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MORALITY IN CONTEXT: DO ADOLESCENTS' PROSOCIAL BYSTANDER JUDGMENTS AND
RESPONSES VARY DEPENDING ON REALITY AND GROUP MEMBERSHIP CONTEXTS?

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MORALITY IN CONTEXT: DO ADOLESCENTS' PROSOCIAL BYSTANDER JUDGMENTS AND RESPONSES VARY DEPENDING ON REALITY AND GROUP MEMBERSHIP CONTEXTS?

A Master's Thesis

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Ankara
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To all the people with good hearts



MORALITY IN CONTEXT: DO ADOLESCENTS' PROSOCIAL BYSTANDER
JUDGMENTS AND RESPONSES VARY DEPENDING ON REALITY AND
GROUP MEMBERSHIP CONTEXTS?

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By Yağmur Censur

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ABSTRACT

MORALITY IN CONTEXT: DO ADOLESCENTS' PROSOCIAL BYSTANDER JUDGMENTS AND RESPONSES VARY DEPENDING ON REALITY AND GROUP MEMBERSHIP CONTEXTS?

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Various social-cognitive and contextual correlates of bystander judgments and responses were studied in bullying literature. However, our knowledge is still limited in understanding how the interaction between reality context and group membership might shape bystander judgments, responses, and likelihood of future helping behavior in bullying contexts. This study focused on this gap by employing a between-subject design in which group membership and reality context varied depending on the context condition. In the ingroup conditions, participants read a repetitive bullying scenario in which an ingroup member was excluded and teased by ingroup peers for being perceived as boring either in a real-life or VR environment. In outgroup conditions, participants read the same scenario for an outgroup member who was excluded and teased by ingroup peers for being a foreigner either in a real-life or VR environment. In the end, adolescents showed more prosocial

bystander judgments, responses, and likelihood of future helping behavior in VR contexts compared to real-life contexts. Moreover, results documented that group membership processes might be perceived differently in VR and real-life contexts. More specifically, adolescents showed more prosocial bystander judgments, responses, and likelihood of future helping behavior towards outgroup members over ingroup members in VR contexts. Adolescents also demonstrated more prosocial bystander judgments and responses when they observed the repetitiveness of bullying. Socio-cognitive factors (ToM, empathy, rejection sensitivity) and contextual factors (dehumanization) were important predictors of the relationship between bystander responses to bullying. Overall, our findings provide implications for the importance of understanding the interaction between group membership and reality contexts by adopting more technology-based methodologies.

Keywords: Bystander Judgments and Responses, Group Membership, Social Exclusion, Teasing, Virtual Reality

ÖZET

BAĞLAMDA AHLAK: GENÇLERİN PROSOSYAL SEYİRCİ YARGILARI VE DAVRANIŞLARI GERÇEKLIK VE GRUP ÜYELİĞİ BAĞLAMLARINA GÖRE DEĞİŞİR Mİ?

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Zorbalık literatüründeki çalışmalar çeşitli sosyal-bilişsel ve bağlamsal faktörlerin seyirci yargı ve davranışları üzerindeki etkisini araştırmıştır. Ancak zorbalık bağlamlarında, gerçeklik bağlamı ile grup üyeliği bağlamı arasındaki etkileşimin seyirci yargılarını, davranışlarını ve gelecekteki yardım etme olasılıklarını nasıl şekillendirebileceği konusunda bilginiz sınırlıdır. Bu nedenle, bu konu hakkında daha fazla bilgi sahibi olabilmek adına, mevcut çalışmada grup üyeliği ve gerçeklik bağlamının denekler arası değiştiği bir desen kullanılmıştır. İç grup üyeliği koşullarında, katılımcılar bir iç grup üyesinin sıkıcı olarak algılandığı için gerçek hayatta veya sanal gerçeklik bağlamında başka bir iç grup üyesi tarafından dışlandığı ve alay edildiği bir tekrarlayan zorbalık senaryosu okumuştur. Dış grup üyeliği koşullarında, katılımcılar aynı zorbalık senaryosunun bir dış grup üyesinin yabancı olduğu

iin gerek hayatta veya sanal gereklik baėlamında baėka bir i grup yesi tarafından dıėlandığı ve alay edildiėi versiyonunu okumuėtur. alıėmanın sonunda genler gereklik baėlamına kıyasla sanal gereklik baėlamında daha prososyal seyirci yargıları, tepkileri ve gelecekte yardım etme olasılığı gstermiėtir. Aynı zamanda sonular grup yeliėinin sanal gereklik ve gereklik baėlamlarında farklı algılanabileceėini gstermiėtir. zellikle, genlerin sanal gereklik baėlamlarında i grup yelerine kıyasla dıė grup yelerine daha prososyal seyirci yargıları, tepkileri ve gelecekte yardım etme olasılığı gsterdiėi ortaya konmuėtur. Bunun yanı sıra, genler zorbalığın tekrarladığını grdėėi zaman daha prososyal seyirci yargıları ve davranıėları gstermiėtir. Sosyal-biliėsel (zihin kuramı, empati, reddedilme hassasiyeti) ve baėlamsal (ve gayriinsanileėtirme) faktrlerin zorbalık karėısındaki seyirci tepkilerinin nemli yordayıcıları olduėu gsterilmiėtir. Genel olarak, daha fazla alıėmanın teknoloji bazlı metodolojiler kullanarak grup yeliėi ve gereklik baėamları arasındaki etkileėimi incelemesi gerekmektedir.

Anahtar Kelimeler: Alay, Grup yeliėi, Sanal Gereklik, Sosyal Dıėlama, Tanık Yargıları ve Tepkileri

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TABLE OF CONTENTS

ABSTRACT	i
ÖZET	iii
ACKNOWLEDGMENTS	v
TABLE OF CONTENTS	vi
LIST OF TABLES	x
 CHAPTER I: INTRODUCTION	 1
1.1. Bystander Responses and Judgments	2
1.2. The Role of Reality Context in Bystander Responses and Judgments to Bullying	5
1.2.1 Comparison of virtual reality and real-life contexts	7
1.2.2 Comparison of fantastical and real-life contexts	11
1.3 The Role of Group Membership in Bystander Responses and Judgments to Bullying	15
1.4 The Interaction between the Reality Context and Group Membership in Bystander Responses and Judgments to Bullying	22
1.5 Repetitive Nature of Bullying	23
1.6 Potential Social-cognitive and Contextual Correlates of Bystander Responses and Judgments	24
1.6.1 Empathy	24
1.6.2 Theory of Mind (ToM)	25
1.6.3 Rejection Sensitivity	26
1.6.4 Dehumanization	27
1.7 Present Study	28
CHAPTER II: METHOD	34

2.1 Participants	34
2.2 Design	35
2.3 Procedure	35
2.4 Materials	36
2.4.1 Demographic Information Questionnaire	36
2.4.2 Hypothetical Scenarios.....	36
2.4.2.1 Virtual Reality Conditions Introductions.....	36
2.4.2.2 Real-Life Conditions Introduction	40
2.4.3 Hypothetical Scenarios of Two Bullying Cases	41
2.4.3.1 Social Exclusion as the Initial Bullying	42
2.4.3.2 Verbal Teasing as the Following Bullying Case	44
2.5 Outcome Measures	45
2.5.1 Acceptability Judgments.....	45
2.5.2 Bystander Responses	45
2.5.3 Evaluations of the Challenger Act	47
2.5.4 Perceived Support for Challenging Behavior.....	47
2.5.5 Likelihood of Future Helping.....	48
2.5.6 Self-efficacy.....	49
2.5.7 Forgiveness.....	49
2.6 Correlates	49
2.6.1 Empathy	49
2.6.2 Theory of Mind	50
2.6.3 Rejection Sensitivity	50
2.6.4 Dehumanization	51
2.7 Control Variables	52
2.7.1 Self-efficacy for Virtual Environment.....	52
2.7.2 Perceived Liking of Virtual Environment.....	53
CHAPTER III: RESULTS	54
3.1 Preliminary Results.....	54
3.1.1 Condition-based Differences in Covariates	54
3.1.1.1 Demographic Factors.....	54
3.1.1.2 Socio-cognitive Abilities.....	55

3.1.1.3 Virtual Reality Context Control Variables	56
3.1.2 Analysis Regarding the Missing Data	56
3.1.3 Correlations	57
3.1.3.1 Correlations for the Social Exclusion Scenario.....	57
3.1.3.2 Correlations for the Teasing Scenario	60
3.2 Main Analysis	62
3.2.1 Condition-based differences	62
3.2.1.1 Acceptability Judgments.....	62
3.2.1.2 Bystander Responses	63
3.2.1.3 Challenger Evaluation	68
3.2.1.4 Perceived Support.....	69
3.2.1.5 Likelihood of Future Helping Behavior	70
3.2.1.6 Self-efficacy.....	71
3.2.1.7 Forgiveness.....	71
3.2.2 Predictors of Bystander Responses and Judgments	72
3.2.2.1 Bystander Responses for Social Exclusion	72
3.2.2.2 Bystander Responses for Teasing	74
CHAPTER IV: DISCUSSION	77
4.1 Age and Gender-related Demographic Factors	78
4.2 Acceptability Judgments	79
4.3 Bystander Responses.....	80
4.4 Repetitive Nature of Bullying	83
4.5 Challenger Evaluation.....	86
4.6 Perceived Support	87
4.7 Helping Behavior	88
4.8 Self-efficacy	90
4.9 Forgiveness	91
4.10 Social-cognitive and Contextual Correlates of Bystander Responses	91
4.10.1 Empathy	91
4.10.2 Theory of Mind	92
4.10.3 Rejection Sensitivity	92

4.10.4 Dehumanization	94
4.11 Limitations and Future Directions	95
4.12 Conclusion and Implications	99
REFERENCES	104
APPENDICES.....	115
APPENDIX A: TABLES	115
APPENDIX B: VR INTRO	121
APPENDIX C: VIRTUAL UNIVERSE SELECTION	122
APPENDIX D: SCHOOL PHOTOS.....	123
APPENDIX E: CLASS SELECTION	124
APPENDIX F: ROBOT SELECTION	125
APPENDIX G: HYPOTHETICAL SCENARIO FOR VRO CONDITION ...	126
APPENDIX H: DEHUMANIZATION SCALE	138
APPENDIX I: SELF-EFFICACY FOR VIRTUAL ENVIRONMENT.....	139
APPENDIX J: PERCEIVED LIKING OF VIRTUAL ENVIRONMENT	140
APPENDIX K: EMPATHY SCALE	141
APPENDIX L: REJECTION SENSITIVITY QUESTIONS	142
APPENDIX M: THEORY OF MIND.....	146
APPENDIX N: CONTROL QUESTIONS FOR VR CONDITIONS	147

LIST OF TABLES

Table 1: Descriptive Statistics by Condition for the Social Exclusion Incident.....	115
Table 2: Descriptive Statistics by Condition for the Teasing Incident.....	116
Table 3: Hierarchical Regression Analyses for Variables Predicting Social Exclusion Bystander Responses in Different Group Membership and Reality Contexts.....	117
Table 4: Hierarchical Regression Analyses for Variables Predicting Teasing Bystander Responses in Different Group Membership and Reality Contexts.....	119

CHAPTER I

INTRODUCTION

Bullying can be defined as an intentional and repetitive act of aggression where there is a real or perceived power imbalance between children and adolescents (Espelage et al., 2010; Olweus, 2010). Bullying can be in different forms (e.g., verbal, relational, physical, and social exclusion). Based on established literature bullying is a critical problem all around the world which affects children and adolescents of all ages (Walton, 2005). For instance, according to the Organization for Economic Co-operation and Development (OECD) on average 20.5% of adolescents worldwide report being subjected to bullying more than once in a month (OECD, 2022). Bullying is also a critical problem in Türkiye. According to the Türkiye Child Survey conducted by The United Nations Children's Fund, 13.8% of Turkish children between the ages of 6-17 reported that they are being bullied by their peers at least once a month and they can experience multiple forms of bullying including social exclusion, teasing and physical abuse (UNICEF, 2023).

