. It seems like they are having a fun time.

     B.   I don't do anything. They're both adults and responsible for themselves.

     C.   I go up to them and check to see if she is doing oke, and/or is maybe uncomfortable with this situation.

     D.   I check in on them a bit later, just to make sure if she is doing all right.

Card 7

You are going out with your female friend to a dance party in a club. She is known among your friends to make out with guys at parties, and tonight is no exception. At some point during the evening, you don't know where she is anymore. She was last seen hooking up with a guy on the dance floor. You know she has been drinking a lot tonight. What do you do?

     A.   I go look for her and talk to her to check if she is doing all right.

     B.   I keep dancing. She has been making out with guys at parties before. She is fine.

     C.   I ask others where she is, and if they know then I know enough.

     D.   I go look for her to know where she is, but once I see she is still with the guy I leave them alone.

A.2.4. Close Enough

Card 1

In your study there is a female student that wears revealing and, in your eyes, "sexy" clothes. When going on a fieldtrip, you hear from another student later that day that one of the guys was touching her inappropriately when waiting for the bus. What do you think?

     A.   It is not oke what he did, but she is drawing unwanted attention which such clothing.

     B.   He needs to be reported.

     C.   I wonder what happened exactly.

     D.   Unfortunately, these things happen.

Card 2

One of your roommates tells you that at a party the day before, she was making out with a guy she likes. However, they went further than she wanted to. She kept trying to move his hands away from her private parts, but that didn't stop him. They both were drinking the whole night. What do you think?

A. It sounds like he sexually harassed her, and he should be held accountable.
B. It sounds like she lost control in this situation because of the drinking. Next time she should be more careful.
C. Things like this unfortunately happen. It's very likely he didn't mean to assault her.
D. They should not have been making out, being so drunk, and otherwise should have kept checking each other's boundaries.

Card 3

A friend tells you that the previous evening when going out, he kissed a girl he met and clicked with. However, the next day she sends him a text message saying that she did not want to kiss him. They were both very drunk. What do you think?

A. He was drunk and it was an accident. Probably he didn't realise that he overstepped her boundaries.
B. He overstepped her boundaries.
C. I wonder if she did anything to stop him.
D. I think both parties had a responsibility for preventing this from happening. They were both drunk.

Card 4

A girl you know from your studies confides in you that the day before she went out with her friends, a guy touched her private parts while she was dancing. What do you think about this?

A. I wonder why he harassed her and what she did before it happened.
B. I wonder if and how he can be punished.
C. I wonder how I can help her.
D. I wonder if she did anything to stop him when it happened.

Card 5

You are discussing sexually transgressive behaviour with your friend. Your friend thinks that's its more common that a stranger will touch you inappropriately on the street or in public areas, then your partner or date overstepping your boundaries when fooling around. What do you think?

A. I think my friend is right.
B. I think my friend is wrong.
C. I don't know.

Card 6

Your female friend went on a date with a guy she knows from her studies. She tells you that they kissed at the end, but that he then also started touching her on other places of her body, which made her feel very uncomfortable. She now claims that he sexually harassed her. When asked if she clearly told him no, she said that she didn't, because she froze. Do you think this was assault?

A. No, because she didn't clearly indicate that she did not want it.
B. No, because they were on a date.
C. Yes, but he couldn't have known that she didn't want to go further.
D. Yes, and he should have known that she didn't want to go further.

Card 7

You are standing in a very crowded bar on King's day next to a table. Near your table you hear a girl screeching and cursing, saying things like "you can't walk normal in a bar without someone touching you!" What do you think?

A. I agree with her.

B. It is a crowded place. There is a high chance of people accidently touching you.
C. I agree with her, but there are ways to prevent that.
D. I never really realized that that happens often in crowded bars.

A.2.5. Rewind

Card 1
Your friend went on a date with a guy she met on tinder. After her date she went home with him. The next day she tells you that it was fun initially, but that now she feels weird about the end, because he didn't stop insisting or nagging to have sex with her. He was clearly drunk. Eventually she stopped resisting and sort of consented to sex. Now, she is not sure whether you call this rape or not. What do you think?
A. It sounds like he raped her, as she had unwanted sexual penetration.
B. It sounds like he raped her, but I do think she should have stood up for herself more if she didn't want to.
C. I don't think this is rape, because she eventually did consent.
D. I don't think this is rape, because he was clearly drunk and didn't know what he was doing.

Card 2
In your student house two roommates have been flirting with each other for a while. However, one day the flirting stops, and you find out that your female roommate accuses the other roommate of unwanted sexual penetration after an evening of getting drunk together. Before it happened, they were also making out. What do you think?
A. It probably was not his intention to transgress her boundaries, as he did seem to like her.
B. They both should not have been making out while being drunk.
C. This is called rape.
D. I wonder if all the flirting contributed to this.

Card 3
Why do you think mostly men (are known to) commit sexual assault?
A. Men have a stronger biological desire than to release sexual tension than woman do.
B. Men drink more, which results in them seeing less clearly the boundaries of someone else.
C. Sexual assault committed by women is less reported.
D. None of the above reasons.

Card 4
One of the girls you know from your association is known to be very flirty and to have casual hook-ups with the other members. She is what they call "easy". You haven't seen her hear for a while but from your friends you hear that she accuses another association member of "rape". What is the first thing you think?
A. I wonder how she is doing.
B. That is a tough accusation to make. Maybe there is more to the story.
C. Well, she has been sleeping around. She should have been more careful.
D. I wonder if that is true. She has been sleeping around.

Card 5

Who of the following students do you think will be more believed when reporting rape?

A. A female student who is single and is known to have had many casual hook-ups at parties.
B. A female student that is known to have had one partner for a very long time.
C. A female student who is single and is known to join the hook-up culture hardly ever.
D. All of them

Card 6

A friend tells you that her boyfriend convinced her to sleep with him, after she already had said that she was not up for it. They ended up having sex. What do you think?

A. It's her boyfriend. If she really didn't want to sleep with him, she would not have slept with him.
B. I wonder why she didn't want to sleep with him.
C. It sounds like she had unwanted sex, or rape.
D. That does not sound like a healthy relationship.

Card 7

You hear from one of your friends, that her female roommate was raped by someone she is dating with. Her date stayed over and while they were making out, the lines blurred. Before she knew it, he was in her. They have had intercourse before, but this time she didn't want to have sex and she felt violated. He apparently was shocked and apologised. Her roommate has forgiven him, your friend sees this as rape and thinks she should not date him anymore. What do you think?

A. This is not rape, because he didn't mean to transgress her boundaries.
B. This is not rape, because they have had sex before.
C. This is rape, but he should not be reprimanded because he already apologised and didn't mean to.
D. This is rape, and if I was her roommate, I would stop seeing him.

Card 8

Your female friend spends the night at a good friend's place, as she was too tired to go back home. They slept in the same bed together, as there was no other sleeping arrangement. She tells you the next day that he kept touching her private places during the night when she was asleep. What is the first thing you think when you hear this?

A. It was not a good idea to go with him and sleep at his place. I'm sorry that happened to her.
B. I wonder why he did that. Maybe he thought she wanted it.
C. I wonder if she (could or did) do anything to stop it.
D. I want to kick his ass.

Card 9

Your female friend has last night been sexually assaulted (or raped) by a guy from study. However, she doesn't dare to go to the police because she doesn't have physical prove, as there are no signs of struggle on her body. What do you think?

A. I think she should go to the police. They will believe her.
B. I think she is right, and that it will be hard to prove to the police that she has been raped.
C. I don't know what to think.

<u>Card 10</u>
A friend tells you that she/he knows a female fellow student that claims to have been raped by stranger in the club a few days ago. Your friend also tells you that she/he finds it hard to believe because this student doesn't seem to have bruises or injuries from the event. What do you think?

  A. I also find the story hard to belief. I thought that usually a victim does have someone bruises or injuries.
  B. Not everyone has bruises or injuries from rape.
  C. I don't know what to think about it.

A.3. Game Design Lay-Out

A.3.1. Front Page & Dice

A.3.2 ABCD Cards Design

	A	B	C	D
Talk That Talk	A	B	C	D
Talk That Talk	A	B	C	D
Talk That Talk	A	B	C	D
Talk That Talk	A	B	C	D
Talk That Talk	A	B	C	D
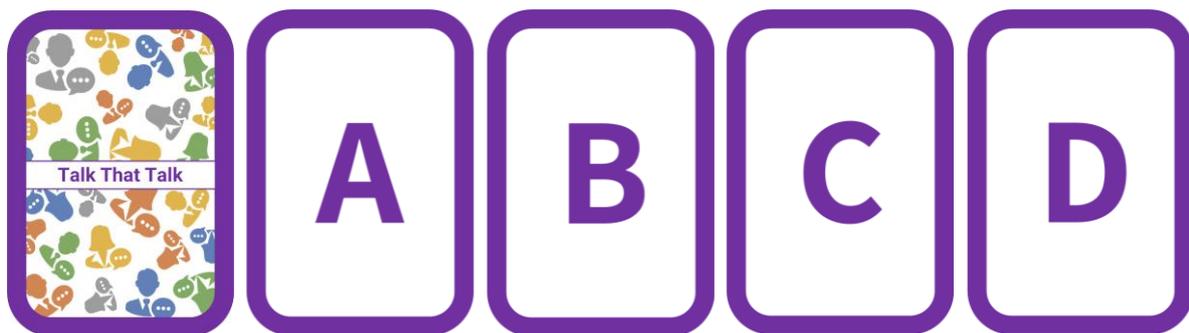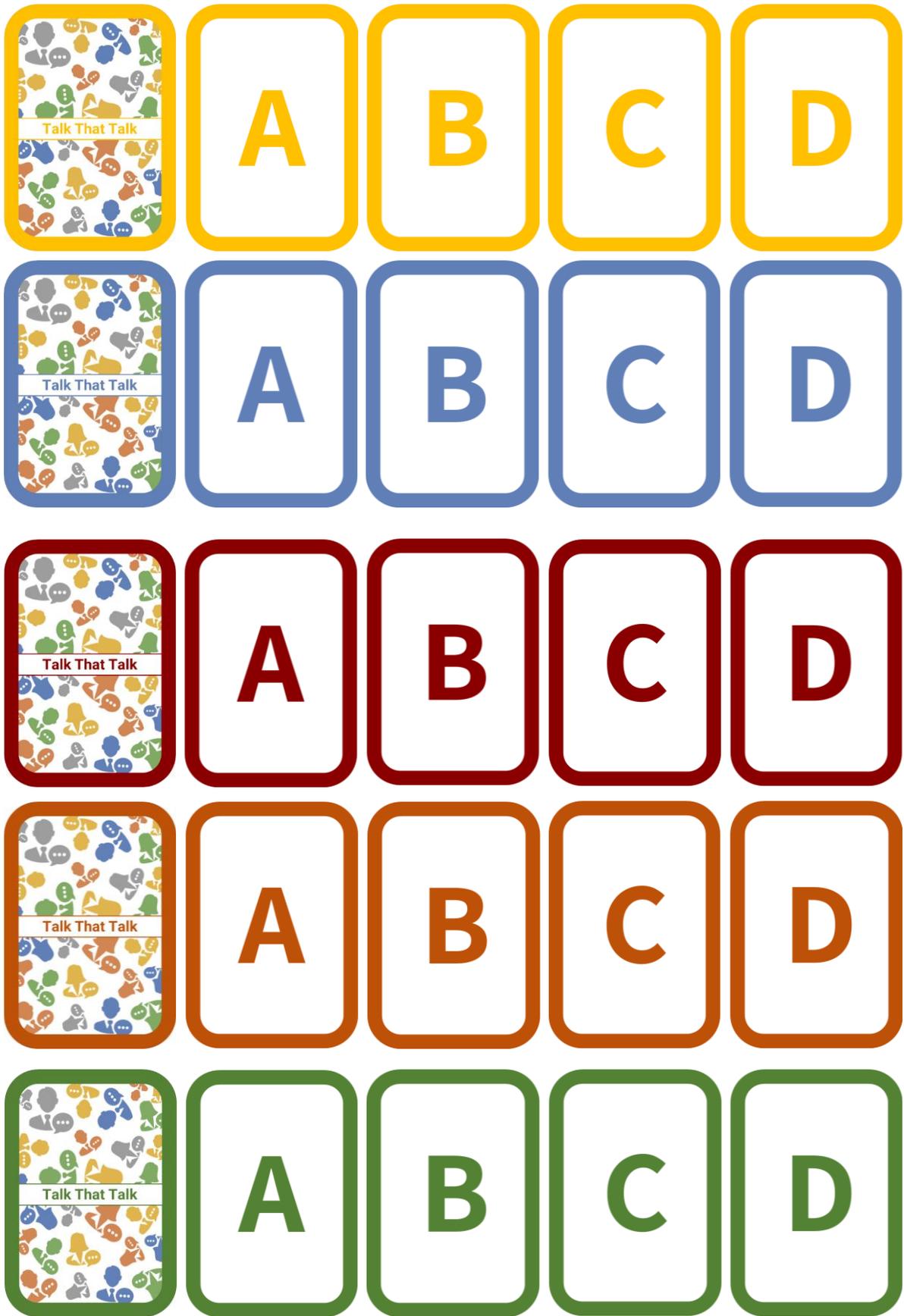
A.3.3. Scenarios and Statements Cards Design

The Sound of Silence

What do you think a woman will often do when she doesn't feel comfortable with having sexual contact or going further sexually?