Alongside its high prevalence, bullying also has severe outcomes ranging from the mental well-being of children and adolescents to economic costs to society. For example, children and adolescents who experience bullying are more likely to suffer from psychological (e.g., depression, anxiety; suicidal ideation) and physical issues (e.g., headaches, sleep problems) (Smith, 2016). Similarly, bullying has negative effects on children's and adolescents' social and academic life such as low self-esteem, negative self-image, negative perceptions towards school, low academic performance, and lower school connectedness (Smokowski & Evans, 2019). Furthermore, not only the victims but also the bullies, bully/victims, and bystanders face harsh negative outcomes like depression and conduct disorders, lower academic and later life success, receiving more criminal charges, and demonstrating marital aggression later in life (Smokowski & Kopasz, 2005; Stuart & Jose, 2014). In addition, research shows that bullying is associated with many economic costs for different institutions such as economic costs for schools (e.g., administrative work for dealing with bullying, school absenteeism), health care system (e.g., self-harm, bullying injuries, mental health treatments), and justice system (e.g., substance use, criminal activities) (Jadambaa et al., 2021). These show that bullying is a crucial topic that needs to be addressed so that tailored intervention programs can be designed to reduce instances of bullying.

1.1. Bystander Responses and Judgments

One potential actor that can help to reduce bullying is bystanders, who are the peers that witness a bullying instance (Salmivalli et al., 2011). Bystanders

are mostly present during bullying incidents (Hawkins et al., 2001) which makes them potential candidates for reducing or stopping bullying incidents. Moreover, research shows that in approximately 75% of the extreme violence cases, a close peer of the bully knew what the bully was planning to do (Vossekuil et al. 2004). Research shows that bystanders are quite important for reducing bullying instances if they try to stop and/or prevent the bullying instances (i.e., acting as “defenders”) (Salmivalli et al., 2011). Hence identifying the factors that can promote defender bystander behavior can be a key element for designing effective intervention programs to reduce bullying incidents.

Bystanders can take on many roles during a bullying incident. For example, according to the categorization of Olweus & Limber (2010), there are six different bystander roles in any bullying incidents: (a) followers (“those who play an active role in the bullying but they do not initiate it or have a leading role”), (b) supporters (those who actively support the bullying without actually joining in), (c) passive supporters (those who do not show active support but like the bullying), (d) disengaged onlookers (“those who do not show any outward support and take a stand”), (e) possible defenders (those who do not do anything to stop the bullying even though they do not like bullying), and defenders (those who actively try to stop the bullying).

Later, Salmivalli (2014) came up with the following categorization: (a) reinforcers (those who actively support the bullying by showing approval), (b) assistants (those who actively support bullying by joining in and helping the

bully), (c) outsiders (“silent approvers that do not do anything and choose a side”), and (d) defenders (those who challenge the bullying incident by actively voicing their opinions or doing things to stop and/or prevent the bullying).

Considering the broader range of bystander responses, it is important to focus on factors in promoting active bystander responses because research shows that when bystanders take on the defender role, there is a high chance that the bullying will stop (Salmivalli et al., 2011). Extant literature on bystander responses showed that there are several social-cognitive factors (e.g., Theory of Mind, empathy; Gönültaş & Mulvey, 2021b) and contextual factors (e.g., group membership; Gönültaş et al., 2020, school climate; Waasdorp, 2022) that can be facilitators or barriers for prosocial bystander responses.

One potential factor that can also shape bystander responses is the type of bullying. Bullying types can be categorized in several ways depending on different factors. It can be categorized by looking at different aggression types such as physical (e.g., hitting), verbal (e.g., name-calling, teasing), relational (e.g., socially excluding peers, spreading gossip), and cyberbullying (e.g., sending hateful messages) (Kennedy, 2020). Moreover, it can be categorized depending on the place of occurrence such as cyberbullying in which the bullying takes place on online platforms via the use of electronic devices or offline bullying (Leduc et al., 2022). Finally, it can be categorized depending on the reason for bullying. For instance, bullying can occur due to

interpersonal reasons (i.e., being perceived as boring or being shy) or intergroup reasons (i.e., being an immigrant (Juvonen & Graham, 2014; Palmer & Abbott, 2018)).

Understanding the nature of these categorizations of bullying is also important because bystanders might show different responses to different types of bullying. In the current study, the place of bullying (i.e., different reality contexts like real-life vs virtual reality), the reason for bullying (interpersonal reason of being perceived as boring vs intergroup reason of being an immigrant), and the potential interaction between these categorizations were examined.

Examining bystander responses to bullying by considering the context and reason for bullying will help us to identify the factors that can increase the prosocial responses of those who witness the bullying incident (i.e., bystander responses) (Frey et al., 2009). However, our knowledge is still limited in understanding how those different factors in categorizing bullying act together to shape bystander responses. In this study, the occurrence place of bullying (real-life vs virtual reality) and group membership (ingroup vs outgroup) and the interaction between these two contexts were examined.

1.2. The Role of Reality Context in Bystander Responses and Judgments to Bullying

In the era of digitalization and huge technological advancements, virtual environment interactions are becoming increasingly common. For example,

Apple has recently launched its VR headset called Apple Vision Pro (i.e. integrating digital content into individuals' physical environment, The Economist, 2023), and the use and development of these types of technological advancements can increase drastically in the near future. These advancements would affect the daily life and social interactions of one of the biggest consumers of technological improvements and devices, adolescents. Currently, VR technologies are already employed for enhancing learning (e.g., social and emotional learning; Zhang et al., 2023) and promoting skill development (e.g., promoting social development in autism spectrum disorder; Mesa-Gresa et al., 2018) in adolescents. As the usage of VR technologies increases among adolescents, the need to investigate their social interactions in the VR context will arise. Thus, it is important to investigate the potential effect of virtual contexts on adolescents' moral judgments because how adolescents behave in virtual contexts can also affect and shape their real-life moral norms. For instance, extant research shows that the level of aggression in video games translates into adolescents' real-life behaviors and attitudes such as displaying more aggressive behaviors in real life when they play violent video games (Prescott et al., 2018). Hence, similar transfers of learned behaviors, norms, and attitudes can happen between virtual and real-life contexts.

Moreover, children and adolescents might spend a great amount of time in this virtual environment and experience lots of virtual interactions and some of those interactions can be negative (e.g., bullying, and discrimination; Gray et al., 2024, Kassner et al., 2012). For example, research showed that both

adolescents and young adults engage in incidents of social exclusion in immersive VR contexts (Kassner et al., 2012; Sargent et al., 2018). Thus, what people experience and learn from these virtual interactions can shape their moral attitudes and judgments just like real-life interactions.

Furthermore, moving on from gaming literature, the research identifies both interpersonal (e.g., skill and age-based) (Nguyen et al., 2022) and group-based discrimination (e.g., race-based) in online gaming platforms (Tynes et al., 2014). Like gaming platforms, both interpersonal and group-based discrimination can occur in VR environments. The extent of these discriminations can be even higher in VR environments compared to gaming platforms due to the contextual richness that these environments can provide.

Below I summarized two important research lines which can be related to children's and adolescents' bystander responses to bullying in different contexts including VR and real environments. As a note to keep in mind due to a lack of studies in this research area with adolescents I kept the scope of the literature review broad by incorporating studies that also are conducted with children, college students, and young adults. These studies can give insights and implications for adolescents.

1.2.1 Comparison of virtual reality and real-life contexts

There is a limited amount of research that examined the difference between virtual reality and reality contexts in moral development (e.g., Benvegnù et al., 2021, Niforatos et al., 2020). Although there is increasing research on

investigating bystander responses in virtual reality contexts in adolescents and children, these studies did not compare bystander responses across virtual reality and reality contexts. Thus, the current section detailed the existing research with college students and young adults which gives insights into implications for adolescents. For example, Niforatos et al. (2020) examined how college students respond to two well-known moral dilemmas (e.g., the trolley dilemma) in virtual reality or real-life contexts. In their study, they used VR headsets that fully immersed the participants in the video scenario. In the end, they found that participants in the virtual reality condition made higher utilitarian decisions (e.g., saving more children) compared to the real-life condition. The authors note that the contextual richness of the VR environment in the study led to higher levels of emotional arousal and empathy which increased utilitarian decisions. Similar results are also found in other studies that examined the effect of moral dilemmas on the decision-making processes of young adults with similar VR headsets in virtual reality environments due to heightened empathy levels (e.g., Patil et al., 2014).

Nonetheless, to our knowledge, it is not known how bystander judgments and behaviors of adolescents would differ in varying reality conditions. Some potential differences between bystander responses in virtual reality compared to real-life context could be argued for by looking at the differences between cyberbullying and traditional bullying (while keeping in mind that cyberbullying context is fundamentally different from virtual reality context). Similar to cyberbullying, the level of anonymity can be higher in virtual reality contexts since individuals can create themselves avatars and/or new personas

compared to real-life contexts (Leduc et al., 2022). Moreover, supervision levels in visual reality contexts can be quite low which might encourage more extreme antisocial behaviors (Sticca & Perren, 2012). Virtual reality contexts might also have distinct effects on bystander responses compared to both traditional and cyberbullying such as perceiving the act of bullying as a lot less severe due to taking place in a context in which accustomed physics rules and lifestyle are quite different from real-life (e.g., being able to fly on top of buildings, having quite complex technologies).

In addition, in the current literature, VR technologies are generally employed to investigate moral behavior in extreme scenarios such as life-or-death situations like earthquakes, and terrorist attacks (e.g., Benvegñù et al., 2021). Thus, to the best of our knowledge, it is not known how bystander judgments and behaviors towards daily-life moral situations like bullying would differ in varying reality conditions and how group processes would affect these judgments and behaviors. This study tries to shed light on this question and fill the gap in literature. Nonetheless, as a starting point, existing studies examining the difference in moral judgments in fantastical vs real-life contexts might give some insights into virtual reality vs real-life comparison.

Overall, extant literature documented many factors that can be related to children's and adolescents' moral judgments and behaviors in VR studies. One of those factors is the type of setting within the VR environment. In other words, research results can differ depending on whether a fantastical setting with fantastical elements is created in the VR environment or whether a real-

life-like environment is created in the VR environment. For example, studies with adolescents and young adults documented higher prosocial bystander responses in VR settings compared to real-life settings when the VR context was a realistic one (e.g., Liu et al., 2023; Niforatos et al., 2020).

Moreover, another important factor that could affect moral judgments and behaviors of children and adolescents is the methodology used to test the VR environment such as using actual VR headsets or creating the VR environment by using hypothetical written scenarios. For instance, research conducted with adolescents found more prosocial bystander responses and antibullying attitudes when participants viewed the same bullying scenario by using a VR headset compared to reading the same scenario in a text format (Liu et al., 2023). This result was explained by the vividness and contextual richness of the VR environment that prompts more empathy and perspective-taking of the participants (e.g., Liu et al., 2023). Thus, changing contextual and methodological aspects might shape the salience of VR effect on bystander responses. Nonetheless, many factors about VR environments are still unknown such as the nature of potential interactions and potential group formations in VR contexts due to the scarcity of empirical research. Thus, it is important to examine how bystander judgments and behaviors would differ in varying reality conditions and how group processes would affect these judgments and behaviors.

1.2.2 Comparison of fantastical and real-life contexts

Another research line that might be related to children's and adolescents' moral judgments and responses in different reality contexts is the comparison of fantastical and real-life contexts. Current studies that looked at the effect of non-real contexts mainly compared moral judgments in fantastical vs real-life contexts in different age groups (e.g., Fast & Reet, 2018; Ruedinger & Barnes, 2022). These fantastical contexts generally had one or more of the following characteristics: having a fantastical setting (e.g., outer space, underwater), characters with fantastical powers that engage in fantastic actions (e.g., playing football with stars, using a flying carpet, walking a unicorn) (e.g., Fast & Reet, 2018). Existing research reports that the same immoral actions are judged as less immoral such as viewing these actions as less extreme, deserving of less punishment, more acceptable, and emotionally better for the victim in the fantastical context over the realistic one, and this phenomenon is labeled as 'fictive pass' by some scholars (e.g., Fast & Van Reet, 2018, Krcmar & Valkenburg, 1999, Ruedinger & Barnes, 2022).

For example, a study by Fast and Van Reet (2018) measured preschool children's punishment levels of antisocial actions (e.g., kicking a friend, stealing, not sharing) by reading and enacting six short stories with props to the participants in each of the following three conditions: real-life, realistic pretense and fantastical context. They found that children in the fantastical condition rated the immoral actions as less deserving of punishment and more acceptable compared to the other two conditions and there was no

significant difference in moral judgments between real-life and realistic pretense conditions (Fast & Van Reet, 2018). Moreover, children in the fantastical condition stated that the victim would feel less bad compared to the children in the real condition while the children in the realistic pretend condition fall in between (Fast & Van Reet, 2018). This shows that even from preschool ages, children can differentiate between different reality contexts, and they view immoral actions in a fantastical context as less immoral in terms of being less worthy of punishment, more acceptable, and less bad for the victim compared to real-life contexts. Thus, Fast and Van Reet (2018) conclude that at least for young age groups, proximity to reality might be important for the transfer of real-life moral rules. This can explain why real-life moral rules might be transferred to fantastical conditions harder compared to realistic pretend conditions. Moreover, the difference between reality conditions might stem from the fact that changing real-life rules by making them more fantastical (e.g., contradicting physics rules and changing norms) might have given the permission to change other rules like moral rules and judgments in the fantasy context (Fast & Van Reet, 2018). Another potential explanation of this result might be perceiving immoral actions as less costly (e.g., imagining less authority or less judicial and daily life consequences) in a fantastical condition compared to a real-life condition (Fast & Van Reet, 2018). This might lead to viewing immoral actions as less extreme and less immoral in fantastical contexts. Similarly low levels of cost perceptions can also be observed in VR vs real-life comparisons, but whether this low cost perception in VR would lead to higher or lower prosociality in moral judgments and behaviors is an open question.

Similarly, a study conducted with 6- to 12-year-old children found that children who watched more fantasy violence (e.g., Supermen, X-Men) judged justified violence as more acceptable compared to those who watched realistic violence (e.g., America's Most Wanted) however there was no significant difference between groups when the violence is unjustified (i.e., random violence without no provocations or reasons) (Krcmar & Valkenburg, 1999).

Similar results were found in research conducted with older age groups. For instance, in a study with young adults, Ruedinger and Barnes (2022) presented participants with a realistic cheating story in a job application scenario or with a fantastical one by changing the wording of the scenario into a fantastical one (e.g., college became magic college). Participants rated immoral actions as less immoral in the fantastical condition compared to the realistic condition (Ruedinger & Barnes, 2022). Moreover, there seems to be a developmental pattern in which beginning from preschool years, individuals view antisocial actions in fantastical contexts as deserving of less punishment, less immoral, and more acceptable compared to real-life contexts.

Nonetheless, existing research also found that certain factors like the type of bullying can affect whether the fictive pass phenomenon will be observed. For instance, Sabo and Giner-Sorolla (2017) studied the effect of two different violation types, namely harm violation and purity violation (i.e., acts that do not directly harm another person but violate a purity norm like

violating a sexual taboo) in different reality contexts (i.e., fiction and real-life) by measuring college students acceptability judgments, evaluation of the protagonists' character and emotional responses towards the protagonist. The results showed that the same immoral act is judged as less immoral, and the protagonist is judged as a better person and subjected to less anger in the fictional condition compared to the real-life condition (Sabo & Giner-Sorolla, 2017). Nonetheless, this difference between fiction and real-life conditions was not found when there was a purity violation. Thus, they conclude that moral judgments can change depending on the type of act that can be related to the fictive pass.

In a similar vein, Thompson et al. (2023) measured college students' identification and sympathy level and acceptability judgments towards a murderer by showing them a 25-minute-long murder interview that is either framed as a real-life murder interview or a fictional murder interview depending on the condition. The results documented that participants in the fictional condition were more likely to identify with and show sympathy towards the murderer compared to participants in the real-life condition. On the other hand, there was no difference in participants' acceptability judgments between conditions (Thompson et al., 2023). Thus, the authors conclude that the existence of a fictional pass can depend on the operationalization of the measured construct (e.g., measuring acceptability level versus emotional responses) which shows the multifaceted nature of morality (Thompson et al., 2023). Overall, it is crucial to examine whether adolescents' moral judgments and responses would differ between VR and

real-life contexts with a comprehensive approach, and the existing research on fantastical vs real-life contexts can give insights for hypothesizing and creating an appropriate VR scenario.

Overall, considering the mixed literature (i.e., VR-real life vs fantasy-reality studies), it is important to understand the changing dynamics behind bystander responses. It is also important to note that while the first research line (VR-real life comparison) mostly focused on the behavioral level outcomes, the second research line (fantasy-reality comparison) focused more on perceptions of severity, attribution to victim's emotional state, and punishment judgments. Since our outcomes were mostly related to bystander behaviors and helping behavior, it was plausible to see more parallel results with the first research line.

1.3 The Role of Group Membership in Bystander Responses and Judgments to Bullying

Group membership is another important factor that affects children's and adolescents' moral responses and judgments in bullying incidents as bystanders (Gönültaş & Mulvey, 2021a).

According to Social Identity Development Theory (SIDT; Nesdale, 2008), children go through four sequential steps as undifferentiated, social group awareness, social group preference, and outgroup negativity. In the undifferentiated phase, children do not demonstrate any awareness or knowledge regarding the existence of different group memberships (Nesdale

et al., 2004; Nesdale, 2008). Then in the social group awareness phase, children become aware of the existence of different groups and their own groups (Nesdale et al., 2004). Moreover, in the social group preference phase, children start to prefer their ingroups over outgroups because they view their ingroups as having a higher status and being better off than outgroups (Nesdale et al., 2003; Nesdale et al., 2004). In this phase, the focus is more on ingroup members and enhancing the status of ingroups (Nesdale et al., 2004). In contrast, in the final outgroup negativity phase, the focus is more on outgroup members, and they start to feel and show negative attitudes and feelings towards outgroup members (Nesdale et al., 2004). However, not every child goes through all of these phases. The level of identification with the ingroup, normativeness of outgroup prejudice within the ingroup, the potential of enhancing one's own and the group's standing, and whether ingroup members feel threatened by the outgroup members determine whether children will reach the final phase (Nesdale et al., 2004; Nesdale, 2008).

Social domain theory (SDT; Turiel, 2008) states that children and adolescents focus on different social reasoning domains (i.e., moral, social/conventional, or psychological) to evaluate a moral situation (Rutland et al., 2010). In the moral domain, children and adolescents consider the concept of fairness, equality, equity, and justice by considering others' welfare (Gönültaş & Mulvey, 2019). In the social/conventional domain, they consider group identities, group norms, and group functioning (Gönültaş & Mulvey, 2019). Finally, in the psychological domain, they value autonomy and

individual choices and intentions (Gönültaş & Mulvey, 2019). According to this theory, children can draw on multiple domains, especially as their age increases (Rutland et al., 2010). This theory highlights the multifaceted nature of moral development and reasoning (Rutland et al., 2010).

Drawing on SDT, the Social Reasoning Developmental Perspective (SRD; Rutland et al., 2010) states that the emergence of prejudice is a result of the interaction between morality and group processes hence these constructs should not be regarded as separate from one another. Moreover, especially starting from middle childhood, children are able to draw on both moral principles and group-related processes in their moral decision-making process (Rutland et al., 2010). Based on these two complementary theories, group membership (i.e., witnessing the victimization of ingroup or outgroup members) influences children's and adolescents' judgments, attitudes, and responses in intergroup moral contexts. Both theories propose that children and adolescents reason about moral transgressions by focusing on both moral and group-related concerns (Palmer & Abbott, 2018; Rutland et al., 2010).

Previous studies used novel artificial groups (i.e. Minimal Group Paradigm, Tajfel et al., 1971) to test the effect of group membership. In this paradigm, researchers created random arbitrary social groupings such as red or blue groups. Studies that used a minimal group paradigm documented that children and adolescents showed ingroup preferences in their judgments, attitudes, and responses (Mulvey et al., 2022, Glidden et al., 2022; Cooley et

al., 2015; Elenbaas & Killen, 2016). For example, Glidden et al. (2022) created two artificial groups (team blue and red) and assigned participants randomly to one of these groups to measure the acceptability and punishment judgments of participants when either ingroup or outgroup members cheated in a competitive game. The results showed that when the cheater is an ingroup member, participants rated the act as more positive and more acceptable and gave less punishment compared to when the cheater is an outgroup member.

Similarly, extant research that examined the role of group membership across different moral domains (e.g., bystander responses, Gönültaş et al., 2021; helping behavior, Levine et al., 2005; resource allocation, Fehr et al., 2008) documented that children and adolescents can favor ingroup members compared to outgroup members in real intergroup contexts as well. One of the important real intergroup contexts is the nationality and immigrant/refugee status of outgroup members. For example, children and adolescents show more prosocial bystander responses to victimization of their own ethnic groups compared to their peers from other ethnic backgrounds, such as being a defender for the ingroup members over outgroup members (e.g., Gönültaş et al., 2021; Gönültaş & Mulvey, 2022a). More specifically, a study by Gönültaş and Mulvey (2022a) compared children's and adolescents' judgments and responses towards bullying of either a Syrian refugee peer or an ingroup Turkish peer. The results showed that children and adolescents judged the bullying as less acceptable and stated that they would be less

likely to support the bully when an ingroup member is bullied compared to a Syrian refugee peer.

In a similar vein, Palmer et al. (2023) examined 8-to-16-year-old students' bystander judgments towards different immigrant outgroups (Turkish vs Australian) and ingroup peers (British) in a social exclusion scenario. The results showed that especially younger children were less likely to report defending bystander responses to the social exclusion of Turkish immigrant peers compared to Australian immigrant and British peers. Further, their defending responses did not differ between British ingroup peers and Australian immigrant peers.

Moreover, Palmer et al. (2022) conducted a study in which both minority (i.e., non-Cypriot) and majority status (i.e., Cypriot) preadolescents' bystander responses and reasoning were measured towards either a non-Cypriot or Cypriot newcomer peer depending on the condition. Results showed that majority-status participants were less likely to show prosocial bystander responses for non-Cypriot peers over Cypriot peers. On the other hand, minority-status participants did not discriminate between non-Cypriot and Cypriot peers by showing similar levels of prosocial bystander responses towards both groups.

Children's and adolescents' moral judgments and attitudes towards outgroup members can also be affected by different factors like perceived support (i.e., the level of support one perceives from their immediate social network like

their peers; Malecki & Demaray, 2002). For example, perceived support from peers can be a motivating factor in showing prosocial bystander responses to bullying (e.g., Demaray & Malecki, 2003; Mishna et al., 2016). More specifically, research shows that as youth perceived more support from friends and parents, they were more likely to show prosocial bystander responses to peer victimization (Banyard et al., 2016).

Moreover, bystander self-efficacy (i.e., “belief in the capability to intervene” in the bullying incident to defend the victimized peer; Thornberg & Jungert, 2013) is another crucial factor that can shape children’s and adolescents’ moral judgments and attitudes towards outgroup members. For instance, adolescents who report low levels of bystander self-efficacy were more likely to show passive bystander responses whereas those who report high levels of bystander self-efficacy were more likely to show active bystander responses (Gini et al., 2008; Thornberg & Jungert, 2013). That is, bystander self-efficacy serves as a motivation factor for intervening in the situation (Thornberg & Jungert, 2013). Furthermore, an intervention study showed that increasing bystander self-efficacy was also related to adolescents’ prosocial bystander responses to discriminatory social transgressions (Thornberg & Jungert, 2013). Thus, extant literature shows that perceived support and bystander self-efficacy are important constructs for showing active bystander responses in the face of bullying and discrimination and these constructs should be examined alongside other factors that might affect active bystander responses.