A. She will clearly say "no".

B. She will push him back.

C. She will resist in subtle ways such as saying that "he has to wait" or trying to keep her distance to him.

D. She won't do anything.

Close Enough

A male friend tells you that the previous evening when going out, he kissed a girl he met and clicked with. However, the next day she sends him a text message saying that she did not want to kiss him. They were both very drunk. What do you think?

A. He was drunk and it was an accident. Probably he didn't realise that he overstepped her boundaries.

B. He overstepped her boundaries.

C. I wonder if she did anything to stop him.

D. I think both parties had a responsibility for preventing this from happening. They were both drunk.

Unseen

When going out, you see two girls that are walking towards a club. They are being approached by two guys. You overhear one of the girls saying to leave them alone, but the guys don't leave, and instead try to block their way. How do your respond?

A. I make pictures or start filming.

B. I ask for help from other people nearby or alert the guards in front of the club.

C. There are enough people near the club to help them, so I ignore it.

D. I approach the girls and distract the guys by pretending I know them.

Thinking out loud

You are sitting with a group of people from your studies in a bar. One of them starts to make fun of a woman he knows and her body, making jokes about how she has a flat ass but great tits. Everyone else is laughing. However, you see the only (other) female friend in the group getting uncomfortable. How do you respond?

A. Nothing. He is just joking.

B. It makes me uncomfortable, but I still laugh, because otherwise it's awkward.

C. He is just joking, but I tell him not to say such things in front of my female friend.

D. I tell him that it makes me uncomfortable.

Rewind
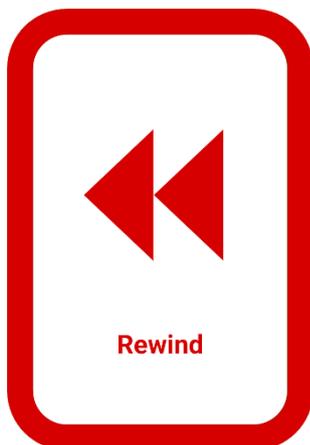
A friend tells you that her boyfriend convinced her to sleep with him, after she had already said that she was not up for it. They ended up having sex. What do you think?

A. It's her boyfriend. If she really didn't want to sleep with him, she would not have slept with him.

B. I wonder why she didn't want to sleep with him.

C. It sounds like she had unwanted sex, or rape.

D. That does not sound like a healthy relationship.

A.4. Briefing

A.4.1. Agenda

1. Group Introduction
2. Filling in the Forms
   a. Explicit Consent Form
   b. Demographic Questionnaire
3. Briefing
   a. Set-up
   b. Rules of the game
   c. Ethical Guidelines
4. Time to play
5. Break
6. Debriefing
7. Post-survey
8. Small presentation with explanation and goal of the game
9. Start serious game

A.4.3. Rules of the Game

TALK THAT TALK

How It Works

1. Throw the dice.
2. Take card and read out loud.
3. Other players guess your answer with the ABCD-cards. Don't show the card!
4. Pick your answer and explain it to the other players.
5. Other players show their guesses.
6. If you throw the dice with the arrow, then the participant the arrow points at, will get the turn. That person will pick a card.

Set Up

Every player gets coloured ABCD-cards and matching pawns to walk on the score-board. Furthermore, one stack of cards per category is laid on the table.

Ending

4 players: the first player reaching **12 points** wins.

4+ players: the first player reaching **points** wins.

Rules

1. Your turn: One or more of the other players guess your answer correctly = **1 point**

2. Others: You guess the answer of the other players correctly = **1 point**

START
1	2	3	4
5	6	7	8
9	10	11	12

4 Players   4+ Players

A.5. Debriefing: Statistics

Facts From the Netherlands
- In the Netherlands 11% of female and 1% of male students have experienced *unwanted sexual penetration* (or rape) during their student time.
- 53% of female and 19% of male students have experienced sexual touching in their lifetime (eg. kissing, groping, etc.).
- In 70% of the cases the victim freezes (not being able to move or react)
- In 85% of the cases rape happens by someone the victim knows.
- In 60% of the cases the perpetrator is a peer.
- In 79% of the cases the perpetrator is a man (or multiple men).

Relationship between perpetrator and victim
- 34% partner
- 21% someone I just met
- 26% someone I know from going out or party
- 21% Someone I just had a date with
- 19% someone I had slept with before, but did not have a relationship with
- 16% a good friend
- 11% unknown
- 7% fellow student
- 5% someone from my association

Location of sexual violence
- 36.5% other housing (eg. student rooms)
- 31.6% restaurant/bars/clubs
- 10.5% some other place
- 7.3% outdoor or recreational place
- 2.6% other association space
- 1.5% student association building
- 1.1% university building
- 0.6% other non-residential building

A.6. Facilitator Information

A.6.1. Roles
There is the assistant facilitator who is making notes <u>during the game play</u> and the <u>debriefing</u>, and the main facilitator (me) who is also doing the briefing and debriefing.

A.6.2. Tasks of the facilitator
- Log all player's choices and actions (Michael and Chen, 2006).
- Observe the participants from a distance and listen to their discussions, reactions, and emotions.
- Facilitators do not interact with the participants during game play. <u>Only if there are questions about the game mechanics.</u>

Ask yourself the following:
1. Related to the cards and discussions:
    a. Are there cards that sparks a lot of discussion?
    b. Which discussions catches your eye?
    c. Do you notice any "aha" moments?
    d. Are there cards easily understood or followed?
2. Related to their communication:
    a. How are the participants communicating with each other?
        i. Are they sharing different perspectives?
        ii. Are they listening to each other?
        iii. Is there conflict? Or is there harmony?
        iv. Are they engaged?
        v. Are they learning from each other? Sharing different perspectives?
        vi. How safe do you think they feel?
    b. What do you notice about the emotions of the participants?
        i. Are there any strong reactions?
        ii. Perhaps weak ones?
        iii. If so why in this experiment do you think that is happening?
3. Related to the goals:
    a. Do you notice a shift in the willingness to intervene?
    b. Do you notice a shift in awareness or responsibility taking?
    c. Do you notice a shift in the sexual assault myth acceptance?
    d. If you do notice a shift, indicate why you think that is happening.
4. Last question: Do you notice an influence of the environment on the participants?

Appendix B: Surveys

B.1. Development of Scales

B.1.1. Sexual Assault Myth Acceptance Scale

Table 11 | Original Item and the Adapted Version of the Original Item of Sexual Assault Myth Acceptance Scale

Construct	Original Item	Adapted Version
Responsibility of the Victim	A woman who dresses provocatively should not be surprised if a man tries to force her to have sex.	A woman <u>who dresses sexy</u> should not be surprised if a man <u>touches her inappropriately.</u>
	If a woman is sexually assaulted while drunk, she is partly to blame for having lost control of her.	n.a.
	If a woman is sexually harassed, she had to do something to provoke it.	n.a.
Social Conventions of Sexuality	If a woman has no intention of having sex with a man, she should not flirt with him.	n.a.
	For men it is a biological need to release their accumulated sexual tension from time to time.	n.a.
Context of Sexual Assault	A woman who has had many sexual partners has less credibility if she reports an assault.	n.a.
	A woman is more likely to be raped by a stranger than by an acquaintance.	n.a.
	Alcohol is often the cause of a man raping a woman.	n.a.

Note. The original items are from "Sexual Assault Myth Acceptance in University Campus: Construction and Validation of a Scale", by Recalde-Esnoz, I. et al., 2021, *Social Sciences, 10*(12), p. 462.

B.1.2. Rape Excusing Attitudes and Language Scale

Table 12 | Original Item and the Adapted Version of the Original Item of Rape Excusing Attitudes and Language Scale

Construct	Original Item	Adapted Version
Exaggeration of Harm	If a guy takes a woman on a nice date, he deserves to have sex with her.	n.a.
	She probably wasn't raped if she doesn't have any injuries (for example, bruises).	n.a.
	If two individuals are in a sexual relationship, it cannot be rape.	n.a.
Confusion of Consent	If she doesn't physically resist, she must have thought it wasn't that bad.	If <u>a woman</u> doesn't physically resist, she must have thought it wasn't that bad.
	If a woman goes over to a man's house at night, she is consenting to sexual attention.	n.a.
(Lied About the Event)	Unless she audibly says "no," she cannot claim that she was raped.	n.a.

Note. The original items are from "Development and validation of the Rape Excusing Attitudes and Language Scale", by Hahnel-Peeters, R. et al, 2022, *Personality and Individual Differences, 186*(Part B)*,* p. 5.

B.1.3. Readiness to Help Scale

Table 13 | Original Item and the Adapted Version of the Original Item of Readiness to Help Scale

Construct	Original Item	Adapted Version
Taking Responsibility	Sometimes I think I should learn more about sexual abuse.	Sometimes I think I should learn more about <u>sexual violence.</u>
	I think I can do something about sexual abuse.	I think I can do something about <u>sexual violence.</u>
	Planning to learn more about the problem of sexual abuse on campus.	I plan to learn more about the problem of <u>sexual violence</u> on campus.
No Awareness	Don't think sexual abuse is a problem on campus.	I don't think <u>sexual violence</u> is a problem on campus.
	Don't think there is much I can do about sexual violence on campus.	I don't think there is much I can do about <u>sexual violence</u> on campus.
	Not much need for me to think about sexual violence on campus.	There is not much need for me to think about <u>sexual violence</u> on campus,

Note. The original items are from "How do we know if it works? Measuring outcomes in bystander-focused abuse prevention on campuses", by Banyard, V. et al., 2014, *Psychology of Violence, 4*(1), p. 106 (DOI: 10.1037/a0033470).

B.1.4. Perceptions of Peer Helping Scale

Table 14 | Original Item and the Adapted Version of the Original Item of Perceptions of Peer Helping

Original Item	Adapted Version
Do something to help a very intoxicated person who is being brought upstairs to a bedroom by a group of people at a party.	I am willing to stop and check in on a woman who looks very intoxicated when she is being taken upstairs at a party to a bedroom.
Do something if they to see a woman surrounded by a group of men at a party who looks very uncomfortable.	I am willing to stop and check in on a woman who is surrounded by a group of men at a party and looks very uncomfortable.
Express discomfort/concern if someone makes a joke about a woman's body or about gays/lesbians or someone of a different race.	I am willing to express discomfort/concern if someone makes a joke about a woman's body.
Talk to people they know about the impact of using language that is negative toward groups like gays/lesbians/women/people of color.	I am willing to talk to people I know about the impact of using language that is negative toward women.
I see a guy talking to a woman I know. He is sitting close to her and by look on her face I can see she is uncomfortable. I ask her if she is okay or try to start a conversation with her	I see a guy talking to a woman I know. He is sitting close to her and by the look on her face I can see she is uncomfortable. I am willing to ask her if she is okay or try to start a conversation with her.

Note. The original items are from "How do we know if it works? Measuring outcomes in bystander-focused abuse prevention on campuses", by Banyard, V. et al., 2014, *Psychology of Violence, 4*(1), p. 106 (DOI: 10.1037/a0033470).