Furthermore, studies also documented that children's and adolescents' forgiveness judgments are susceptible to group membership differences. For instance, Mulvey et al. (2022) showed that children and adolescents are more likely to forgive ingroup transgressors than outgroup transgressors.

There are a limited number of studies that looked at the role of group membership in virtual reality contexts. To the best of our knowledge, only one study conducted with male college students looked at the role of group membership in VR environments. In this study, participants used a VR headset to experience non-repetitive verbal and physical aggression (i.e., pushing the victim) incident between an ingroup Arsenal supporter vs a non-ingroup football viewer (i.e., team affiliation of the outgroup is unknown) and vice versa (Slater et al., 2013). They found that participants showed more prosocial bystander responses when the victim is an ingroup member compared to being an outgroup member (Slater et al., 2013). However, it is not known how an adolescent sample would react to changing group membership context and the potential interaction between group membership and reality contexts especially when they are presented with repetitive bullying. Thus, the current study can shed more light on the potential interaction between group membership and reality contexts.

To sum up, the abovementioned studies highlight the importance of group membership and group status on children's and adolescents' bystander judgments and responses in moral transgressions including social exclusion and bullying.

1.4 The Interaction between the Reality Context and Group Membership in Bystander Responses and Judgments to Bullying

Based on the literature summarized above, to the best of our knowledge, the potential interaction between reality context and group membership in adolescents' bystander responses to bullying has not been examined yet. Considering the dearth of literature in this area, it is important to understand how reality and group membership contexts would interact together.

The potential interaction between reality context and group membership would allow scholars to understand how children and adolescents view group processes and related negative social interactions like bullying in daily life vs in VR environments. Moreover, understanding their approach would then promote tailored interventions to take preventive steps for increasing their prosocial attitudes in VR environments before the usage of these types of technologies becomes widespread.

Moving on from the existing literature, the following potential patterns can be observed. Firstly, if participants view the group membership context as more salient compared to the reality context, then they might show higher prosocial behaviors and judgments for ingroup members compared to outgroup members regardless of the reality context. Moreover, moving on from the VR vs real-life comparison studies, virtual contexts could receive more prosocial behaviors and judgments compared to reality contexts. Secondly, if participants view reality contexts as more salient compared to the group membership context, then they might show higher prosocial behaviors and

judgments for VR conditions compared to real conditions regardless of the group membership. Furthermore, in line with the current literature, ingroup members could receive more prosocial behaviors and judgments compared to outgroup members. Finally, in line with the literature, participants might show more ingroup favoritism in reality contexts but we might find different group membership results in virtual reality contexts due to different manifestations of group processes in these contexts. Thus, the potential interaction between group membership and reality context should be examined to understand the nature of these complex social interactions in different settings.

1.5 Repetitive Nature of Bullying

As mentioned in the description of bullying, for a violent and/or harmful action to be regarded as bullying the action must have a repetitive nature. Previous studies provided bullying definitions to the participants in the related hypothetical scenarios (Pöyhönen et al., 2012), however, to the best of our knowledge, no study has examined participants' bystander responses when they are presented with the victimization of the same victim with multiple bullying incidents. Considering the repetitive nature of bullying, it is important to use two different bullying scenarios to be able to observe whether there would be any changes in the bystander responses between initial and following bullying cases. When children and adolescents are explicitly shown that the aggressive act is repetitive, they might give more prosocial moral judgments and show more prosocial responses due to increased levels of victimization and increasing saliency of the harmful acts.

1.6 Potential Social-cognitive and Contextual Correlates of Bystander Responses and Judgments

Social Reasoning Developmental Perspective (SRD) also proposed that multiple social-cognitive and contextual factors are related to children's and adolescents' moral judgments and behaviors in intergroup contexts (Rutland et al., 2010). Empirical research based on this theory also documented the relationship between multiple social-cognitive and contextual factors and children and adolescents' moral judgments and behaviors like bystander responses in intergroup contexts (Rutland et al., 2010). The potential relationship between bystander responses and these factors is detailed in the following subsections.

1.6.1 Empathy

Empathy can be defined as the ability to “perceive and share the feelings and/or emotions of others” based on that perception (Bryant, 1982). Empathy is a multidimensional construct that covers both affective (i.e., “emotionally resonating with other's feelings while being able to separate other's feelings from one's own”) and cognitive (i.e., “understanding other's thoughts or feelings without necessarily resonating with that particular feeling state”) components (Gönültaş et al., 2020). Extant research shows that empathy is a crucial social-cognitive skill for children and adolescents to engage in prosocial moral behaviors such as sharing with outgroup peers, helping, and comforting others, and showing prosocial bystander behaviors (e.g., Beelmann & Heinemann, 2014, Gönültaş et al., 2020, Gönültaş et al., 2021). Studies constantly documented the positive association between empathy

and bystander helping behavior in both traditional and cyberbullying contexts (e.g., Kowalski et al., 2013; Van Cleemput et al., 2014).

Although most studies measure generalized empathy, some studies use more specific measures of empathy related to bullying (e.g., Gönültaş et al., 2020; Kärnä et al., 2011). For example, Gönültaş et al. (2021) assessed the role of a specific empathy type (i.e., empathy for victimization) in an intergroup context in which a Syrian peer is exposed to bias-based bullying. The results showed that higher levels of empathy towards victimized peers were associated with showing higher inclusivity levels towards Syrian peers while lower levels of empathy were associated with showing higher inclusivity levels towards Turkish bullies (Gönültaş et al., 2021). The results can be interpreted that empathy toward victimized peers could facilitate adolescents' understanding of how victimized peers might feel (Abbott & Cameron, 2014, as cited in Gönültaş et al., 2021). This study also showed that empathy for victimization can be a stronger predictor for prosocial bystander responses (Gönültaş et al., 2021).

1.6.2 Theory of Mind (ToM)

ToM can be defined as the ability of an individual to understand their own and other's mental state perspectives including beliefs, desires, and wishes (Wellman et al., 2001). Research shows that adolescents with higher ToM abilities act more as defender bystanders by challenging the bully in both intrapersonal (e.g., Caravita et al., 2010; Gini, 2006) and bias-based bullying contexts (e.g., bullying towards immigrant peers; Gönültaş & Mulvey, 2022b;

Gönültaş et al., 2021). Moreover, higher ToM ability is also found to predict higher defending behavior in retaliatory acts (e.g., retaliating due to seeking revenge for the bullying act) in an intergroup context (Gönültaş and Mulvey, 2021b). Hence, in this study, regardless of context, ToM is expected to be positively correlated with higher prosocial bystander judgments and attitudes.

1.6.3 Rejection Sensitivity

Rejection sensitivity can be defined as attitudes and tendencies to perceive and react to rejection (Downey & Feldman, 1996). Rejection sensitivity is the tendency to anxiously or angrily expect and perceive rejection in both overt and ambiguous situations (Downey et al., 1998). Studies documented that children and adolescents can react to rejection with anger and/or anxiety (Bondü & Krahé, 2015). Further, if children and adolescents experience rejection before, then they are more likely to develop sensitivity toward future rejection and feel more threatened in the face of future rejection (Downey et al., 1998). These expectations and perceptions of rejection can trigger withdrawal from social relationships or retribution and reactive aggression (Zimmer-Gembeck & Nesdale, 2013).

Rejection sensitivity is also found to affect adolescents' engagement in violence because adolescents with high rejection sensitivity are more likely to commit violent acts toward their peers (Zimmer-Gembeck et al., 2013) and this effect is higher for adolescents who exhibit anger in the face of rejection over anxiety (Bondü & Krahé, 2015). Furthermore, bystander responses literature shows that middle and high school children with higher rejection

sensitivity are more likely to report passive bystander responses (e.g., observing the incident but not intervening) when they encounter aggressive behaviors like physical/relational aggression and social exclusion (Gönültaş et al., 2020). Thus, in the present study, participants with higher rejection sensitivity scores might exhibit more passive bystander responses compared to the participants with lower rejection sensitivity scores.

1.6.4 Dehumanization

Dehumanization occurs when individuals perceive other individuals as having fewer uniquely human traits (e.g., morality, rationality) and human characteristics (e.g., being emotionally responsive) (Fousiani et al., 2020). Research shows that children who view their peers as odd, deviant, and non-intelligent are more likely to dehumanize their peers (Forsberg et al., 2014). In return, victimization of those peers can be seen as more acceptable and/or less severe from the perspective of bullies and bystanders (Forsberg et al., 2014). Moreover, dehumanization can also occur after victimization in which bullies and bystanders can view victims as less of a human after they are victimized especially if they believe that victims deserve this (Fousiani et al., 2020).

Limited research examined the effect of dehumanization in bullying contexts. Existing research shows that participants between the ages of 15-61 were more likely to view victims as having fewer human traits compared to those who have not been exposed to bullying (Fousiani et al., 2020). Nonetheless, when these victimized individuals stood up for themselves and reacted to the

unfairness of the situation, participants were more likely to ascribe human traits and human characteristics to them (Fousiani et al., 2020).

Furthermore, group processes also affect dehumanization. For instance, a study by Fousiani et al. (2019) presented adolescents with six different vignettes about physical, verbal, and relational bullying of peers by randomly assigning participants into one of three conditions: bullying of ingroup peers by outgroup peers, bullying of outgroup peers by ingroup peers and bullying of ingroup peers by ingroup peers. They found that adolescents rated outgroup bullies as having fewer human traits and human characteristics compared to ingroup bullies. Thus, dehumanization seems to be a crucial socio-cognitive ability for determining and influencing bystander reactions in bullying incidents.

1.7 Present Study

The current study aimed to examine whether bystander moral judgments, responses, and likelihood of future helping behavior vary by reality context and group membership. Further, the current study also explored the different factors as potential correlates of bystander moral judgments, responses, and likelihood of future helping in different contexts.

As mentioned above, the effect of group membership on adolescents' moral judgments, responses, and likelihood of future helping behavior was extensively studied in the literature. However, to the best of our knowledge, the effect of reality context (i.e., VR vs real-life) and the potential interaction

between reality and group membership contexts on adolescents' moral judgments, responses, and likelihood of future helping behavior is currently understudied. Thus, this study can shed light on how adolescents represent the boundary between real and VR contexts and their understanding of what information can pass between the two contexts as well as how group membership affects their moral judgments, responses, and likelihood of future helping behavior in different reality contexts.

With this aim in mind, in the present study, either an immigrant outgroup peer or an ingroup peer who is perceived as boring was first socially excluded from an extracurricular activity and then teased by other peers either in a real or VR environment depending on the condition. In addition, by giving both a social exclusion and then a teasing incident this study also aimed to analyze whether and how adolescent's moral judgments, responses, and likelihood of future helping behavior change when they observe the repetitive nature of the bullying towards the same victimized peer.

In the current study, VR context is selected to understand adolescents' moral judgments, responses, and likelihood of future helping behavior in a bullying context as in the era of digitalization and huge technological advancements, virtual environment interactions are becoming increasingly common in adolescents. Previous literature documented that adolescents perceive virtual reality environments as psychologically engaging and meaningful (Badger et al., 2023). In addition, in the present study, the immigrant context was selected due to being the most salient group membership context as well as

being regarded as a risk factor for victimization especially in multicultural contexts (Caravita et al., 2019). Moreover, extant research shows that immigrants do experience bullying because of their group membership (Xu et al., 2020). Especially in Turkey, the increasing number of refugees (approximately 3.4 million according to the International Organization for Migration) makes it important to study immigrant context to understand and design intervention studies to especially prevent school-based bullying incidents in a high intergroup tension country like Turkey (2024). However, in the current study, specific nationality was not provided to the participants as it was not possible to create the same context in the virtual reality environment. Selecting a real-life group for virtual reality conditions could have prevented the participants from fully immersing themselves in the virtual environment. Thus, no specific nationality was given for the real conditions to be able to keep different conditions as similar as possible.