B.1.5. Communication Process Scale

Table 15 | Original Item and the Adapted Version of the Original Item of Communication Process Scale

Construct	Original Item	Adapted Version
Alliance Building	Other students' willingness to understand their own biases and assumptions	I was able to listen to other student' willingness to understand their own biases and assumptions.
	Hearing other students' passion about social issues	I was able to hear other students' passion about social issues
	Hearing other students' commitment to work against injustices	I was able to hear other students' commitment to work against injustices.
	Talking about ways to take action on social issues	I was talking about ways to take action on social issues.
	Exploring ways to take action with people from different racial/ethnic groups	I was exploring ways to take action with people with a different gender.
	Working through disagreements and conflicts	I was able to work through disagreements and conflicts
	Feeling a sense of hope in being able to challenge injustices	I was feeling a sense of hope in being able to challenge injustices
Engaging Self	Being able to disagree	I was able to disagree
	Sharing my views and experiences	I was able to share my views and experiences
	Asking questions that I felt I was not able to ask before	I was able to ask questions that I felt I was not able to ask before

	Addressing difficult issues and questions	<u>I was able to</u> address difficult issues and questions
	Being able to speak openly without feeling judged	<u>I was able to speak</u> openly without feeling judged
	Being allowed to make mistakes and reconsider my opinions	<u>I felt allowed to</u> make mistakes and reconsider my opinions.
Critical Self-Reflection	Being challenged to examine the sources of my biases and assumptions	<u>I was being challenged</u> to examine the sources of my biases and assumptions
	Being supported to appreciate the experiences different from my own	<u>I felt supported</u> to appreciate the experiences different from my own
	Being encouraged to think about issues that I may not have before	<u>I was encouraged</u> to think about issues that I may not have before
	Being encouraged to understand how privilege and oppression affect our lives	<u>I was encouraged</u> to understand how privilege and oppression affects our lives
Appreciating Difference	Hearing different points of view	<u>I was able</u> to hear different points of view
	Learning from each other	<u>I learnt</u> from others
	Hearing other students' personal stories	<u>I was able to</u> hear other students' personal stories

Note. The original items are from "Breaking Barriers, Crossing Borders, Building Bridges: Communication Processes in Intergroup Dialogues", by Nagda, A., 2006, *Journal of Social Issues, 62*(3), p. 562.

B.1.6. Demographic Questionnaire

Introduction:
These following demographic questions will be asked to analyse whether there is a relation between the answers on the online survey and the demographics of the participants. This Questionnaire is anonymous, but the last three digits of your phone number will be asked to be able to connect the online survey with your demographic.

1. What are the last three digits of your phone number: …

Age, Gender and Nationality:

2. Please specify your age: ….

3. Which gender do you identify with?
   - ☐ Cis* or transwoman
   - ☐ Cis* or transmen
   - ☐ Other
   - ☐ Prefer not to answer

Note. Cis woman/man= a woman or man born biologically as a woman or man.

4. Please specify your nationality:
   - ☐ Dutch
   - ☐ EU

- ☐ non-EU (Western)
- ☐ non-EU (Non-Western)
- ☐ Prefer not to answer

Student life:
5. Do you have a membership at an association?
   - ☐ Yes, with a student association*
   - ☐ Yes, with a study association*
   - ☐ Yes, with a sport association*
   - ☐ Yes, with a cultural association (eg. music, dance, theatre, etc).
   - ☐ Other
   - ☐ None

Note. *Study association = the association of your respective study. Members all share the same study background; Student association= an association for students all with a different study.*

Education:
6. Which educational degree program are you currently following?
   - ☐ Bachelors
   - ☐ Masters
   - ☐ Other

7. In which faculty at the TU Delft do you follow your educational degree?
   - ☐ Architecture
   - ☐ Civil Engineering and Geosciences (CEG)
   - ☐ Electrical Engineering, Mathematics & Computer Science (EEMGS)
   - ☐ Industrial Design Engineering (IDE)
   - ☐ Aerospace Engineering (AE)
   - ☐ Technology, Policy and Management (TPM)
   - ☐ Applied Sciences (AD)
   - ☐ Mechanical, Maritime and Materials Engineering (3mE)
   - ☐ Other

B.1.7. Additional Questions Post Survey Game Session

1. In which part of the physical experiment (during game-play, or debriefing) did you gain most awareness about and understanding in sexually transgressive behaviour, and why?
   …

2. Was the content of the cards (the scenarios and its answers) relatable?
   - ☐ Yes
   - ☐ No
   - ☐ Other: …

3. Could you please elaborate why, or why not the cards were relatable?

4. Do you have any positive feedback or tips to improve this game?

5. How did you feel during the game? (Multiple answers are possible)
   - ☐ Unsafe
   - ☐ Engaged
   - ☐ Challenged
   - ☐ Uncomfortable
   - ☐ Inspired
   - ☐ Empathetic
   - ☐ Embarrassed
   - ☐ Calm
   - ☐ Angry
   - ☐ Annoyed
   - ☐ Self-conscious
   - ☐ Misunderstood
   - ☐ Safe

6. Did you feel safe to answer and discuss honestly during the game, if so why (not)?

B.2. Adapted Surveys Based on Pilot-Test Analysis

B.2.1. Sexual Violence Attitudes and Beliefs

To what extent do you agree/disagree with the following statements?

Nr.	Item	1 Strongly Disagree	2 Disagree	3 Neutral	4 Agree	5 Strongly agree
	FACT1					
E3	If a woman doesn't physically resist, she must have thought it wasn't that bad.					
E8	If a woman is sexually assaulted while drunk, she is partly to blame for having lost control.					
E15	Unless she audibly says "no," she cannot claim that she was raped.					
	FACT2					
E5	A woman who has had many sexual partners has less credibility if she reports an assault					
E12	Alcohol is often the cause of a man raping a woman.					
E14	If a woman has no intention of having sex with a man, she should not flirt with him					
	FACT3					
E10	If a woman is sexually harassed, she must have done something to provoke it.					
E16	If the man was drunk when the woman didn't want to have sex, it cannot be called rape.					

Note. The items have been numbered based on their ordering in the survey handed out to the participants; nr = number.

B.2.2. Bystander Attitudes

To what extent do you agree/disagree with the following statements?

Nr.	Item	1 Strongly Disagree	2 Disagree	3 Neutral	4 Agree	5 Strongly agree
	No Awareness (FACT1)					
E2	There is not much need for me to think about sexual violence on campus					
E3	I don't think sexual violence is a problem on campus					
E5	I don't think there is much I can do about sexual violence on campus.					
	Taking Responsibility (FACT2)					
E1	I plan to learn more about the problem of sexual violence on campus					
E4	Sometimes I think I should learn more about sexual violence					
E6	I think I can do something about sexual violence.					

Note. The items have been numbered based on their ordering in the survey handed out to the participants; nr = number.

B.2.3. Willingness to Intervene

For all actions, indicate in the column 'Willingness' how willing you are to intervene. Rate your degree of willingness by entering a number from 0 to 100 using the scale given below.

```
0        10      20     30     40     50      60     70     80     90     100
can't    quite                        moderately                  very
do       uncertain                    certain                     certain
```

Nr.	Item	Willingness ....%
	Primary Prevention (Before an Assault)	
1	I am willing to stop and check in on a woman who looks very intoxicated when she is being taken upstairs at a party to a bedroom.	…..%
2	I am willing to stop and check in on a woman who is surrounded by a group of men at a party and looks very uncomfortable.	…..%
3	I am willing to express discomfort/concern if someone makes a joke about a woman's body.	…..%
4	I am willing to talk to people I know about the impact of using language that is negative toward women	…..%
5	I see a guy talking to a woman I know. He is sitting close to her and by the look on her face I can see she is uncomfortable. I am willing to ask her if she is okay or try to start a conversation with her.	…..%

B.2.4. Communication Process Scale

Nr.	Item	1 Strongly Disagree	2 Disagree	3 Neutral	4 Agree	5 Strongly Agree
	Alliance Building					
1	I was able to listen to other student' willingness to understand their own biases and assumptions.					
2	I was able to hear other students' passion about social issues					
3	I was able to hear other students' commitment to work against injustices.					
4	I was able to work through disagreements and conflicts					
5	I was talking about ways to take action on social issues					
6	I was exploring ways to take action with people with a different gender.					
7	I was feeling a sense of hope in being able to challenge injustices					
	Engaging Self					
8	I was able to disagree					
9	I was able to share my views and experiences					
10	I was able to ask questions that I felt I was not able to ask before					
11	I was able to address difficult issues and questions					
12	I was able to speak openly without feeling judged					
13	I felt allowed to make mistakes and reconsider my opinions.					
	Critical Self-Reflection					
14	I was being challenged to examine the sources of my biases and assumptions					
15	I felt supported to appreciate the experiences different from my own					
16	I was encouraged to think about issues that I may not have before					
17	I was encouraged to understand how privilege and oppression affects our lives					
	Appreciating Difference					
18	I learnt from others					

19	I was able to hear other students' personal stories					
20	I was able to hear different points of view					

Appendix C: Pilot-Tests in SPSS

C.1. Results SPSS of Sexual Violence Myth Acceptance Scale

Table 16 | Communalities Results of Sexual Violence Myth Acceptance Scale Including all Items

Communalities

	Initial	Extraction
1. For men it is a biological need to release their accumulated sexual tension from time to time.	1.000	.634
2. If a guy takes a woman on a nice date, he deserves to have physical sexual contact with her.	1.000	.896
3. If a woman doesn't physically resist, she must have thought it wasn't that bad.	1.000	.858
4. A woman who dresses sexy should not be surprised if a man touches her inappropriately.	1.000	.711
5. A woman who has had many sexual partners has less credibility if she reports an assault.	1.000	.702
6. If two individuals are in a sexual or romantic relationship, it cannot be rape.	1.000	.699
7. If a woman goes over to a man's house at night, she is consenting to sexual attention.	1.000	.707
8. If a woman is sexually assaulted while drunk, she is partly to blame for having lost control.	1.000	.797
9. A woman is more likely to be sexually harassed by a stranger than by an acquaintance.	1.000	.781
10. If a woman is sexually harassed, she must have done something to provoke it.	1.000	.789
11. She probably wasn't raped if she doesn't have any injuries (for example, bruises).	1.000	.771
12. Alcohol is often the cause of a man raping a woman.	1.000	.811
14. If a woman has no intention of having sex with a man, she should not flirt with him.	1.000	.836
15. Unless she audibly says "no," she cannot claim that she was raped.	1.000	.831
16. If the man was drunk when the woman didn't want to have sex, it cannot be called rape	1.000	.887

Extraction Method: Principal Component Analysis.

Table 17 | KMO Results of Sexual Violence Myth Acceptance Scale

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.773
Bartlett's Test of Sphericity	Approx. Chi-Square	158.131
	df	36
	Sig.	.000

Table 18 | Total Variance Explained of Sexual Violence Myth Acceptance (SVMAS)

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4.624	51.376	51.376	4.624	51.376	51.376	2.745	30.501	30.501
2	1.358	15.090	66.466	1.358	15.090	66.466	2.603	28.925	59.426
3	1.258	13.980	80.446	1.258	13.980	80.446	1.892	21.020	80.446
4	.504	5.597	86.043						
5	.403	4.482	90.525						
6	.325	3.616	94.141						
7	.240	2.663	96.804						
8	.185	2.060	98.864						
9	.102	1.136	100.000						

Extraction Method: Principal Component Analysis.

Table 19 | Rotated Component Matrix of Sexual Violence Myth Acceptance

Rotated Component Matrix[a]

	Component		
	1	2	3
3. If a woman doesn't physically resist, she must have thought it wasn't that bad.	.842		
15. Unless she audibly says "no," she cannot claim that she was raped.	.840		
8. If a woman is sexually assaulted while drunk, she is partly to blame for having lost control.	.810		
12. Alcohol is often the cause of a man raping a woman.		.922	
5. A woman who has had many sexual partners has less credibility if she reports an assault.		.776	
14. If a woman has no intention of having sex with a man, she should not flirt with him.		.770	
16. If the man was drunk when the woman didn't want to have sex, it cannot be called rape			.912
10. If a woman is sexually harassed, she must have done something to provoke it.	.516		.696
4. A woman who dresses sexy should not be surprised if a man touches her inappropriately.		.555	.657

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

a. Rotation converged in 5 iterations.

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C.2. Results SPSS of Bystander Attitudes

Table 20 | Communalities Results of Bystander Attitudes Scale

Communalities

	Initial	Extraction
1. I plan to learn more about the problem of sexual violence on campus.	1.000	.767
2. There is not much need for me to think about sexual violence on campus.	1.000	.759
3. I don't think sexual violence is a problem on campus.	1.000	.741
4. Sometimes I think I should learn more about sexual abuse.	1.000	.709
5. I don't think there is much I can do about sexual violence on campus.	1.000	.639
6. I think I can do something about sexual violence.	1.000	.766

Extraction Method: Principal Component Analysis.

Note. Exploratory factor analysis is conducted with principal component analysis and Varimax Rotation.

Table 21 | KMO Results of Bystander Attitudes Scale

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.756
Bartlett's Test of Sphericity	Approx. Chi-Square	78.836
	df	15
	Sig.	.000

Note. Exploratory factor analysis is conducted with principal component analysis and Varimax Rotation.