Additionally, for the current study, the sample consisted of adolescents aged between 14 and 17. Adolescents were specifically targeted for the purpose of the current study as they are more likely to engage in virtual reality compared to children. Moreover, research notes that adolescents are less likely to intervene in bullying incidents and evaluate the bullying act as more acceptable compared to middle school students (Gönültaş & Mulvey, 2022a). Finally, adolescents could be better at understanding the materials of the study (i.e., scenario) and visualizing the virtual environment compared to younger age groups. Thus, adolescents are viewed as one of the optimal age

groups for studying bullying and bystander responses in virtual reality contexts.

The current study aimed to answer the following research questions with related hypotheses:

Research Question 1: Do adolescents' bystander moral judgments, responses, and likelihood of future helping behavior vary by the reality context (virtual vs real-life)?

Hypothesis 1: Based on the previous research on moral judgments in VR vs real life, participants in the VR conditions (a) would be less likely to perceive bullying incidents as acceptable, (b) would be more likely to evaluate the challenger positively and perceive support from their peers, (c) would be more likely to show prosocial bystander responses, and (d) would be more likely to show prosocial future helping behavior compared to the participants in the real-life conditions.

Research Question 2: Do adolescents' bystander moral judgments, responses, and likelihood of future helping behavior vary by changing the group membership context?

Hypothesis 2: Based on the previous research on moral judgments in group membership, participants in the ingroup member conditions (a)

would be less likely to perceive bullying incidents as acceptable, (b) would be more likely to evaluate the challenger positively and perceive support from their peers, (c) would be more likely to show prosocial bystander responses, and (d) would be more likely to show prosocial future helping behavior compared to the participants in the outgroup member conditions.

Research Question 3: How do group membership and reality context interact with each other to shape adolescents' bystander moral judgments, responses, and likelihood of future helping behavior?

Hypothesis 3: I would expect the group membership to be more salient in real life context compared to VR. However, as mentioned above, due to the scarcity of literature it is difficult to propose a direction for the interaction. Thus, the interaction between reality and group membership would be examined through exploratory analysis.

Research Question 4: Do adolescents' socio-cognitive abilities affect their bystander moral judgments, responses, and likelihood of future helping behavior?

Hypothesis 4: Participants with higher empathy and higher theory of mind ability would be more likely to show prosocial bystander responses whereas the opposite pattern would be observed with

participants with higher dehumanization levels and higher rejection sensitivity levels (including rejection sensitivity anger and anxiety).

Research Question 5: How does the repetitive nature of bullying affect adolescents' bystander moral judgments and responses?

Hypothesis 5: Across all conditions, adolescents would (a) would be less likely to perceive bullying incidents as acceptable and (b) would be more likely to show prosocial bystander responses, in the teasing incident compared to the social exclusion incident.

CHAPTER II

METHOD

2.1 Participants

Three hundred and eighty-eight 14- to 17-year-old high school students attended the study ($M = 15.52$, $SD = .98$, 155 boys). Originally, we collected data from four hundred adolescents, but twelve participants were excluded from the study. Two participants were excluded for not passing the control questions and ten participants were excluded for finishing the survey in under 10 minutes. A priori power analysis for conducting ANOVA analysis with an effect size of 0.10 with the desired statistical power at 0.95, and alpha at .05 indicated that a minimum sample size should consist of 216 participants. Another priori power analysis for conducting ANCOVA analysis with the same effect size, statistical power, and alpha indicated that a minimum sample size should consist of 210 participants. Finally, another priori power analysis for conducting linear regression analysis with the same effect size, statistical power, and alpha indicated that a minimum sample size should consist of 254 participants (G*Power version 3.1.9.7, Faul et al., 2009). The participants

were recruited from eight public schools (365 participants) and one private school (24 participants) in Turkey, Ankara. Moreover, the sample consisted of middle to high SES participants (77.1% of mothers had a high school degree or higher and 77.8% of fathers had a high school degree or higher).

2.2 Design

The current study adopted a 2 (Group Membership: Ingroup vs Outgroup) x 2 (Reality Context: Virtual Reality vs Reality) factorial design in which both group membership and reality contexts differed between subjects. In total, there were 4 conditions: Virtual Reality – Ingroup Member (VRI); Virtual Reality – Outgroup Member (VRO); Reality – Ingroup Member (RI); and Reality – Outgroup Member (RO). All participants were randomly assigned to one of these four conditions. Randomization was done via Qualtrics based on the gender of the participants to have a similar number of participants in each condition from both genders (VRI: 97 participants, 58 females; VRO: 97 participants, 57 females; RI: 98 participants, 60 females; RO: 96 participants, 58 females).

2.3 Procedure

The study was approved by the Ethics Committee of Bilkent University and the Turkish Ministry of Education. Firstly, a pilot test with 8 participants was conducted over Zoom ($M = 15.28$, $SD = 1.49$, 3 boys). The participants received the Zoom link via email and the Qualtrics link is shared with them over Zoom. Participants were told that they do not need to open their cameras and that zoom sessions were not recorded. This pilot test aimed to

test the comprehensibility of the questions, the length of the survey, the visual quality of images in the survey, and whether they would get bored or not. Participants completed the survey in 20 to 30 minutes, and feedback stated by the participants was addressed before conducting the actual study.

After the pilot test, to recruit participants for the main study, schools were contacted and printed parental consent forms were distributed via schools' counselors and teachers. Only the participants whose parents gave consent for their participation were involved in the study. Participants completed the surveys on their smartphones by scanning a QR code that was shown to them. The participants completed the surveys in 20 to 35 minutes. The data is collected between March and May 2024. Participants did not receive any gifts for their participation.

2.4 Materials

2.4.1 Demographic Information Questionnaire

Birth date, age, gender, grade level, and mother-father education level (i.e., highest level of education) were asked in this questionnaire. Moreover, as control variables, only for VRO and VRI conditions, daily internet usage frequency, weekly online gaming frequency, and experience with virtual reality games were asked (see Appendix N for these control questions).

2.4.2 Hypothetical Scenarios

2.4.2.1 Virtual Reality Conditions Introductions

At the beginning, the following description and introduction of virtual reality

were given to the participants in both VRI and VRO conditions to familiarize the participants with the concept of virtual reality:

“Virtual reality is a technology that allows you to experience images in three-dimensional reality instead of perceiving them on two-dimensional screens. Thanks to this special technology, users not only watch, but also touch, hear, and even smell the things that they see. Thus, people who use this technology can feel as if they are actually living there at that moment.”

Then participants were instructed to imagine that they are in the year 2050 because they were going to be introduced into a highly technological world that is based on the usage of virtual reality on a daily basis. Considering the rapid technological enhancements, the usage of VR technologies in daily life can become quite common in the near future. Hence, selecting the year 2050 would not be unrealistic or too far into the future for the participants considering that they would most likely experience these technological advancements (e.g., Apple Vision Pro; The Economist, 2023). Moreover, participants were instructed that everyone that they know is the same age as they are today to avoid any confusion due to this time jump. These prompts were given as follows:

“Imagine that we are in the year 2050 and everyone is the age they are now. Now everyone lives in virtual universes by connecting these universes via glasses. The name of these glasses is Techno-Vision. Like everyone else, you have also created a virtual universe for yourself using your own Techno-Vision glasses, as shown in the

above photos, and you have a life there.”

These prompts were accompanied by relevant photos of Techno-Vision glasses and introductory virtual reality photos (see Appendix B for these photos).

After these prompts, participants selected a specific virtual universe from three virtual universe photos (see Appendix C for these photos) and a new technological name for themselves (e.g., Bytea, Kuantia). These questions were used to increase the participants’ feelings of belonging to their environment and to their group as warm-up questions.

Then they received the prompt below about what they see when they put on the Techno-Vision glasses, how they can spend their time, and what they can do in their selected virtual universe:

“When you put on your virtual reality glasses and step into this world, colorful lights, interesting creatures, and vast digital landscapes welcome you. You spend most of your day in this virtual universe. In this virtual universe, you can go to school, virtual shopping, augmented reality cinema, stadium, and many other places.”

Then, they were introduced to their new school in their selected virtual universe with the following prompt and a photo of this new school (see Appendix D for the photo of these schools):

“It is enough to wear your Techno-Vision glasses to go to school

because by putting on the glasses you can reach your school in just a few seconds. You have a lot of friends like you who connect to this virtual universe and go to your school here. The school is equipped with highly advanced technologies. You can develop many new skills at this school.”

Finally, they were introduced to three different classes that they could take in this new school (i.e., robot design, flying car design, and virtual astronomy lessons) and asked to select one of those classes (see Appendix E to see the given pictures for these classes). As stated above, all these prompts and questions were included in the study to increase the familiarity and belongingness of the participants with the virtual environment and the concept of virtual reality.

Then, in all conditions, the excluded peer was introduced. The name of all the characters in the scenario including the excluded peer was selected as gender-neutral names and appropriate to the reality vs virtual reality contexts (e.g., Deniz vs Kayte). Moreover, no gendered pronouns are used, and all characters are referred to by their names. Furthermore, depending on the group membership condition, the excluded peer was either described as someone who is coming from another virtual universe (i.e., outgroup member) or who is from the same virtual universe (i.e., ingroup member).

An example introduction of the excluded peer for the VRO condition was as follows:

“One day a student from another virtual universe, in other words, someone who is not from your virtual universe joins your class. The name of this student is Zey1ka. Till now, Zey1ka has lived in another virtual universe which was different from yours. The schools and activities of the virtual universe where Zey1ka comes from are different from yours. But now Zey1ka changes his/her virtual universe and moves to your universe by starting to connect to your universe.”

A similar introduction was also given for the VRI condition but this time the group membership was the same (i.e., the excluded peer was from the same virtual universe) and the reason for exclusion was not finding the peer “fun”. Moreover, different from the VRO condition, in the VRI condition, the excluded peer who is perceived as boring was not a newcomer because for the peer to be a newcomer, he/she needed to come from another school or another virtual universe but that would have created a difference in group membership.

2.4.2.2 Real-Life Conditions Introduction

In RO and RI conditions, the scenario started with a new school introduction hence the abovementioned warm-up questions like virtual reality introduction, time jump (i.e., imagining that they are in the year 2050), virtual universe selection, and new name selection were not included. In other words, before introducing the soon-to-be-excluded peer, participants in the reality conditions were introduced to their new school and selected a class (see Appendix D for the school photo and Appendix E for class selection photos)

as warm-up questions.

After these warm-up questions, the excluded peer was introduced. An example introduction of the excluded peer for RO condition was as follows:

“All your classmates are people, just like you, who were born, raised, and live in this country. One day, a student from another country, in other words, someone who is not from your country joins your class. The name of this student is Adar. Till now, Adar has lived in another country, which was different from yours. The schools and activities in this country where Adar comes from are different from yours. But now Adar changes his/her country and moves to your country.”

A similar prompt was also given for the RI condition but this time the group membership was the same (i.e., the excluded peer was from the same country) and the reason for exclusion was not finding the peer “fun”.

Moreover, different from the RO condition, in the RI condition the excluded peer who is perceived as boring was not a newcomer because for the peer to be a newcomer he/she needed to come from another school or another virtual universe but that would have created a difference in group membership.

2.4.3 Hypothetical Scenarios of Two Bullying Cases

After introducing the newcomer, participants in all conditions read two consecutive bullying incidents that involved the same characters introduced before. First, the excluded peer was socially excluded from a robot design

competition by the excluder, then the same peer was teased because of his/her robot design in another activity by the same excluder. The details of these bullying cases and the step-by-step progression of the scenarios are detailed below.

2.4.3.1 Social Exclusion as the Initial Bullying

Firstly, after the introduction of the excluded peer, all conditions read the details of a robot design competition that they were going to attend as a class (but it is defined as a non-school related weekend activity). So, they selected the specific robot design that they were going to create in this activity (see Appendix F for the robot photos). Then the following prompt was given to describe the social exclusion of the excluded peer:

"While talking with your classmates about what time the robot design competition will start, [the excluded peer] hears about it and says that he/she wants to participate. The [excluder] does not want [the excluded peer] to participate in the competition, so he/she says the time of the competition incorrectly. The following week [the excluded peer] again says that he/she wants to participate in the competition, but when he/she went to the competition location last week, he/she could not find anyone there. Then, when he/she asks what time they will meet this week, [the excluder] says,

"You come from a different virtual universe. Since you are not from our virtual universe, you are not like us, so we do not want you to participate in the competition." (for VRO member condition).

“You come from another country. Since you are not from our country, you are not like us, so we do not want you to participate in the competition.” (for RO member condition).

“We do not think that you are a fun person. Hence, we do not think that you can have fun with us and keep up with us, and we do not want you to participate in the competition.” (same for both RI and VRI conditions).

Note that in this social exclusion scenario, the participants understood that not only the excluder but also some other classmates do not want the excluded peer to join them. In other words, the participants learned about the beliefs and ideas of a group of classmates (albeit not knowing the number of these supporting classmates and whether they make up most of the class) indirectly.

At this point, a control question was given to assess whether participants understood the reason behind the exclusion. An example control question for the VRO condition is as follows:

We would like to check whether you have understood the story correctly so far. It is quite important for you to answer the following question correctly to be able to show that you have understood the story.

Is the reason why Kayte does not want Zey1ka because Zey1ka comes from another virtual universe and is not like them?

a) Yes, Kayte does not want Zey1ka because Zey1ka comes from

another virtual universe and is not like them.

b) No, Kayte does not want Zey1ka because Zey1ka does not like ice cream.

If participants failed in the control question, then they were shown the same question again. The second time, they saw a notification that said that they had answered the previous question wrong, and they were given the related part of the storyline again to reread the reason for exclusion. However, those participants who have failed to pass the control question in the second round are excluded from the study (two participants in the main study and none in the pilot test are excluded for this reason).

After this point in the scenario, a challenger who says that what the excluder is doing is wrong and that he/she should have invited the excluded peer was introduced. However, the excluder does not change his/her behavior, so the challenger decides to organize a new event (i.e., a robot race) to be able to invite both the excluded peer and his/her other classmates.

2.4.3.2 Verbal Teasing as the Following Bullying Case

After the social exclusion incident and some outcome measures detailed below (acceptability, bystander responses, evaluation of the challenger act, perceived support for challenging behavior), the participants read about a new event that the challenger organized with the aim of including the excluded peer in this event. In this event, the excluder and his/her close friend make fun of the robot design that the excluded peer has made. As a

note, all the characters were the same across two bullying cases (i.e., the excluder, excluded, and challenger are the same characters). In the outgroup condition, the robot looks different because the excluded peer used different drawing techniques that he/she has learned in his country or virtual universe (according to the reality condition). In the ingroup condition, no reason was given for why they thought the robot looked weird. After hearing this, the excluded peer decides not to join the game.

Both scenarios were created by looking at previous research that used similar exclusion scenarios (e.g., Gönültaş & Mulvey, 2020; Gönültaş & Mulvey, 2022a; Mulvey et al., 2018a) (please see Appendix G for the complete version of the scenarios in VRO condition as an example).

2.5 Outcome Measures

2.5.1 Acceptability Judgments

Participant's acceptability judgments of both social exclusion and teasing were measured with a single item (e.g., "How would you evaluate the excluder's behavior?"). This item was presented after both bullying incidents separately. The participants answered this question on a six-point Likert-type scale ranging from 1 (not OK at all) to 6 (totally OK). This question was taken from previous research that examines discrimination and social exclusion (Gönültaş et al., 2022) (please see the related subtitle in Appendix G).

2.5.2 Bystander Responses

Participant's bystander responses were measured with a fourteen-item scale

developed by Wachs et al. (2023) for both bullying incidents separately. They originally developed twenty-four items however, since the participants rated these items twice after each bullying, to keep the scale shorter due to time constraints, 14 items were selected. The items that had the highest factor loading and were most appropriate for the current study were selected. Moreover, the scale originally was created to measure bystander responses toward hate speech so the items in the scale were adapted to the social exclusion and teasing contexts by making minor changes in the wording of the questions.

This scale measured seven different subdomains which can be listed as:

- a. Explicit support and assisting (2 items; e.g., I would support [the excluder] by thinking that he/she is right.; $r = .295, p < 0.01$)
- b. Explicit challenge (2 items; e.g., I would talk to [the excluder] to explain the consequences of what he/she did.; $r = .573, p < 0.01$)
- c. Revenge (2 items; e.g., "I would end my friendship with [the excluder] to make him/her sad.; $r = .341, p < 0.01$)
- d. Talking to the excluded (2 items; e.g., I would encourage [the excluded peer] to talk with the teachers about what happened.; $r = .431, p < 0.01$)
- e. Seeking help (2 items; e.g., I would ask help from my teachers to stop this situation.; $r = .522, p < 0.01$)
- f. Helplessness (2 items; e.g., I would not do anything to prevent the situation from getting worse.; $r = .495, p < 0.01$)
- g. Ignoring (2 items; e.g., I would not care about this situation since I do

not think that it is a big deal.; $r = .439, p < 0.01$)

Participants answered these questions on a six-point Likert-type scale ranging from 1(definitely would not) to 6 (definitely would) (please see the related subtitle in Appendix G for the full item list). To calculate the composite score, all items were averaged, and higher scores indicate higher prosocial bystander responses (e.g., challenging the exclusion/teasing).

2.5.3 Evaluations of the Challenger Act

After the first introduction of the challenger (in which he/she said that what the excluder did was wrong and he/she should have invited the excluded as mentioned above), participants were presented with individual and group evaluations of the challenger's behavior. The item used to assess the individual evaluation of the challenger was "How would you evaluate X's (name of the challenger) behavior?" (Gönültaş et al., 2022). The item used to assess group evaluation of the challenger was "How would your other classmates evaluate the behavior of X's (name of the challenger)?" (Gönültaş et al., 2022). These evaluations were only given after the social exclusion incident and were not given after the teasing incident. Participants answered these questions on a six-point Likert-type scale ranging from 1 (not OK at all) to 6 (totally OK) (please see the related subtitle in Appendix G). Individual and group evaluation items had a correlation of .432 ($p < .01$).

2.5.4 Perceived Support for Challenging Behavior

Perceived support for being a challenger was assessed with a single item

(i.e., “If you, like the challenger, said that the excluded peer should participate in the robot design competition, would your classmates support you?”) (Gönültaş et al., 2022). Participants answered this item on a six-point Likert-type scale ranging from 1 (they don’t support at all) to 6 (they support a lot) (please see the related subtitle in Appendix G). This question was only given after the initial bullying (i.e., social exclusion).

2.5.5 Likelihood of Future Helping

As described previously, the challenger planned an event to be inclusive for the excluded peer and asked for the help of other peers. In this scale, participants were asked to evaluate their likelihood of helping the challenger in organizing this event with nine items on a six-point Likert-type scale ranging from 1 (definitely would not) to 6 (definitely would) (please see the related subtitle in Appendix G). These items were created for the purpose of this study based on previous research (Gönültaş et al., 2021).

The scale had four domains as follows: proactive help, active help, passive help, and no help. Two items were created for each domain. An example item for proactive help was: “Before the event, I make sure that the excluded peer spends time with us during breaks so that my classmates can warm up to him/her.” ($r = .313, p < 0.01$). An example item for active help was: “I would help the challenger to prepare the necessary materials for the event she/he will organize.” ($r = .682, p < 0.01$). An example item for passive help was: “I would attend the organized event” ($r = .399, p < 0.01$). Finally, an example item for no help was: “I would say that I am not going to help because this

situation does not concern me” ($r = .570, p < 0.01$). To calculate the composite score for each type of helping, all items were averaged.

2.5.6 Self-efficacy

Participant’s self-efficacy levels for helping the excluded peer after they witnessed the social exclusion, and teasing incidents were measured with an adapted version of Palmer et al. (2023)’s self-efficacy scale. Original items were adapted to the context of the current scenario. In the present study, the scale consisted of five items on a six-point Likert-type scale ranging from 1 (very difficult to 6 (very easy) (e.g., Telling the excluder that it was wrong to make fun of the excluded peer and not inviting him/her to events.; Cronbach’s $\alpha = .738$) (please see the related subtitle in Appendix G). To calculate the composite score, all items were averaged, and higher scores indicate higher self-efficacy levels for helping the excluded.

2.5.7 Forgiveness

At the very end of the bullying scenarios, participants were presented with a forgiveness scenario in which the excluder apologized to the excluded peer. Participants were asked to evaluate the likelihood of forgiveness from the excluded peer’s perspective (“Do you think the excluded peer will forgive the transgressor?”). Participants answered these two items on a six-point Likert-type scale ranging from 1 (definitely would not) to 6 (definitely would).

2.6 Correlates

2.6.1 Empathy

Participants' empathy levels towards victimized individuals were measured via the Empathy for Victimization Scale (Pöyhönen et al., 2008). The scale consisted of seven items on a five-point scale ranging from 1 (never) to 5 (always) (e.g., "I can understand how a bullied student feels"; Cronbach's $\alpha = .83$) (please see Appendix K). To calculate the composite score, all items were averaged, and higher scores indicate higher empathy levels towards victimized peers.

2.6.2 Theory of Mind

Participant's theory of mind abilities was measured by using white lie and persuasion stories from the Strange Stories Task (White et al., 2009; Perez-Zapata et al., 2016) (please see Appendix M). The interrater reliability was 94.97% and it was calculated by coding 25% of the answers by two independent coders. To calculate the composite score, all items were summed up, and higher scores indicated higher ToM levels.

2.6.3 Rejection Sensitivity

Participant's rejection sensitivity was measured with four rejection stories from the Children Rejection Sensitivity Questionnaire (Downey et al., 1998). The original questionnaire has twelve stories, however, by looking at the explanatory factor analysis in Demircioğlu's (2020) study, only the stories that had a high factor loading were chosen to make a shorter scale due to time constrain. Moreover, after these stories, the anger and anxiety levels of participants for a potential rejection are measured separately with a single item. More specifically, the participants answered a prompt question asking

them how angry they would feel on a seven-point Likert-type scale ranging from 1 (not angry) to 7 (very, very angry) and how anxious they would feel if an event X occurred on a seven-point Likert-type scale ranging from 1 (not nervous) to 7 (very, very nervous). Finally, they answered a question about perceived rejection on a six-point Likert-type scale ranging from 1 (definitely would) to 6 (definitely would not) (e.g., “Do you think the child will want to talk to you?”) (see Appendix L). To calculate the composite score, answers to the stories were averaged separately for anger (Cronbach’s $\alpha = .746$), anxiety (Cronbach’s $\alpha = .768$), and perceived rejection possibility (Cronbach’s $\alpha = .608$), and higher scores indicated feeling higher anger for rejection, higher anxiety for rejection and perceiving higher rejection possibility.

2.6.4 Dehumanization

In this study, a modified version of the Dehumanization Scale (Capozza et al., 2013) was used to measure the participants’ dehumanization level of the excluded peer. The scale originally had eight items that were rated on a seven-point Likert-type scale ranging from 1 (absolutely false) to 6 (absolutely true). Only four uniquely human traits (i.e., reasoning, rationality, morality, intellectual abilities) were measured in the current study. The wording of the original items was also adapted to the current study (please see Appendix H).

The following prompt was given for both RO and VRO conditions at the beginning of the survey: “You can think about the people in [the excluded peer]’s [country/virtual universe] and evaluate the following questions

accordingly". For both RI and VRI conditions, the following prompt was presented at the beginning of the survey: "You can think about the people in your [country/virtual universe] and evaluate the following questions accordingly".

Participants in RI and VRI conditions only rated the human traits of the ingroup members (e.g., People in your [country/virtual universe] are rational people who can think and act logically; Cronbach's $\alpha = .903$). Participants in RO and VRO conditions rated these human traits for only outgroup members (e.g., [The excluded peer] and the people from his/her [country/virtual universe] are rational people who can think and act logically; Cronbach's $\alpha = .811$ for RO, Cronbach's $\alpha = .703$ for VRO).