Table 22 | Correlation Matrix of Bystander Attitudes Scale

Correlation Matrix[a]

		1. I plan to learn more about the problem of sexual violence on campus.	2. There is not much need for me to think about sexual violence on campus.	3. I don't think sexual violence is a problem on campus.	4. Sometimes I think I should learn more about sexual abuse.	5. I don't think there is much I can do about sexual violence on campus.	6. I think I can do something about sexual violence.
Correlation	1. I plan to learn more about the problem of sexual violence on campus.	1.000	.389	.189	.621	.391	.538
	2. There is not much need for me to think about sexual violence on campus.	.389	1.000	.602	.437	.543	.615
	3. I don't think sexual violence is a problem on campus.	.189	.602	1.000	.219	.339	.374
	4. Sometimes I think I should learn more about sexual abuse.	.621	.437	.219	1.000	.368	.477
	5. I don't think there is much I can do about sexual violence on campus.	.391	.543	.339	.368	1.000	.802
	6. I think I can do something about sexual violence.	.538	.615	.374	.477	.802	1.000

Note. Exploratory factor analysis is conducted with principal component analysis and Varimax Rotation.
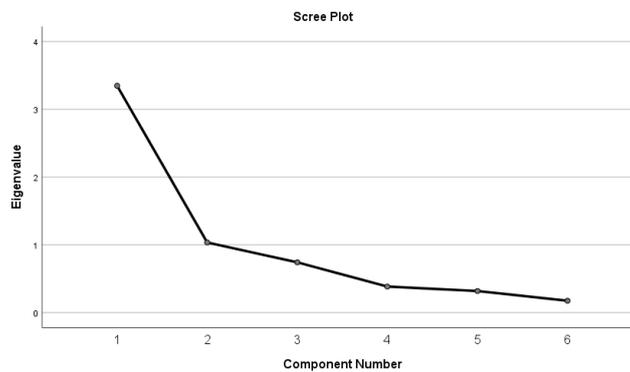
Figure 53 | Scree plot of Bystander Attitudes Scale

Table 23 | Total Variance Explained of Bystander Attitudes Scale Including item 6

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.347	55.778	55.778	3.347	55.778	55.778	2.208	36.802	36.802
2	1.035	17.244	73.022	1.035	17.244	73.022	2.173	36.221	73.022
3	.741	12.355	85.377						
4	.384	6.401	91.779						
5	.318	5.305	97.083						
6	.175	2.917	100.000						

Extraction Method: Principal Component Analysis.

Table 26 | Rotated Component Matrix of Bystander Attitudes Scale Including Item 6

	Component 1	Component 2
1. I plan to learn more about the problem of sexual violence on campus.		.867
2. There is not much need for me to think about sexual violence on campus.	.806	
3. I don't think sexual violence is a problem on campus.	.860	
4. Sometimes I think I should learn more about sexual abuse.		.828
5. I don't think there is much I can do about sexual violence on campus.	.631	
6. I think I can do something about sexual violence.	.618	.619

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

a. Rotation converged in 3 iterations.

Table 25 | Rotated Component Matrix of Bystander Attitudes Scale Excluding Item 6

	Component 1	Component 2
1. I plan to learn more about the problem of sexual violence on campus.		.880
2. There is not much need for me to think about sexual violence on campus.	.822	
3. I don't think sexual violence is a problem on campus.	.890	
4. Sometimes I think I should learn more about sexual abuse.		.857
5. I don't think there is much I can do about sexual violence on campus.	.591	

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

a. Rotation converged in 3 iterations.

Table 24 | Total Variance Explained of Bystander Attitudes Scale Excluding item 6

Total Variance Explained

Component	Initial Eigenvalues Total	% of Variance	Cumulative %	Extraction Sums of Squared Loadings Total	% of Variance	Cumulative %	Rotation Sums of Squared Loadings Total	% of Variance	Cumulative %
1	2.656	53.128	53.128	2.656	53.128	53.128	1.872	37.431	37.431
2	1.035	20.692	73.820	1.035	20.692	73.820	1.819	36.389	73.820
3	.609	12.174	85.994						
4	.382	7.645	93.639						
5	.318	6.361	100.000						

Extraction Method: Principal Component Analysis.

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C.3. Results SPSS of Willingness to Intervene Scale

Table 27 | Correlation Matrix of Willingness to Intervene Scale

Correlation Matrix[a]

		1. I am willing to stop and check in on a woman who looks very intoxicated when she is being taken upstairs at a party to a bedroom.	2. I see a guy talking to a woman I know. He is sitting close to her and by the look on her face I can see she is uncomfortabl e. I am willing to ask her if she is okay or try to start a conversation with her.	3. I am willing to stop and check in on a woman who is surrounded by a group of men at a party and looks very uncomfortabl e.	5. I am willing to express discomfort/co ncern if someone makes a joke about a woman's body.	10. I am willing to talk to people I know about the impact of using language that is negative toward women.
Correlation	1. I am willing to stop and check in on a woman who looks very intoxicated when she is being taken upstairs at a party to a bedroom.	1.000	.543	.523	.477	.474
	2. I see a guy talking to a woman I know. He is sitting close to her and by the look on her face I can see she is uncomfortable. I am willing to ask her if she is okay or try to start a conversation with her.	.543	1.000	.617	.637	.637
	3. I am willing to stop and check in on a woman who is surrounded by a group of men at a party and looks very uncomfortable.	.523	.617	1.000	.521	.803
	5. I am willing to express discomfort/concern if someone makes a joke about a woman's body.	.477	.637	.521	1.000	.765
	10. I am willing to talk to people I know about the impact of using language that is negative toward women.	.474	.637	.803	.765	1.000

Table 28 | Kaiser-Meyer-Olkin Measure of Willingness to Intervene Scale

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.728
Bartlett's Test of Sphericity	Approx. Chi-Square	87.350
	df	10
	Sig.	.000

Table 29 | Total Variance Explained of Willingness to Intervene Scale

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.415	68.303	68.303	3.415	68.303	68.303
2	.613	12.255	80.558			
3	.487	9.738	90.296			
4	.376	7.527	97.823			
5	.109	2.177	100.000			

Extraction Method: Principal Component Analysis.

Table 31 | Communalities of Willingness to Intervene Scale

Table 30 | Rotated Matrix of Willingness to Intervene Scale

Communalities

	Initial	Extraction
1. I am willing to stop and check in on a woman who looks very intoxicated when she is being taken upstairs at a party to a bedroom.	1.000	.506
2. I see a guy talking to a woman I know. He is sitting close to her and by the look on her face I can see she is uncomfortable. I am willing to ask her if she is okay or try to start a conversation with her.	1.000	.693
3. I am willing to stop and check in on a woman who is surrounded by a group of men at a party and looks very uncomfortable.	1.000	.715
5. I am willing to express discomfort/concern if someone makes a joke about a woman's body.	1.000	.687
10. I am willing to talk to people I know about the impact of using language that is negative toward women.	1.000	.815

Extraction Method: Principal Component Analysis.

Component Matrix^a

	Component 1
10. I am willing to talk to people I know about the impact of using language that is negative toward women.	.903
3. I am willing to stop and check in on a woman who is surrounded by a group of men at a party and looks very uncomfortable.	.845
2. I see a guy talking to a woman I know. He is sitting close to her and by the look on her face I can see she is uncomfortable. I am willing to ask her if she is okay or try to start a conversation with her.	.832
5. I am willing to express discomfort/concern if someone makes a joke about a woman's body.	.829
1. I am willing to stop and check in on a woman who looks very intoxicated when she is being taken upstairs at a party to a bedroom.	.711

Extraction Method: Principal Component Analysis.

a. 1 components extracted.

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Appendix D: Letter of Approval of HREC

TUDelft Delft University of Technology

Human Research Ethics Committee
TU Delft
(http://hrec.tudelft.nl/)

Visiting address
Jaffalaan 5 (building 31)
2628 BX Delft

Postal address
P.O. Box 5015 2600 GA Delft
The Netherlands

Ethics Approval Application: The evaluation of a serious game for tackling sexually transgressive behavior in Dutch higher education
Applicant: Baijanova, Francien

Dear Francien Baijanova,

It is a pleasure to inform you that your application mentioned above has been approved.

Please note that this approval is subject to your ensuring that the following condition is fulfilled: The Executive Board (CvB) and Integrity Officer are aware that their suppor

Good luck with your research!

Sincerely,

Dr. Ir. U. Pesch
Chair HREC
Faculty of Technology, Policy and Management

Full missing sentence: *"Please note that this approval is subject to your ensuring that the following condition is fulfilled: The Executive Board (CvB) and Integrity Officer are aware that their support is being used and communicated the way it is in the Informed Consent form."*

Appendix E: Advertisement Materials

E.1. Poster & Flyer

E.2. Screen Image

Appendix F: Consent Forms

F.1. Opening Statement Pre-Survey

Dear Participant,

Hereby, you are being invited for the pre-survey for the Masters research study titled **"An Open Dialogue Between Women and Men About Transgressive Behaviour".** This study is conducted by Francien Baijanova from the TU Delft and is supported by the TU Delft Executive Board and the Integrity Officer.

Students of Delft, University of Technology from all faculties and nationalities are welcome to participate in this Master research study. The purpose of this study study is to evaluate a serious game called "Boxing the Boxes" on its effectiveness to encourage a dialogue between men and women regarding sexually transgressive behaviour on campus. This survey will take you **approximately 10 minutes** to complete. You will be asked about your awareness, attitudes and beliefs, and your willingness to intervene in situations of transgressive behaviour. The data will be used as statistical summary for a master thesis report.

This experiment exists of four phases: 1) 10 minutes pre-survey, 2) 1.5 hours physical game session together including the first post-survey, 3) A 30 minutes optional interview a few days after the first post-survey, and 4) a 10 minutes second post-survey a month after the first post-survey. This personal agreement is part of the first phase of this experiment. Consent will be asked for each step.

As with any online activity the risk of a breach is always possible. To the best of our ability your answers in this study will remain confidential. We will minimize any risks in a couple of ways:

Phase 1 and 4: The online pre- and post-surveys are anonymous. Only the last three digits of your phone number will be asked. The last three digits will be used to compare the pre- and post-survey to research whether a change has taken place in awareness, attitude, and willingness to intervene. Names, telephone numbers or addresses will **not** be asked. The answers of the survey will be stored in the survey platform Qualtrics. After this master thesis has ended, the survey data will be destroyed.

Phase 2: The physical serious game session will take place in a project room in the faculty TPM and will take around 1.5 hours. You will play the serious game together with three or five other TU Delft students. Before the game session you will be asked to fill in a personal demographic data questionnaire, which will be stored in the TU Delft Project Storage Drive. This drive is only accessible to the corresponding researcher. Again, the last three digits of your phone number will be used to link the personal data with the online survey questions. The game session will end with the first online post-survey. The data will be again stored in the survey platform Qualtrics. During the entire game session anonymous handwritten and typed notes will be made of the discussions and game experience by the facilitators. These notes will be used to give insight into the survey answers. The notes will also be saved in the TU Delft Project Storage Drive. The game sessions will adhere to the current corona guidelines.

Phase 3: Participants will be asked if they are interested in giving a pseudo-anonymous telephone interview within a week after the game session. Participants can show interest by writing down their phone number on paper after the game session. The telephone numbers will be stored in the TU Delft Project Storage Drive. The phone numbers can be used to track the pre-and post-survey of the participant and will be used as input for the interview. The interview will be recorded by mobile phone and will be about the survey answers and the game experience. No name or demographic questions will be asked. The recording will be immediately saved in the TU Delft Project Storage Drive after the interview and will subsequently be destroyed from the mobile phone. The interview will be used as an insight to give possible explanations to the survey answers.

Keep in mind that the survey questions can be **emotionally triggering**. Your participation in this study is **entirely voluntary and you can withdraw at any time without giving a reason**. You are free to omit any

questions, by choosing the "No answer" option. After filling in the survey you have till the end of this experiment process whether you would like to withdraw your data from the statistical data analysis. In this case you send the corresponding researcher an email with the last three digits of your phone number stating that you would like to opt out of the experiment. The data will then be immediately destroyed.

By completing this survey, you are agreeing to the terms of this Opening Statement.

Kind regards,
Francien Baijanova

F.2. Opening Statement Post-Survey(s)

Dear Participant,

Hereby, you are being invited to the first post-survey for the Masters research study titled "The **Evaluation of a Serious Game For Tackling Sexually Transgressive Behaviour Among Students in Dutch Universities"**. This study is conducted by Francien Baijanova from the TU Delft and is supported by the TU Delft Executive Board and the Integrity Officer.

Students of Delft, University of Technology from all faculties and nationalities are welcome to participate in this Master research study. The purpose of this study study is to evaluate a serious game called "Talk That Talk" on its effectiveness to encourage a dialogue between men and women regarding sexually transgressive behaviour on campus. This survey will take you **approximately 15 minutes to complete**. You will be asked about your attitudes and beliefs, and your willingness to intervene in situations of transgressive behaviour. The data will be used as statistical summary for a master thesis report.