To calculate the composite score, all items were averaged, and higher scores indicate higher dehumanization levels.

2.7 Control Variables

2.7.1 Self-efficacy for Virtual Environment

In this study, a modified version of the Self-efficacy for Virtual Environment scale (Ketelhut, 2011) was used to measure participants' self-efficacy for living in a virtual environment. Originally, the scale was used to measure self-efficacy for playing video games, so the adaptation included changing the original items into the virtual reality context.

In this study, the scale was given for only VRO and VRI conditions. In this

scale, there were nine items on a five-point Likert-type scale ranging from 1 (strongly disagree) to 5 (strongly agree) (e.g., I think I can learn to live in any virtual reality and continue my daily activities; Cronbach's $\alpha = .716$) (see Appendix I). To calculate the composite score, all items were averaged, and higher scores indicate higher self-efficacy levels for using and living in virtual environments.

2.7.2 Perceived Liking of Virtual Environment

Participants' perceived liking of virtual reality was measured for the VRI and VRO conditions. In this scale, there were four items on a five-point Likert-type scale 1 (strongly disagree) to 5 (strongly agree) (e.g., I would like to do social activities such as going to the cinema and theater with my friends in a virtual universe; Cronbach's $\alpha = .750$). The items in this scale are developed by the researchers for this study (please see Appendix J). The composite score was calculated by averaging the scores, with higher scores indicating higher levels of perceived liking for using and living in virtual environments.

CHAPTER III

RESULTS

The preliminary results consisted of examining (i) whether covariates differed based on conditions, (ii) whether missing data was at random, and (iii) correlations of all variables. Secondly, the main analyses were conducted by examining condition-based ANOVAs, ANCOVAs, and repeated measure ANOVAs. Finally, regression analyses were conducted.

3.1 Preliminary Results

3.1.1 Condition-based Differences in Covariates

3.1.1.1 Demographic Factors

Univariate ANOVA analysis showed that there is no significant difference between conditions in terms of participant age ($F(3, 384) = .457, p = .712, \eta_p^2 = .004$). Age only had a significant negative correlation with talking to the excluded peer in both bullying incidents ($r(388) = -.121, p = .017$; $r(388) = -.140, p = .006$ for bullying incidents respectively).

The Chi-square test showed that there is no significant difference between conditions in terms of participant gender ($X^2 (3,338) = .131, p = .988$).

Univariate ANOVA analysis documented that girls were less likely to find bullying acceptable, show more prosocial bystander responses and prosocial helping behavior, feel more self-efficacy for helping the excluded peer, and evaluate the challenger more positively compared to boys across conditions (all $p_s < 0.05$).

Moreover, univariate ANOVA analysis showed that there is no significant difference between conditions in terms of maternal education level ($F (3, 357) = .692, p = .557, \eta_p^2 = .006$) and paternal education level ($F (3, 350) = .488, p = .691, \eta_p^2 = .004$).

3.1.1.2 Socio-cognitive Abilities

Univariate ANOVA analysis showed that there is no significant difference between conditions in terms of participant's empathy ($F (3, 378) = .333, p = .801, \eta_p^2 = .003$) and ToM ($F (3, 375) = .866, p = .459, \eta_p^2 = .007$). Univariate ANOVA analysis showed that there is no significant difference between conditions in terms of participant's rejection sensitivity anxiety ($F (3, 381) = .172, p = .915, \eta_p^2 = .001$), rejection sensitivity anger ($F (3, 381) = 1.495, p = .215, \eta_p^2 = .012$) and perceived rejection possibility ($F (3, 383) = 1.514, p = .210, \eta_p^2 = .012$).

3.1.1.3 Virtual Reality Context Control Variables

Univariate ANOVA analysis showed that there is no significant difference between virtual reality conditions (i.e., VRI and VRO) in terms of participant's perceived self-efficacy levels to use and live in virtual reality environments ($F(1, 192) = .086, p = .769, \eta_p^2 = .000$). Univariate ANOVA analysis showed that there is no significant difference between virtual reality conditions in terms of participant's perceived liking of virtual reality environments ($F(1, 191) = 2.012, p = .158, \eta_p^2 = .010$). Further, univariate ANOVA analysis showed that there is no significant difference between virtual reality conditions in terms of participant's daily internet usage frequency ($F(1, 191) = 1.175, p = .280, \eta_p^2 = .006$), online gaming frequency ($F(1, 192) = 2.248, p = .135, \eta_p^2 = .012$) and existence of virtual gaming experience ($F(1, 192) = .044, p = .833, \eta_p^2 = .000$).

3.1.2 Analysis Regarding the Missing Data

Little's Missing Completely at Random (MCAR) test is conducted to see whether missing values were completely at random for the common variables across four conditions. Results showed that for all these common variables across four conditions missing values were completely at random ($\chi^2 = 27.957, df(29), p = .520$).

Nonetheless, some variables like virtual self-efficacy, perceived liking for the virtual environment, and online gaming frequency are only employed in virtual reality conditions (i.e., VRO, VRI). Hence, those variables are investigated separately to see whether missing values were completely at random.

Results showed that for these variables missing values were completely at random ($\chi^2 = 7.800$, $df (8)$, $p = .453$) as well. Overall, the missing data percentage was lower than 15.56% and higher than 1.35% across all variables.

3.1.3 Correlations

Pearson's correlation analysis is carried out to examine the associations between study variables. Only the correlation between the variables that are controlled for in the hierarchical regression analysis will be reported in this section.

3.1.3.1 Correlations for the Social Exclusion Scenario

With other bystander responses, explicit support had a negative correlation with explicit challenge ($r (388) = -.476$, $p = .000$), talking to excluded ($r (388) = -.434$, $p = .000$) and seeking help ($r (388) = -.306$, $p = .000$). It had a positive correlation with feeling helpless ($r (388) = .271$, $p = .000$) and ignoring the victim ($r (388) = .438$, $p = .000$) (all other $ps > .05$). With social-cognitive abilities, explicit support had a negative correlation with dehumanization ($r (377) = -.144$, $p = .005$; higher scores indicate lower dehumanization), ToM ($r (379) = -.175$, $p = .001$), empathy ($r (382) = -.297$, $p = .000$) and rejection sensitivity anxiety ($r (385) = -.125$, $p = .014$) whereas it had a positive correlation with rejection sensitivity anger ($r (385) = .114$, $p = .025$) (all other $ps > .05$).

With other bystander responses, explicit challenge had a negative correlation

with feeling helpless ($r(388) = -.155, p = .002$) and ignoring the victim ($r(388) = -.440, p = .000$). It had a positive correlation with talking to excluded ($r(388) = .545, p = .000$) and seeking help ($r(388) = .524, p = .000$) (all other p s $> .05$). With social-cognitive abilities, explicit challenge had a positive correlation with dehumanization ($r(377) = .223, p = .000$; higher scores indicate lower dehumanization), ToM ($r(379) = .143, p = .005$), empathy ($r(382) = .461, p = .000$) and rejection sensitivity anxiety ($r(385) = .184, p = .000$) (all other p s $> .05$).

With other bystander responses, taking revenge had a negative correlation with ignoring the victim ($r(388) = -.150, p = .003$) whereas it had a positive correlation with talking to the excluded ($r(388) = .244, p = .000$) and seeking help ($r(388) = .209, p = .000$) (all other p s $> .05$). With social-cognitive abilities, taking revenge had a positive correlation with empathy ($r(382) = .158, p = .002$) and rejection sensitivity anger ($r(385) = .102, p = .046$) (all other p s $> .05$).

With other bystander responses, talking to the excluded peer had a negative correlation with feeling helpless ($r(388) = -.200, p = .000$) and ignoring the victim ($r(388) = -.429, p = .000$) whereas it had a positive correlation with seeking help ($r(388) = .600, p = .000$). With social-cognitive abilities, talking to the excluded peer had a positive correlation with dehumanization ($r(377) = .125, p = .015$), empathy ($r(382) = .408, p = .000$) and rejection sensitivity anxiety ($r(385) = .233, p = .000$) (all other p s $> .05$).

With other bystander responses, seeking help had a negative correlation with feeling helpless ($r(388) = -.159, p = .002$) and ignoring the victim ($r(388) = -.351, p = .000$). With social-cognitive abilities, seeking help had a positive correlation with dehumanization ($r(377) = .177, p = .001$), empathy ($r(382) = .295, p = .000$), rejection sensitivity anxiety ($r(385) = .197, p = .000$) and rejection sensitivity anger ($r(385) = .176, p = .001$) (all other $ps > .05$).

Finally with other bystander responses, feeling helpless had a positive correlation with ignoring the victim ($r(388) = .487, p = .000$). With social-cognitive abilities, feeling helpless had a negative correlation with ToM ($r(379) = -.102, p = .048$) and empathy ($r(382) = -.176, p = .001$) (all other $ps > .05$).

With social-cognitive abilities, ignoring the victim had a negative correlation with dehumanization ($r(377) = -.112, p = .029$) and empathy ($r(382) = -.336, p = .000$) (all other $ps > .05$).

Moreover, among social-cognitive abilities, dehumanization only had a positive correlation with empathy ($r(371) = .136, p = .009$). ToM had a positive correlation with empathy ($r(375) = .131, p = .011$) and a negative correlation with rejection sensitivity anger ($r(376) = -.226, p = .000$) (all other $ps > .05$). Empathy had a positive correlation with rejection sensitivity anxiety ($r(381) = .374, p = .000$) (all other $ps > .05$). Rejection sensitivity anxiety had a positive correlation with rejection sensitivity anger ($r(385) = .406, p = .000$) and a negative correlation with perceived rejection possibility ($r(387) = -.415,$

$p = .000$). Finally, rejection sensitivity anger had a negative correlation with perceived rejection possibility ($r(385) = -.271, p = .000$).

3.1.3.2 Correlations for the Teasing Scenario

With other bystander responses, explicit support had a negative correlation with explicit challenge ($r(388) = -.435, p = .000$), talking to excluded ($r(388) = -.362, p = .000$), seeking help ($r(388) = -.237, p = .000$) whereas it had a positive correlation with feeling helpless ($r(388) = .351, p = .000$) and ignoring the victim ($r(388) = .613, p = .000$) (all other $p_s > .05$). With social-cognitive abilities, explicit support had a negative correlation with ToM ($r(388) = -.180, p = .000$) and empathy ($r(388) = -.302, p = .000$) (all other $p_s > .05$).

With other bystander responses, explicit challenge had a negative correlation with feeling helpless ($r(388) = -.410, p = .000$) and ignoring the victim ($r(388) = -.566, p = .000$) whereas it had a positive correlation with taking revenge ($r(388) = .103, p = .042$), talking to the excluded ($r(388) = .599, p = .000$) and seeking help ($r(388) = .615, p = .000$). With social-cognitive abilities, explicit challenge had a positive correlation with dehumanization ($r(377) = .183, p = .000$), ToM ($r(379) = .151, p = .003$), empathy ($r(382) = .409, p = .000$), rejection sensitivity possibility ($r(387) = .103, p = .043$) (all other $p_s > .05$).

With other bystander responses, taking revenge had a positive correlation with talking to excluded ($r(388) = .196, p = .000$), seeking help ($r(388) = .212, p = .000$) and negative correlation with ignoring the victim ($r(388) = -$

.140, $p = .006$) (all other $p_s > .05$). With social-cognitive abilities, taking revenge had a positive correlation with empathy ($r(382) = .150, p = .003$), rejection sensitivity anxiety ($r(385) = .105, p = .039$) and rejection sensitivity anger ($r(385) = .159, p = .002$) (all other $p_s > .05$).

With other bystander responses, talking to excluded had a positive correlation with seeking help ($r(388) = .703, p = .000$) and had a negative correlation with feeling helpless ($r(388) = -.386, p = .000$) and ignoring the victim ($r(388) = -.525, p = .000$). With social-cognitive abilities, talking to excluded had a positive correlation with dehumanization ($r(377) = .169, p = .001$), ToM ($r(379) = .148, p = .004$), empathy ($r(382) = .395, p = .000$), rejection sensitivity anxiety ($r(385) = .220, p = .000$) (all other $p_s > .05$).