This experiment exists of four phases: 1) 10 minutes pre-survey, 2) 1.5 hours physical game session including the first post-survey, 3) A 30 minutes optional interview a few days after the first post-survey, and 4) a 10 minutes second post-survey a month after the first post-survey. This personal agreement is part of the second phase of this experiment. Consent will be asked for each step. As compensation for your participation, you will receive a 10-euro bol.com voucher at the end of the experiment process (so after the second post-survey), and you will be treated with cookies and drinks during the game session.

As with any online activity, the risk of a breach is always possible. To the best of our ability, your answers in this study will remain confidential. We will minimize any risks in a couple of ways:

1. **Phase 1 and 4:** The online pre- and post-surveys are anonymous. Only the last three digits of your phone number will be asked. The last three digits will be used to compare the pre- and post-survey to research whether a change has taken place in awareness, attitude, and willingness to intervene. Names, telephone numbers or addresses will not be asked. The answers of the survey will be stored in the survey platform Qualtrics. After this master thesis has ended, the survey data will be destroyed.
1. **Phase 2:** The physical serious game session will take place in a project room in the faculty TPM and will take around 1.5 hours. You will play the serious game together with three or five other TU Delft students. Before the game session, you will be asked to fill in a personal demographic data questionnaire, which will be stored in the TU Delft Project Storage Drive. This drive is only accessible to the corresponding researcher. Again, the last three digits of your phone number will be used to link the personal data with the online survey questions. The game session will end with the first online post-survey. The data will be again stored in the survey platform Qualtrics. During the entire game session, anonymous handwritten and typed notes will be made of the discussions and game experience by the facilitators. These notes will be used to give insight into the survey answers. The

notes will also be saved in the TU Delft Project Storage Drive. The game sessions will adhere to the current corona guidelines.

2. **Phase 3:** Participants will be asked if they are interested in giving a pseudo-anonymous telephone interview of max 30 minutes within a week after the game session. Participants can show interest by writing down their phone number on paper after the game session. The telephone numbers will be stored in the TU Delft Project Storage Drive. The phone numbers can be used to track the pre-and post-survey of the participant and will be used as input for the interview. The interview will be recorded by mobile phone and will be about the survey answers and the game experience. No name or demographic questions will be asked. The recording will be immediately saved in the TU Delft Project Storage Drive after the interview and will subsequently be destroyed from the mobile phone. The interview will be used to give insight in the survey answers.

Keep in mind that the survey questions can be **emotionally triggering**. Your participation in this study is entirely voluntary, and you can **withdraw at any time without giving a reason**. You are free to omit any questions, by choosing the "No answer" option. After filling in the survey, you have till the end of this experiment process whether you would like to withdraw your data from the statistical data analysis. In this case, you send the corresponding researcher an email with the last three digits of your phone number stating that you would like to opt out of the experiment. The data will then be immediately destroyed.

If you have any questions, remarks or concerns about the experiment process, you can email me at f.o.m.baijanova@students.tudelft.nl.

By completing this survey, you are agreeing to the terms of this Opening Statement.

Kind regards,
Francien Baijanova

F.3. Opening Statement Interview

Dear Participant,

Hereby, you are being invited to a telephone interview for the Masters research study titled "The Evaluation of a Serious Game For Tackling Sexually Transgressive Behaviour Among Students in Dutch Universities". This study is conducted by Francien Baijanova from the TU Delft.

Students of Delft, University of Technology from all faculties and nationalities are welcome to participate in this Master research study. The purpose of this study study is to evaluate a serious game called "Boxing the Boxes" on its effectiveness to increase the willingness to intervene in situations of sexually transgressive behaviour. It will take you approximately 30 minutes to participate in the interview. The data will be used as conclusion and discussion points for the results in the master thesis report. You will be asked about your survey questions and your game experience.

This experiment exists of five phases: 1) pre-survey, 2) physical game session, 3) first post-survey after physical game session, 4) An interview a few days after the first post-survey, 5) second post-survey a month after the first post-survey. This personal agreement is part of the fourth phase of this experiment. Consent will be asked for each step.

As with any telephone interview the risk of a breach is always possible. To the best of our ability your answers in this study will remain confidential. We will minimize any risks in the following way: At the end of the game session, you will be asked if you are interested to give an interview based on your game experience and survey answers. If you are interested, you can give up your telephone number. I can connect your telephone number with your answers given on the survey. The online interview will be held via telephone and an audio recording will be made. No name or other identifying (personal demographic)

questions will be asked. Thus, this interview will be <u>pseudo-anonymous.</u> The recording will be saved in the TU Delft Project Storage Drive. The insights gained from the interview will be used anonymously in the thesis report to explain the survey results of the experiment.

Furthermore, keep in mind that the interview can be emotionally triggering. Proceed further at your own risk. Your participation in this study is entirely voluntary and **you can withdraw at any time without giving a reason**. You are free to refuse any question without further explanation. After the interview you have a week to indicate whether you would like to withdraw the interview from the master thesis report. In this case you send an email stating that you would like to opt out of the experiment by including the last three digits of your phone number in the email to the corresponding researcher Francien Baijanova (see information below). The data will then be immediately destroyed.

If you have any questions, remarks or concerns about the experiment process you can send an email to Francien Baijanova (<u>f.o.m.baijanova@students.tudelft.nl</u>).

By giving your <u>vocal consent</u> at the beginning of the interview, you are agreeing to the terms of this Opening Statement. Your proof of consent will be recorded and saved as long as the personal data will be saved, which is till the end of this master thesis study. At the beginning of the interview you will be also asked for consent about using your quotes in the interview anonymously in the master thesis report.

Kind regards,
Francien Baijanova

F.4. Explicit Consent Form

Dear Participant,

Hereby, you are being invited to participate in the <u>game session</u> for the Masters research study titled "The Evaluation of a Serious Game For Tackling Sexually Transgressive Behaviour Among Students in Dutch Universities". This study is conducted by the corresponding researcher Francien Baijanova from the TU Delft and is supported by the TU Delft Executive Board and the Integrity Officer.

Students of Delft, University of Technology from all faculties and nationalities are welcome to participate in this Master research study. The purpose of this study study is to evaluate a serious game called "Talk That Talk" on its effectiveness to increase the willingness of university students to intervene in situations of sexually transgressive behaviour. The data collected during the entire experiment will be used as statistical summary data for a master thesis report.

This experiment exists of five phases: 1) pre-survey, 2) physical game session including the first post-survey, 3) An optional interview a few days after the first post-survey, 4) second post-survey a month after the first post-survey. <u>This personal agreement is part of the second phase of this experiment.</u> Consent will be asked for each step.

Please indicate in the following table if you agree or disagree with the consent point, which are relevant to continue with your participation in this experiment of the serious game called "Talk That Talk". The points state how (personal) data is being collected and stored, how confidentiality is secured and how this study will ensure anonymity specifically for phase 2. Separate consent forms have been made for phase 1, 3 and 4. If you decide not to consent, your participation ends here, and your pre-survey data will be deleted soon after.

First a short summary is provided of the risks of this entire study. The explicit consent points will explain the risks in more detail for phase 2. A breach is always possible. To the best of our ability your answers in this study will remain confidential. We will minimize any risks in a couple of ways:

As with any online activity the risk of a breach is always possible. To the best of our ability your answers in this study will remain confidential. We will minimize any risks in a couple of ways:

1) **Phase 1 and 4:** The online pre- and post-surveys are <u>anonymous.</u> Only the last three digits of your phone number will be asked. The last three digits will be used to compare the pre- and post-survey to research whether a change has taken place in awareness, attitude, and willingness to intervene. Names, telephone numbers or addresses will **not** be asked. The answers of the survey will be stored in the survey platform Qualtrics. After this master thesis has ended, the survey data will be destroyed.

2) **Phase 2:** The physical serious game session will take place in a project room in the faculty TPM and will take around 1.5 hours. You will play the serious game together with three or five other TU Delft students. Before the game session you will be asked to fill in a personal demographic data questionnaire, which will be stored in the TU Delft Project Storage Drive. This drive is only accessible to the corresponding researcher. Again, the last three digits of your phone number will be used to link the personal data with the online survey questions. The game session will end with the first online post-survey. The data will be again stored in the survey platform Qualtrics. During the entire game session anonymous handwritten and typed notes will be made of the discussions and game experience by the facilitators. These notes will be used to give insight into the survey answers. The notes will also be saved in the TU Delft Project Storage Drive. The game sessions will adhere to the current corona guidelines.

3) **Phase 3:** Participants will be asked if they are interested in giving a pseudo-anonymous telephone interview within a week after the game session. Participants can show interest by writing down their phone number on paper after the game session. The telephone numbers will be stored in the TU Delft Project Storage Drive. The phone numbers can be used to track the pre- and post-survey of the participant and will be used as input for the interview. The interview will be recorded by mobile phone and will be about the survey answers and the game experience. No name or demographic questions will be asked. The recording will be immediately saved in the TU Delft Project Storage Drive after the interview and will subsequently be destroyed from the mobile phone. The interview will be used as an insight to give possible explanations to the survey answers.

Furthermore, keep in mind that participation in the physical serious game session **can be emotionally triggering**. Proceed further at your own risk. Your participation in this study is entirely voluntary and you can withdraw at any time without giving a reason. After participation in the physical experiment, you have a week to indicate whether you would like to withdraw your data from the statistical data analysis. In this case you send an email stating that you would like to opt out of the experiment and you include the last three digits of your phone number to the corresponding researcher Francien Baijanova (see information below). The data will then be immediately destroyed.

If you have any questions, remarks or concerns about the experiment process you can send an email to Francien Baijanova (<u>f.o.m.baijanova@students.tudelft.nl</u>) or you can ask me during the physical game session.

Kind regards,
Francien Baijanova

PLEASE TICK THE APPROPRIATE BOXES	Yes	No
A: GENERAL AGREEMENT – RESEARCH GOALS, PARTICPANT TASKS AND VOLUNTARY PARTICIPATION		
1. I have read and understood the study information dated [*DD/MM/YYYY*], or it has been read to me. I have been able to ask questions about the study and my questions have been answered to my satisfaction.	☐	☐
2. I consent voluntarily to be a participant in this study and understand that I can refuse to answer questions and I can withdraw from the study at any time, without having to give a reason.	☐	☐
3. I understand that taking part in the study involves: a pre-survey, a physical game session of two hours, one post-survey immediately after the gaming session, and one post-survey one month after the game session has taken place.	☐	☐
4. I understand that the physical game session will be observed by two facilitators and will be documented by (hand)written notes. I also understand that the participants will stay anonymous in the notes, and that the notes will be destroyed immediately after the master thesis has ended.	☐	☐
5. I understand that by completing the pre- and post-survey questions I agree with the data being used as anonymised statistical summary in the master thesis report.	☐	☐
6. I understand that I will be compensated for my participation by receiving a voucher of 10 euros.	☐	☐
7. I understand that the study will end once this master thesis research is completed.	☐	☐
B: POTENTIAL RISKS OF PARTICIPATING (INCLUDING DATA PROTECTION)		
8. **(Risk 1)** I understand that taking part in the study involves the discussion of sensitive topics that can be emotionally triggering and/or can lead to emotional discomfort. I also understand that this risk will be mitigated by ethical guidelines set in place before the game session has started, and that I can refuse to answer a question on the card games and/or the in the discussion that follows. Furthermore, I understand that I can leave the game session at any time without further explanation. **(Risk 2)** I understand that participation in the game session is not anonymous. There is a risk of recognizing other participants with whom I might not feel comfortable to discuss this sensitive topic about sexual violence with. I understand that I can leave the game session at any time without further explanation. **(Risk 3)** I understand that the game session takes place face-to-face and that therefore there is a risk for me to get infected with corona. I understand that the corresponding researcher will ensure that the experiment adheres to the corona guidelines as requested by the government. I also understand that I am personally responsible to adhere to these guidelines such as wearing a face mask or keeping my 1.5-meter distance from the other participants. **(Risk 4)** I understand I fill in the first online post-survey in the same experiment room immediately after the game session has ended, and that therefore there is a chance another person in the room can see my answers. I understand that this risk will be mitigated by the corresponding researcher who will request the participants to sit as far away from each other as possible. I also understand I am personally responsible as well to sit as far away as possible from the other people in the room. **(Risk 5)** I understand that the personal demographic data (including the last three digits of my phone number) will be collected on paper before the physical game session starts and will be kept safe with the corresponding researcher. I understand that there is a risk this paper might get lost in the process. I understand this risk will be mitigated by the researcher who will convert the written answers to an excel file in a protected document in the TU Delft Project Storage Drive immediately after the game session has ended. Hereafter, the papers will be immediately destroyed.	☐	☐
9. I understand that taking part in the study also involves collecting specific personally identifiable information (PII) and associated personally identifiable research data (PIRD) such as my age, nationality,	☐	☐

PLEASE TICK THE APPROPRIATE BOXES	Yes	No
educational degree, faculty of current study, gender, sexual orientation, and membership of a student association (no names of this association will be asked) with the potential risk of my identity being revealed.		
10. I understand that some of this PIRD is considered as sensitive data within GDPR legislation, specifically: age, nationality, educational degree, faculty of current study, gender, sexual orientation and membership of a student association.	☐	☐
11. I understand that the following steps will be taken to minimise the threat of a data breach and will protect my identity in the event of such a breach: **(STEP 1**) To ensure anonymity and protect participants from identification in the survey platform Qualtrics only the last three digits of the phone number will be asked in the offline demographic questionnaire and online pre- and post- surveys. **(STEP 2)** It is not allowed to store personal demographic identifiable data in Qualtrics, due to privacy issues. Therefore, personal data in the demographic questionnaire will be asked by written hand before the physical game session starts. The personal sensitive data will be stored in a separate place than the survey questions, which limits the risk of connecting the online survey answers with the personal data by someone else than the corresponding researcher. Personal data will be stored in the TU Delft Project Storage Drive and will be deleted immediately after this master thesis research has ended. **(STEP 3)** Furthermore, I understand that the last three digits of the phone number will be used to connect the pre-/post-survey with the personal data. This connection will be made in a .csv file in a python program that will be saved in the TU Delft Project Storage Drive. These three digits will not be made public. Only the aggregated data from statistical analysis will be publicised in the final thesis report. **(STEP 4)** Lastly, I understand that the observational notes made during the gaming session are completely anonymous and will be used to gain insight into the results of the experiments and will be used for the master thesis report that will be made public.	☐	☐
12. I understand that personal information collected about me that can identify me such as age, nationality, educational degree, faculty of current study, gender, sexual orientation and membership of a student association, will not be shared beyond the research team.	☐	☐
13. I understand that the (identifiable) personal data I provide will be destroyed after completion of this Master thesis.	☐	☐
C: RESEARCH PUBLICATION, DISSEMINATION AND APPLICATION		
14. I understand that after the research study the de-identified information I provide will be used for the master thesis report, which will be made public in the TU Delft Repository.	☐	☐
15. I agree that my responses during the gaming session, or other input, can be quoted anonymously in the master thesis report.	☐	☐
D: (LONGTERM) DATA STORAGE, ACCESS AND REUSE		
16. I give permission for the de-identified online survey questions and personal data that I provide to be used anonymously as statistical summary in the master thesis report and will be archived in the TU Delft Repository so it can be used for future research and learning.	☐	☐
17. I understand that access to the TU Delft repository is open to everyone.	☐	☐

Signatures

_____   _____ _____
Name of participant [printed]   Signature   Date

I, as researcher, have accurately read out the information sheet to the potential participant and to the best of my ability, ensured that the participant understands to what they are freely consenting.

_____   _____   _____
Researcher name [printed]   Signature   Date

Study contact details for further information: Francien Baijanova (f.o.m.baijanova@student.tudelft.nl)

Appendix G: Review of Educational Games

G.1. Systematic Search

A systematic literature review has been conducted to find all serious games that are used as an educational tool to discuss sexual violence and gender inequality among young people. The search has been performed on Scopus, Web of Science, Science Direct, and Google Scholar. The search terms included "gender inequality" and all relevant sexual violence terms: "sexual violence" OR "violence against women" OR "unwanted sexual touch*" OR "unwanted sexual act?" OR "unwanted sexual penetration" OR "unwanted sexual grop*" OR "rape" OR "raping" OR "sexual* transgressive behaviour" OR "gender?based violence" OR "sexual assault" OR "sexual harassment" OR "forced sex" OR "sexual risk behaviour" OR "rape culture". In addition, the terms related to serious games were also included in the search: "serious gam*" OR "gam* simulat*" OR "game?" OR "gaming" OR "educational games" OR "simulation? Of game?". And lastly, all these terms were combined with "intervention" and "education".

The first few attempts of the systematic search were mainly exploratory. The search started on the academic search engines Scopus and Google Scholar. The articles found were first examined and was followed by a more specific search on all the search engines. An initial review of the articles based on the abstract and the title resulted in 44 articles. These articles were then systematically reviewed and selected based on four inclusion criteria: 1) the main-focus of the article is the serious game, which 2) is used as an educational tool to 3) address sexual violence or gender inequality among 4) young people between 16 and 25 years old. The last selection criteria involved the inclusion of only Dutch or English papers, and the evaluation of the respective serious games. The analyses resulted in eight articles that met the criteria. The articles were then read more in detail. One article was finally excluded after playing the game online, concluding that it was focussed on domestic violence and the impact it has on children. The final seven articles are presented in Table 1.

G.2. Review of Serious Games Addressing Sexual Violence

This section reflects on the serious games that were found to address sexual violence among young people, and that are represented in Table 1. Three main objectives of the serious game could be identified: changing attitudes and behaviour, increasing knowledge and communication, and increasing awareness. The serious games have been grouped in respective order accordingly. Topics discussed range from sexual consent to stalking to dating and sexual violence.

The online serious games 'What It Is' and 'Lucidity' focus on increasing knowledge and communication among young people. 'What it is' is a can be played online or on your phone and focusses on young people who have experienced sexual assault or have a high risk of experiencing it. The game is a digital quiz game that challenges sexual violence against the youth and aims to inform the youth and raise discussions about sexual violence. While the game is focussed on such a big age group, three in four of the participants indicated that the game was targeted to the ages of 12 and 14. In addition, most respondents indicated that the game is effective in raising discussions and can be used by all genders (Dagnino & Gunraj, 2012). 'Lucidity' is a multimedia game in which players walk through a non-linear narrative of an African American woman that deals with sexual assault in the past. The players discover parts of her story by reading comic books, watching videos, scrolling though websites and playing small video games. The game has shown to be effective in

engaging young people on the topics of sexual violence and facilitating a discussion between them and adults (Gilliam et al., 2016).

The serious games 'Campus Craft' and 'Decisions that matter' are both digital games that aim to reduce antisocial to improve healthy behaviour among students. In both games the player is a student that walks through different scenarios in which they can choose how to respond to their environment. In 'Campus Craft' the player is a visible avatar that has the freedom to interact with other students on the campus, teaching the player what the benefits are of engaging in healthy behaviour. The game has shown an increase in learning core concepts related to sexual consent and rape culture. Together with other interventions 'Campus Craft' may be effective in addressing sexual assault on campus (Jozkowski & Ekbia 2015). 'Decisions that matter' is more deterministic, meaning that there is limited choice in with what you do or who you talk with. Thereby, players do not receive feedback of their choices. However, despite these limitations 'Decision that Matter' has shown a temporary reduction rape myth acceptance (Gordon, 2018).

The online serious games that focus on increasing awareness are 'Green Acres High', 'Can you fix it?', 'Mind-Flock' and 'Ship Happens'. 'Green Acres High' consists of five computer-mediate lessons that focus each on different learning aspects of dating violence and was developed as an educational tool in high school to stimulate healthy relationships. The game succeeded in improving the understanding in adolescent dating violence. In 'Can you fix it?' players watch short videos that constitute a story-line of sexually transgressive behaviour and can determine through intervention the outcome of the story. The game has shown a positive increase in behavioural intentions and is expected to have an increase in sexual and interaction competence. 'Mind-Flock' and 'Ship Happens' are developed for first year college students and include topics such as bystander intervention, sexual and relationship violence, and stalking. The first is a multi-player trivia that is played by a small group on a table. The players swap categories to other players that they think have more knowledge about the respective categories. Players get points for answering correctly to the questions. 'Ship Happens' is an interactive scenario game, played on the mobile phone, that takes place in the space and follows a college male alien student. By following his student life, players can intervene in situations where the character has a risk of experiencing sexual violence. Both games show a significant impact on participant bystander efficacy and attitude scores. In addition, 'Ship Happens' has shown a positive effect in increasing male attitudes towards bystander intervention.

Table 32 | Serious educational games found about sexual violence and related issues among young people

Source	Name Serious Game	Focus group	Topic	Goal of the Game	Measured Effectivity	Single/ Multi player	Country
(Dagnino & Gunraj, 2012)	"What It Is"	12-25 years	Sexual violence against youth	To make the issue of sexual violence against young women Visible; To raise discussions about sexual violence	Excellent tool for education and has the potential to prevent and intervene in situations of sexual violence	Single	Canada
(Gilliam et al., 2016)	Lucidity	14-18 years	Sexual violence	To promote learning and communication about sexual violence and health topics.	Succeeded in engaging young people and facilitating communication with adults and peers regarding sexual violence and other sexual health topics.	Single	The United States of America
(Gordon, 2018)	Decisions that Matter	Students	Sexual violence and rape culture on campus	To reduce antisocial attitudes about sexual violence	Temporary reduction in rape myth acceptance	Single	The United States of America
(Jozkowski & Ekbia, 2015)	Campus Craft	Students	Sexual Assault, consent negotiation, condom use, sexually transmitted infection	To change attitudes, norms, and control factors to increase positive health behaviours	Increased learning in core concepts related to sexual consent and rape culture	Single	The United States of America
(Bowen et al., 2014)	Green Acres High	Adole-scents	Adolescent Dating Violence (ADV)	To raise awareness and change attitudes towards ADV	Positive learning experience: improved understanding of ADV	Single	England, Sweden, Germany, Belgium
(Cense & van Engelen, 2015)	Can you fix it	12-18 years	Sexually transgressive behaviour	To Increase awareness in sexually transgressive behaviour; To practice setting sexual boundaries	Increase in sexual and interaction competence, which contribute to positive sexual health outcomes	Single	The Netherlands
(Potter et al., 2019)	Mind-flock (trivia) Ship Happens (interactive scenario game)	College first-year students	Bystander intervention, sexual and relationship violence, stalking	To increase their awareness of sexual and relationship violence and stalking; To introduce active bystander skills.	Both games have a significant impact on participant bystander efficacy and attitude scores. Ship Happens is effective in increasing male attitudes towards bystander intervention	Multi (2 or 3) Single	The United States of America

Appendix H: Results

H.1. Effect of Game Design on Dependent Variables

H.1.1. Homogeneity of Variance

The dependent variables were first tested on their homogeneity of variance before inferential data analyses was performed. To determine which test for the variance would be used, the normal distribution of the variables have been explored with the Shapiro-Wilk test. Each found construct in *4.3.3 Materials 2:* Pilot-test of Scales is a variable that is used for data analysis. The results of the Shapiro-Wilk test for each construct and group sample are shown in Table 34. If the p-value is ≤ .05, the null hypothesis can be rejected, meaning that it can be assumed that the distribution of the variable is not normal. If the p-value > .05, the null hypothesis cannot be rejected, meaning that the distribution of the variable is normal.

Table 34 shows that all but one variable is non-significant. The significant variable is indicated with an asterisk. Therefore, based on Table 34 it was determined to perform the Levene's Test, to test the data on the homogeneity of variance. The levene's test is a commonly used test for non-normal distributed data. For each variable the pre- and post-survey of both the experimental and control group are tested together to determine whether the groups have equal variances. The results of the Levene's test for each construct are shown in Table 33. If the p-value is ≤ .05, the null hypothesis can be rejected, meaning that there is sufficient evidence to conclude that the variances between the datasets are different. If the p-value > .05, the null hypothesis cannot be rejected, meaning that there is not enough evidence to conclude that the variance between the groups is different and thus the groups have equal variances. If the latter is true, parametric tests can be performed on the datasets.

Table 33 shows that the Levene's test resulted in a p-value > .05 for all variables. This means that all groups of the variables have a homogeneity of variance, meaning that parametric tests can be conducted on all these datasets.

Table 33 | Results of the Levene's Test

Survey	Variable	Levene's Test: p-value
WIS	Willingness to Intervene	$p = .999$
BAS	No Awareness	$p = .538$
	Taking Responsibility	$p = .317$
SVMAS	FACT1	$p = .361$
	FACT2	$p = .531$
	FACT3	$p = .759$

Note. WIS = Willingness to Intervene Scale; BAS = Bystander Attitudes Scale; = SVMAS = Sexual Violence Myth Acceptance Scale; Variable = construct of survey; p = p-value.

Table 34 | Results of Shapiro-Wilk Test

Survey	Variable	Group (EG or CG)	Pre-, Post - or Follow-Up Survey	Shapiro-Wilk Test: p-value
WIS	Willingness to Intervene	Experimental Group	Pre	$p = .044$
			Post	$p < .001$
			Follow-Up	$p = .003$
		Control group	Pre	$p = .034$
			Post	$p = .028$
BAS	No Awareness	Experimental Group	Pre	$p = .313*$
			Post	$p = .027$
			Follow-Up	$p = .279*$
		Control group	Pre	$p = .513*$
			Post	$p = .315*$
	Taking responsibility	Experimental Group	Pre	$p = .001$
			Post	$p < .001$
			Follow-Up	$p = .052*$
		Control group	Pre	$p = .044$
			Post	$p = .011$
SVMAS	FACT1	Experimental Group	Pre	$p < .001$
			Post	$p < .001$
			Follow-Up	$p < .001$
		Control group	Pre	$p < .001$
			Post	$p < .001$
	FACT2	Experimental Group	Pre	$p = .002$
			Post	$p = .037$
			Follow-Up	$p = .009$
		Control group	Pre	$p = .075*$
			Post	$p = .140*$
	FACT3	Experimental Group	Pre	$p < .001$
			Post	$p < .001$
			Follow-Up	$p < .001$
		Control group	Pre	$p < .001$
			Post	$p < .001$

Note. An asterisk * indicates that the p-value is > .05, meaning that it is NON-significant; Variable = construct of survey.

H.1.2. Willingness to Intervene

Description of Surveys

Table 35 | Willingness to Intervene – Experimental Group: Description of Pre-, Post- and Follow-Up Survey

	Pre-Survey		Post-Survey		FollowUp-Survey
count	32.00	count	32.00	count	26.00
mean	71.86	mean	77.11	mean	72.79
std	17.88	std	20.58	std	25.24
min	21.60	min	12.40	min	0.00
25%	61.55	25%	70.05	25%	60.60
50%	73.70	50%	81.70	50%	81.70
75%	85.75	75%	91.20	75%	88.95
max	100.00	max	100.00	max	100.00

Table 36 | Willingness to Intervene - Control Group: Description of Pre- and Post- Survey

	Pre-Survey		Post-Survey
count	32.00	count	32.00
mean	73.09	mean	70.56
std	17.68	std	23.02
min	32.00	min	0.00
25%	64.85	25%	56.65
50%	78.00	50%	75.90
75%	85.85	75%	85.45
max	96.40	max	99.00

Note. EG = Experimental Group; CG = Control group; Pre = Pre-Survey; Post = Post- Survey; FollowUp = Follow-up Survey; std = standard deviation; min = minimum; max = maximum.

Paired T-Tests

Table 37 | Willingness to Intervene Scale – Experimental Group: Paired T-Test

	construct	comparison	sigdir	testname	p	stat	Pre_mean1	Post_mean2
0	WIS	EG_pre/post	1	ttest	0.019	-2.464	71.875	77.125
1	WIS	EG_pre/followup	1	ttest	0.447	-0.773	71.800	75.680
2	WIS	EG_post/followup	-1	ttest	0.707	0.380	77.560	75.680

Table 38 | Willingness to Intervene Scale – Control Group: Paired T-Test

	construct	comparison	sigdir	testname	p	stat	Pre_mean1	Post_mean2
0	WIS	CG_pre/post	-1	ttest	0.742	0.332	73.355	72.806

Note. EG = Experimental Group; CG = Control group; Pre = Pre-Survey; Post = Post- Survey; FollowUp = Follow-up Survey; ttest = paired t-test; stat = t-statistics; sigdir = direction of change; p = p-value.

H.1.3. Bystander Attitudes

Description of Surveys

Table 39 | Bystander Attitudes - Experimental Group: Description of Pre- Survey

	EG_Pre: No Awareness	EG_Pre: Taking Responsibility
count	32.00	32.00
mean	2.91	3.48
std	0.80	0.82
min	1.33	1.00
25%	2.33	3.50
50%	3.00	3.50
75%	3.42	4.00
max	4.33	5.00

Table 40 | Bystander Attitudes - Experimental Group: Description of Post- Survey

	EG_Post: No Awareness	EG_Post: Taking Responsibility
count	32.00	32.00
mean	2.30	3.67
std	0.71	0.77
min	1.00	1.50
25%	1.92	3.50
50%	2.00	4.00
75%	3.00	4.00
max	3.33	4.50

Table 41 | Bystander Attitudes - Experimental Group: Description of Follow-Up Survey

	EG_FollowUp: No Awareness	EG_FollowUp: Taking Responsibility
count	26.00	26.00
mean	2.36	3.58
std	0.85	0.70
min	1.00	2.00
25%	2.00	3.00
50%	2.16	3.50
75%	3.00	4.00
max	4.00	5.00

Table 42 | Bystander Attitudes - Control Group: Description of Pre-Survey

	CG_Pre: No Awareness	CG_Pre: Taking Responsibility
count	32.00	32.00
mean	2.86	3.50
std	0.80	0.89
min	1.33	2.00
25%	2.33	3.00
50%	3.00	3.50
75%	3.42	4.00
max	4.67	5.00

Table 43 | Bystander Attitudes - Experimental Group: Description of Pre-Survey

	CG_Post: No Awareness	CG_Post: Taking Responsibility
count	32.00	32.00
mean	3.05	3.42
std	1.03	0.87
min	1.00	1.00
25%	2.25	3.00
50%	3.16	3.50
75%	3.67	4.00
max	6.00	5.00

Note. EG = Experimental Group; CG = Control Group; Pre = Pre-Survey; Post = Post- Survey; FollowUp = Follow-up Survey; std = standard deviation; min = minimum; max = maximum.

Frequency per Construct

Table 44 | Bystander Attitudes - Experimental Group: Frequency per Construct – Pre-Survey

	Strongly Disagree	Disagree	Neutral	Agree
No Awareness	1.0	10.0	13.0	8.0
Taking Responsibility	1.0	3.0	3.0	24.0

Table 45 | Bystander Attitudes - Experimental Group: Frequency per Construct – Post-Survey

	Strongly Disagree	Disagree	Neutral
No Awareness	4.0	15.0	13.0
Taking Responsibility	0.0	4.0	2.0

Table 46 | Bystander Attitudes - Experimental Group: Frequency per Construct – Follow-Up Survey

	Strongly Disagree	Disagree	Neutral	Agree
No Awareness	5.0	10.0	9.0	2.0
Taking Responsibility	0.0	2.0	6.0	17.0

Table 47 | Bystander Attitudes – Control Group: Frequency per Construct – Pre-Survey

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
No Awareness	2.0	9.0	13.0	7.0	1.0
Taking Responsibility	0.0	6.0	8.0	16.0	2.0

Table 48 | Bystander Attitudes - Control: Frequency per Construct – Post-Survey

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	No Answer
No Awareness	2.0	8.0	13.0	7.0	1.0	1.0
Taking Responsibility	1.0	6.0	3.0	21.0	1.0	0.0

Median per Construct

Table 49 | Bystander Attitudes - Median Per Construct per Scale

Construct	EG Pre-Survey	EG Post-Survey	EG FollowUp-Survey	CG Pre-Survey	CG Post-Survey
No Awareness	3.0	2.0	2.165	3.0	3.165
Taking Responsibility	3.5	4.0	3.500	3.5	3.500

Paired T-Tests

Table 50 | Bystander Attitudes – Experimental Group: Paired T-Test

	construct	comparison	sigdir	testname	p	stat	Pre_mean1	Post_mean2
0	No Awareness	EG_pre/post	-1	ttest	0.000	4.777	2.906	2.302
1	Taking Responsibility	EG_pre/post	1	ttest	0.032	-2.252	3.484	3.672
2	No Awareness	EG_pre/followup	-1	ttest	0.003	3.347	2.884	2.358
3	Taking Responsibility	EG_pre/followup	1	ttest	0.685	-0.410	3.519	3.596
4	No Awareness	EG_post/followup	1	ttest	0.187	-1.358	2.205	2.358
5	Taking Responsibility	EG_post/followup	-1	ttest	0.511	0.667	3.692	3.596

Table 51 | Bystander Attitudes – Control Group: Paired T-Test

	construct	comparison	sigdir	testname	p	stat	Pre_mean1	Post_mean2
0	No Awareness	CG_pre/post	1	ttest	0.247	-1.180	2.865	3.052
1	Taking Responsibility	CG_pre/post	-1	ttest	0.633	0.482	3.500	3.422

Note. FACT1 is from Construct 'No Awareness' and FACT2 is from Construct 'Taking Responsibility' from the Survey Bystander Attitudes Scale; EG = Experimental Group; CG = Control group; Pre = Pre-Survey; Post = Post- Survey; FollowUp = Follow-up Survey; ttest = paired t-test; stat = t-statistics; sigdir = direction of change; p = p-value.

H.1.4. Sexual Violence Myth Acceptance

Description of Surveys

Table 52 | SVMAS- Experimental Group: Description of Pre- Survey

	EG_Pre: FACT1	EG_Pre: FACT2	EG_Pre: FACT3
count	32.00	32.00	32.00
mean	1.64	1.88	1.39
std	0.71	0.71	0.58
min	1.00	1.00	1.00
25%	1.00	1.33	1.00
50%	1.50	1.67	1.33
75%	2.00	2.33	1.42
max	3.67	4.33	3.33

Table 54 | SVMAS - Experimental Group: Description of Post- Survey

	EG_Post: FACT1	EG_Post: FACT2	EG_Post: FACT3
count	32.00	32.00	32.00
mean	1.47	2.02	1.42
std	0.56	0.66	0.53
min	1.00	1.00	1.00
25%	1.00	1.67	1.00
50%	1.33	2.00	1.33
75%	1.67	2.33	1.67
max	3.00	3.67	3.00

Table 53 | SVMAS - Experimental Group: Description of Follow-Up Survey

	EG_FollowUp: FACT1	EG_FollowUp: FACT2	EG_FollowUp: FACT3
count	26.00	26.00	26.00
mean	1.53	2.03	1.44
std	0.62	0.85	0.62
min	1.00	1.00	1.00
25%	1.00	1.33	1.00
50%	1.33	2.00	1.16
75%	2.00	2.33	1.67
max	3.00	3.67	3.33

Table 55 | SVMAS - Control Group: Description of Pre- Survey

	CG_Pre: FACT1	CG_Pre: FACT2	CG_Pre: FACT3
count	32.00	32.00	32.00
mean	1.67	2.11	1.33
std	0.85	0.71	0.45
min	1.00	1.00	1.00
25%	1.00	1.58	1.00
50%	1.33	2.16	1.00
75%	2.08	2.67	1.67
max	4.00	3.33	2.67

Table 56 | SVMAS - Control Group: Description of Post- Survey

	CG_Post: FACT1	CG_Post: FACT2	CG_Post: FACT3
count	32.00	32.00	32.00
mean	1.44	2.09	1.27
std	0.67	0.75	0.50
min	1.00	1.00	1.00
25%	1.00	1.67	1.00
50%	1.00	2.00	1.00
75%	1.67	2.67	1.33
max	3.67	4.00	2.67

Note. FACT1, FACT2 and FACT3 are the constructs of Sexual Violence Myth Acceptance Scale (SVMAS); EG = Experimental Group; CG = Control group; Pre = Pre-Survey; Post = Post- Survey; FollowUp = Follow-up Survey; std = standard deviation; min = minimum; max = maximum.

Frequency per Construct

Table 57 | SVMAS - Experimental Group: Frequency per Construct – Post-Survey

	Strongly Disagree	Disagree	Neutral	Agree
FACT1	16.0	13.0	2.0	1.0
FACT2	10.0	17.0	4.0	1.0
FACT3	24.0	6.0	2.0	0.0

Table 58 | SVMAS - Experimental Group: Frequency per Construct – Pre-Survey

	Strongly Disagree	Disagree	Neutral	Agree
FACT1	19.0	10.0	3.0	0.0
FACT2	7.0	19.0	5.0	1.0
FACT3	22.0	8.0	2.0	0.0

Table 59 | SVMAS - Experimental Group: Frequency per Construct – Follow-Up Survey

	Strongly Disagree	Disagree	Neutral	Agree
FACT1	15.0	9.0	2.0	0.0
FACT2	9.0	11.0	3.0	3.0
FACT3	17.0	7.0	2.0	0.0

Table 60 | SVMAS - Control Group: Frequency per Construct – Pre-Survey

	Strongly Disagree	Disagree	Neutral	Agree
FACT1	18.0	7.0	6.0	1.0
FACT2	8.0	13.0	11.0	0.0
FACT3	23.0	8.0	1.0	0.0

Note. FACT1, FACT2 and FACT3 are the constructs of Sexual Violence Myth Acceptance Scale (SVMAS).

Table 61 | SVMAS - Control Group: Frequency per Construct – Post-Survey

	Strongly Disagree	Disagree	Neutral	Agree
FACT1	22.0	7.0	2.0	1.0
FACT2	6.0	17.0	8.0	1.0
FACT3	26.0	4.0	2.0	0.0

Median per Construct

Table 62 | SVMAS: Median per Construct per Scale

construct	EG Pre-Survey	EG Post-Survey	EG FollowUp-Survey	CG Pre-Survey	CG Post-Survey
FACT1	1.5	1.0	1.0	1.0	1.0
FACT2	2.0	2.0	2.0	2.0	2.0
FACT3	1.0	1.0	1.0	1.0	1.0

Note. FACT1, FACT2 and FACT3 are the constructs of Sexual Violence Myth Acceptance Scale (SVMAS); EG = Experimental Group; CG = Control group; Pre = Pre-Survey; Post = Post- Survey; FollowUp = Follow-up Survey.

Paired T-Tests

Table 63 | SVMAS – Experimental Group: Paired T-Test

	construct	comparison	sigdir	testname	p	stat	Pre_mean1	Post_mean2
0	FACT1	EG_pre/post	-1	ttest	0.034	2.220	1.635	1.469
1	FACT2	EG_pre/post	1	ttest	0.090	-1.752	1.875	2.021
2	FACT3	EG_pre/post	1	ttest	0.797	-0.259	1.395	1.416
3	FACT1	EG_pre/followup	-1	ttest	0.885	0.146	1.538	1.525
4	FACT2	EG_pre/followup	1	ttest	0.148	-1.491	1.846	2.025
5	FACT3	EG_pre/followup	1	ttest	0.718	-0.365	1.410	1.436
6	FACT1	EG_post/followup	1	ttest	0.186	-1.360	1.436	1.525
7	FACT2	EG_post/followup	1	ttest	0.832	-0.214	2.000	2.025
8	FACT3	EG_post/followup	1	ttest	0.637	-0.478	1.397	1.436

Table 64 | SVMAS – Control Group: Paired T-Test

	construct	comparison	sigdir	testname	p	stat	Pre_mean1	Post_mean2
0	FACT1	CG_pre/post	-1	ttest	0.006	2.919	1.667	1.438
1	FACT2	CG_pre/post	-1	ttest	0.850	0.190	2.114	2.094
2	FACT3	CG_pre/post	-1	ttest	0.161	1.435	1.333	1.271

Note. FACT1, FACT2 and FACT3 are the constructs of Sexual Violence Myth Acceptance Scale (SVMAS); EG = Experimental Group; CG = Control group; Pre = Pre-Survey; Post = Post- Survey; FollowUp = Follow-up Survey; ttest = paired t-test; stat = t-statistics; sigdir = direction of change; p = p-value.

H.1.5. Overview p-values of Variables

Table 65 | Overview p-values of paired t-test for all variables and groups

Survey	Variable	Comparison	Experimental Group	Control Group
Willingness to Intervene Scale (WIS)	Willingness to Intervene	Pre and Post	$p =.019*$	$p =.742$
		Pre and Follow-Up	$p =.447$	
		Post and Follow-Up	$p =.707$	
Bystander Attitudes Scale (BAS)	No Awareness	Pre and Post	$p <.001***$	$p =.247$
		Pre and Follow-Up	$p =.003**$	
		Post and Follow-Up	$p =.187$	
	Taking Responsibility	Pre and Post	$p =.032*$	$p =.634$
		Pre and Follow-Up	$p =.685$	
		Post and Follow-Up	$p =.511$	
Sexual Violence Myth Acceptance Scale (SVMAS)	FACT1	Pre and Post	$p =.034*$	$p =.006**$
		Pre and Follow-Up	$p =.885$	
		Post and Follow-Up	$p =.186$	
	FACT2	Pre and Post	$p =.090$	$p =.850$
		Pre and Follow-Up	$p =.148$	
		Post and Follow-Up	$p =.832$	
	FACT3	Pre and Post	$p =.797$	$p =.423$
		Pre and Follow-Up	$p =.718$	
		Posts and Follow-Up	$p =.637$	

Note. An asterisk * indicates that the p-value is ≤ .05, meaning that it is significant; The number of asterisks indicated represents the significance level; p = p-value; Variable = construct of survey.

H.2. Effect of Game Design on Intergroup Dialogue

Description of Surveys

Table 66 | Communication Process Scale: Description of Post- Survey

	Alliance Building	Engaging Self	Critical Self-Reflection	Appreciating Difference
count	32.00	32.00	32.00	32.00
mean	4.04	4.19	3.98	4.42
std	0.44	0.46	0.61	0.54
min	3.00	3.17	2.50	3.33
25%	3.82	3.96	3.50	4.00
50%	4.00	4.17	4.00	4.67
75%	4.18	4.50	4.50	5.00
max	5.00	5.00	5.00	5.00

Note. std = standard deviation; min = minimum; max = maximum.

Frequency per Construct

Table 67 | Communication Process: Frequency per Construct

	Disagree	Neutral	Agree	Strongly Agree
Alliance Building	0.0	3.0	24.0	5.0
Engaging Self	0.0	2.0	25.0	5.0
Critical Self-Reflection	1.0	6.0	21.0	4.0
Appreciating Difference	0.0	3.0	12.0	17.0

Median per Construct

Table 68 | Communication Process: Median per Construct

Construct	EG Post-Survey
Alliance Building	4.0
Engaging Self	4.0
Critical Self-Reflection	4.0
Appreciating Difference	5.0

H.3. Effect of Intergroup Dialogue on Dependent Variables

H.3.1. Homogeneity of Variance

To understand the effect of the intergroup dialogue on the dependent variables, a correlation test between the four constructs of the Communication Process Scale (CPS) and the mean construct difference of the dependent variables of the experimental group was conducted, based on participants unique Code. Before performing either the parametric test Pearson's r would be conducted or the non-parametric test Spearman's r, the homogeneity of variance needed to be determined between the variables of CPS and the dependent variables. As the data sets of the dependent variables were found in H.1.1. Homogeneity of Variance to be non-normally distributed, the Levene's test was chosen again to test the variables of CPS with the variables of the dependent variables for the variance. The results of the Levene's test are shown in Table 69. Out of the 24 results, 12 results show a p-value below .05 (see orange blocks in Table 69), meaning that the null hypothesis can be rejected, and therefore that the variances between the two variables are not equal. As half of the results reject the null hypothesis and half doesn't, a choice can be made for a statistical test. Because of the greater statistical power of parametric tests, there is preference for the Pearson's r test over the Spearman's r test. Therefore, the Pearson's r test has been chosen to perform the correlation test between the variables of CPS and the dependent variables.

Table 69 | Results Levene's Test for Communication Process Scale and the Dependent Variables

Survey	Variable	Alliance Building	Engaging Self	Critical Self-Reflection	Appreciating Difference
WIS	Willingness to Intervene	$p < .001$***	$p < .001$***	$p < .001$***	$p < .001$***
BAS	No Awareness	$p < .001$**	$p < .001$***	$p = .030$*	$p = .515$
	Taking Responsibility	$p = .055$	$p = .030$*	$p = .346$	$p = .774$
SVMAS	FACT1	$p = .016$*	$p = .007$**	$p = .227$	$p = .835$
	FACT2	$p = .045$*	$p = .022$*	$p = .361$	$p = .681$
	FACT3	$p = .266$	$p = .156$	$p = .996$	$p = .191$

Note. An asterisk * indicates that the p-value is ≤ .05, meaning that it is significant; The number of asterisks indicated represents the significance level; p = p-value; WIS = Willingness to Intervene Scale; BAS = Bystander Attitudes Scale; = SVMAS = Sexual Violence Myth Acceptance Scale; Variable = construct of survey.

The Pearson correlation coefficient was computed to assess the relationship between the constructs "Alliance Building", "Engaging Self", "Critical Self- Reflection", "Appreciating Difference" of the Communication Process Scale (CPS) and the dependent variables of Willingness to Intervene Scale (WIS), Bystander Attitudes Scale (BAS), and Sexual Violence Myth Acceptance Scale (SVMAS) of the experimental group. The difference was first pair-wise calculated between the pre-and post-surveys of the dependent variables and were then tested for correlation with the variables of CPS. The Pearson's r test reports the strength and direction of the relationship between two variables in the form of a correlation coefficient by taking on a value between -1 and +1. A value between .90 to 1.00 (or -0.90 to -1.00) indicates a very high positive (negative) correlation. A value between .70 to .90 (or -0.70 to -0.90) indicates a high positive (negative) correlation, a value between .50 to .70 (or -0.50 to -0.70) indicates a moderative correlation, a value between .30 to .50 (or -0.30 to -0.50) indicates a low correlation, and a value between .00 to .30 (or .00 to -0.30) indicates a negligible correlation. Next, to the correlation coefficient, the p-values of the Pearson's r test are reported to disclose whether the relationship between the two variables is significant.

H.3.2. Pearson's standard correlation coefficient

Table 70 | Correlation Matrix of WIS and CPS

	Alliance Building	Engaging Self	Critical Self-Reflection	Appreciating Difference
WIS_EG_Diff	0.008	0.128	0.255	-0.13

Table 71 | Correlation Matrix of BAS and CPS

	Alliance Building	Engaging Self	Critical Self-Reflection	Appreciating Difference
BAS Diff No Awareness	-0.250	-0.147	-0.369	-0.012
BAS Diff Taking Responsibility	0.153	0.212	-0.078	0.090

Table 72 | Correlation Matrix of SVMAS and CPS

	Alliance Building	Engaging Self	Critical Self-Reflection	Appreciating Difference
SVMAS Diff FACT1	-0.102	0.355	-0.037	-0.189
SVMAS Diff FACT2	-0.267	-0.114	-0.008	0.064
SVMAS Diff FACT3	-0.053	-0.010	0.045	0.003

Note. Diff = difference between scores of pre-and post-survey; WIS = Willingness to Intervene Scale; BAS = Bystander Attitudes Scale; = SVMAS = Sexual Violence Myth Acceptance Scale; CPS= Communication Process Scale.

H.3.3. Correlation p-values

Table 73 | P-values of Correlation for WIS and CPS

	Alliance Building	Engaging Self	Critical Self-Reflection	Appreciating Difference
WIS_EG_Diff	0.966	0.485	0.158	0.478

Table 75 | P-values of Correlation for BAS and CPS

	Alliance Building	Engaging Self	Critical Self-Reflection	Appreciating Difference
BAS Diff No Awareness	0.168	0.422	0.037	0.946
BAS Diff Taking Responsibility	0.404	0.245	0.672	0.626

Table 74 | P-values of Correlation for SVMAS and CPS

	Alliance Building	Engaging Self	Critical Self-Reflection	Appreciating Difference
SVMAS Diff FACT1	0.577	0.046	0.839	0.300
SVMAS Diff FACT2	0.140	0.533	0.965	0.729
SVMAS Diff FACT3	0.774	0.959	0.808	0.985

Note. Diff = difference between scores of pre-and post-survey; EG = Experimental Group; WIS = Willingness to Intervene Scale; BAS = Bystander Attitudes Scale; SVMAS = Sexual Violence Myth Acceptance Scale; CPS= Communication Process Scale.

Table 76 | Overview p-values of Correlation for all Variables of the Experimental Group

Survey	Variable	Alliance Building	Engaging Self	Critical Self-Reflection	Appreciating Difference
WIS_EG_Diff	WIS	$p = .966$	$p = .485$	$p = .158$	$p = .478$
BAS Diff	No Awareness	$p = .168$	$p = .422$	$p = .037^*$	$p = .946$
	Taking Responsibility	$p = .401$	$p = .246$	$p = .652$	$p = .624$
SVMAS Diff	FACT1	$p = .577$	$p = .046^*$	$p = .839$	$p = .300$
	FACT2	$p = .140$	$p = .533$	$p = .965$	$p = .729$
	FACT3	$p = .771$	$p = .761$	$p = .790$	$p = .895$

Note. An asterisk * indicates that the p-value is ≤ .05, meaning that it is significant; The number of asterisks indicated represents the significance level; p = p-value; WIS = Willingness to Intervene Scale; BAS = Bystander Attitudes Scale; SVMAS = Sexual Violence Myth Acceptance Scale; Diff = difference between scores of pre-and post-survey; Variable = construct of survey.

H.4. Demographics Results

Table 77 | Results of Demographics Participants - Faculty

Faculty	EG	CG	Total
Technology, Policy and Management (TPM)	**6**	**17**	**23**
Electrical Engineering, Mathematics & Computer Science (EEMCS)	**6**	**3**	**9**
Civil Engineering and Geosciences (CEG)	**4**	**4**	**8**
Applied Sciences (AS)	**7**	**1**	**8**
Aerospace Engineering (AE)	**4**	**2**	**6**
Industrial Engineering (IDE)	**2**	**4**	**6**
Mechanical, Maritime and Materials Engineering (3mE)	**3**	**-**	**3**
Other	**-**	**1**	**1**

Note. EG = Experimental Group; CG = Control Group.

Table 78 | Results of Demographics Participants - Education

Education	EG	CG	Total
Masters	26	26	52
Bachelors	5	4	9
PhD	1	2	3

Note. EG = Experimental Group; CG = Control Group.