With other bystander responses, seeking help had a negative correlation with feeling helpless ($r(388) = -.342, p = .000$) and positive correlation with ignoring the victim ($r(388) = -.424, p = .000$). With social-cognitive abilities, seeking help had a positive correlation with dehumanization ($r(377) = .238, p = .000$), empathy ($r(382) = .336, p = .000$) and rejection sensitivity anxiety ($r(385) = .190, p = .000$) (all other $p_s > .05$).

With other bystander responses, feeling helpless had a positive correlation with ignoring the victim ($r(388) = .641, p = .000$). With social-cognitive abilities, feeling helpless had a negative correlation with ToM ($r(379) = -.121, p = .018$), empathy ($r(382) = -.341, p = .000$) and perceived rejection possibility ($r(387) = -.227, p = .000$) (all other $p_s > .05$).

With social-cognitive abilities, ignoring the victim had a negative correlation with dehumanization ($r(377) = -.169, p = .001$), ToM ($r(379) = -.208, p = .000$), empathy ($r(382) = -.417, p = .000$) and perceived rejection possibility ($r(387) = -.105, p = .039$) (all other $ps > .05$).

Furthermore, among social-cognitive abilities dehumanization had a positive correlation with empathy ($r(371) = .136, p = .009$) (all other $ps > .05$). ToM had a positive correlation with empathy ($r(375) = .131, p = .011$) and negative correlation with rejection sensitivity anger ($r(376) = -.226, p = .000$) (all other $ps > .05$). Empathy had a positive correlation with rejection sensitivity anxiety ($r(381) = .374, p = .000$) (all other $ps > .05$). Rejection sensitivity anxiety had a negative correlation with perceived rejection possibility ($r(385) = -.415, p = .000$) and positive correlation with rejection sensitivity anger ($r(385) = .406, p = .000$). Finally, rejection sensitivity anger had a negative correlation with perceived rejection possibility ($r(385) = -.271, p = .000$).

3.2 Main Analysis

3.2.1 Condition-based differences

3.2.1.1 Acceptability Judgments

A 2 (acceptability judgments: exclusion, teasing) X 2 (group member: ingroup, outgroup) X 2 (reality: VR, real-life) repeated measure generalized linear model ANCOVA was conducted with group membership and reality as between-participant factors, and acceptability judgments as within-participant factor to examine whether acceptability judgments of exclusion and teasing incidents vary depending on the condition controlling for gender, ToM,

empathy, and rejection sensitivity anxiety. Bonferroni corrected pairwise comparisons showed that participants were more likely to view the actions of the excluder peer as acceptable in the real condition compared to the virtual condition only in the teasing incident when the excluded peer is an ingroup member ($F(1, 366) = 4.429, p = .036, \eta_p^2 = .012$). Further, Bonferroni corrected pairwise comparisons also showed that participants were more likely to view the actions of the excluder peer as acceptable in the ingroup condition compared to the outgroup condition only in the real condition for the social exclusion incident, but this effect was only marginally significant ($F(1, 366) = 3.669, p = .056, \eta_p^2 = .010$). Finally, participants were more likely to view the actions of the excluder peer as acceptable in the social exclusion incident compared to the teasing incident in all conditions ($F(1, 366) = 34.553, p = .000, \eta_p^2 = .086$ for RI; $F(1, 366) = 11.026, p = .001, \eta_p^2 = .029$ for RO; $F(1, 366) = 36.705, p = .000, \eta_p^2 = .091$ for VRI; $F(1, 366) = 26.088, p = .000, \eta_p^2 = .067$ for VRO) (please see Tables 3 and 4 for adjusted means).

3.2.1.2 Bystander Responses

For explicit challenge, a 2 (teasing, social exclusion) X 2 (ingroup, outgroup) X 2 (VR, real-life) repeated measure generalized linear model ANCOVA was conducted with group membership and reality as between-participant factors, and explicit support as within-participant factor to examine whether there are differences in the likelihood of showing explicit support across social exclusion and teasing incidents depending on the condition controlling for ToM and empathy. There was no main effect of group membership ($F(1,$

369) = .235, $p = .628$, $\eta_p^2 = .001$) and reality context ($F(1, 369) = 1.480$, $p = .225$, $\eta_p^2 = .004$). Nonetheless, Bonferroni corrected pairwise comparisons showed that participants were more likely to show explicit support by supporting the excluder peer in the social exclusion incident compared to the teasing incident in all four conditions ($F(1, 369) = 31.972$, $p = .000$, $\eta_p^2 = .080$ for RI; $F(1, 369) = 9.474$, $p = .002$, $\eta_p^2 = .025$ for RO; $F(1, 369) = 37.326$, $p = .000$, $\eta_p^2 = .092$ for VRI; $F(1, 369) = 19.859$, $p = .000$, $\eta_p^2 = .051$ for VRO) (please see Tables 3 and 4 for adjusted means).

For explicit challenge, a 2 (teasing, social exclusion incidents) X 2 (ingroup, outgroup) X 2 (VR, real-life) repeated measure generalized linear model ANCOVA was conducted with group membership and reality as between-participant factors, and explicit challenge as within-participant factor to examine whether there are differences in the likelihood of showing explicit challenge across social exclusion and teasing incidents depending on the condition controlling for gender, ToM, and empathy. There was no main effect of group membership ($F(1, 368) = 1.289$, $p = .257$, $\eta_p^2 = .003$) but there was a main effect of reality context indicating that participants were more likely to show explicit challenge in virtual contexts ($M = 4.673$, $SE = .064$) over real contexts ($M = 4.417$, $SE = .064$), ($F(1, 368) = 7.916$, $p = .005$, $\eta_p^2 = .021$). However, Bonferroni corrected pairwise comparisons based on interaction between reality context and explicit challenge showed that participants were more likely to show explicit challenge to the bullying incident in the virtual condition compared to the real condition in the social exclusion incident for ingroup condition ($F(1, 368) = 6.194$, $p = .013$, $\eta_p^2 =$

.017) and in the teasing incident for the outgroup condition ($F(1, 368) = 3.917, p = .049, \eta_p^2 = .011$). Moreover, participants were more likely to explicitly challenge the bullying in the teasing incident compared to the social exclusion incident only in the VR outgroup condition ($F(1, 368) = 4.976, p = .026, \eta_p^2 = .013$) (please see Tables 3 and 4 for adjusted means).

For revenge, a 2 (teasing, social exclusion incidents) X 2 (ingroup, outgroup) X 2 (VR, real-life) repeated measure generalized linear model ANCOVA was conducted with group membership and reality as between-participant factors, and revenge as within-participant factor to examine whether there are differences in the likelihood of taking revenge across social exclusion and teasing incidents depending on the condition controlling for empathy and rejection sensitivity anger. There was no main effect of group membership ($F(1, 375) = .097, p = .756, \eta_p^2 = .000$) and reality context ($F(1, 375) = .379, p = .538, \eta_p^2 = .001$). Nonetheless, Bonferroni corrected pairwise comparisons showed that there was a main effect of repetition indicating that participants were more likely to take revenge in the teasing incident over the social exclusion incident in all conditions ($F(1, 375) = 43.506, p = .000, \eta_p^2 = .104$ for RI; $F(1, 375) = 27.412, p = .000, \eta_p^2 = .068$ for RO; $F(1, 375) = 20.093, p = .000, \eta_p^2 = .051$ for VRI; $F(1, 375) = 17.050, p = .000, \eta_p^2 = .043$ for VRO) (please see Tables 3 and 4 for adjusted means).

For talking to excluded, a 2 (teasing, social exclusion incidents) X 2 (ingroup, outgroup) X 2 (VR, real-life) repeated measure generalized linear model ANCOVA was conducted with group membership and reality as between-

participant factors and talking to the excluded as within-participant factor controlling for gender, empathy, and rejection sensitivity anxiety. Results documented that there was a main effect of reality indicating that participants were more likely to talk to the excluded in the virtual condition ($M = 4.571$, $SE = .065$) compared to the real condition ($M = 4.358$, $SE = .065$) ($F(1, 373) = 5.342$, $p = .021$, $\eta_p^2 = .014$). There was a main effect of group membership indicating that participants were more likely to talk to the excluded when the excluded peer is an outgroup member ($M = 4.557$, $SE = .065$) compared to when he/she is an ingroup member ($M = 4.372$, $SE = .065$) ($F(1, 373) = 4.017$, $p = .046$, $\eta_p^2 = .011$). Bonferroni corrected pairwise comparisons showed that participants were more likely to talk to the victim in the virtual context over the real context in the teasing incident for outgroup condition ($F(1, 373) = 4.292$, $p = .039$, $\eta_p^2 = .011$). Moreover, Bonferroni corrected pairwise comparisons showed that participants were more likely to talk to the victim in the teasing incident compared to the social exclusion incident in all conditions ($F(1, 373) = 5.318$, $p = .022$, $\eta_p^2 = .014$ for RI; $F(1, 373) = 6.437$, $p = .012$, $\eta_p^2 = .017$ for VRI; $F(1, 373) = 8.943$, $p = .003$, $\eta_p^2 = .023$ for VRO) except in the RO condition ($F(1, 373) = 2.181$, $p = .141$, $\eta_p^2 = .006$) (please see Tables 3 and 4 for adjusted means).

For seeking help, a 2 (teasing, social exclusion incidents) X 2 (ingroup, outgroup) X 2 (VR, real-life) repeated measure generalized linear model ANCOVA was conducted with group membership and reality as between-participant factors and seeking help as within-participant controlling for gender, empathy, and rejection sensitivity anxiety. There was no main effect

of group membership ($F(1, 374) = 3.101, p = .079, \eta_p^2 = .008$) and reality context ($F(1, 374) = 3.770, p = .053, \eta_p^2 = .010$). Nonetheless, Bonferroni corrected pairwise comparisons showed that participants were more likely to seek help in the teasing incident compared to the social exclusion incident in all conditions ($F(1, 374) = 9.183, p = .003, \eta_p^2 = .024$ for RI; $F(1, 374) = 14.560, p = .000, \eta_p^2 = .037$ for RO; $F(1, 374) = 11.350, p = .001, \eta_p^2 = .029$ for VRI; $F(1, 374) = 22.650, p = .000, \eta_p^2 = .057$ for VRO) (please see Tables 3 and 4 for adjusted means).

For helplessness, a 2 (teasing, social exclusion incidents) X 2 (ingroup, outgroup) X 2 (VR, real-life) repeated measure generalized linear model ANCOVA was conducted with group membership and reality as between-participant factors, and helplessness as within-participant factor controlling for empathy and ToM. There was no main effect of group membership ($F(1, 369) = .914, p = .340, \eta_p^2 = .002$) and reality context ($F(1, 369) = .367, p = .545, \eta_p^2 = .001$). However, Bonferroni corrected pairwise comparisons showed that participants were less likely to feel helpless in the teasing incident compared to the social exclusion incident in all conditions ($F(1, 369) = 20.376, p = .000, \eta_p^2 = .052$ for RI; $F(1, 369) = 26.326, p = .000, \eta_p^2 = .067$ for VRI; $F(1, 369) = 28.192, p = .000, \eta_p^2 = .071$ for VRO) except in the RO condition ($F(1, 369) = 2.362, p = .125, \eta_p^2 = .006$) (please see Tables 3 and 4 for adjusted means).

For ignoring, a 2 (teasing, social exclusion incidents) X 2 (ingroup, outgroup) X 2 (VR, real-life) repeated measure generalized linear model ANCOVA was

conducted with group membership and reality as between-participant factors and ignoring as within-participant factor by controlling for gender and empathy. There was no main effect of group membership ($F(1, 376) = 1.004, p = .317, \eta_p^2 = .003$) and reality context ($F(1, 376) = .351, p = .554, \eta_p^2 = .001$). Nonetheless, Bonferroni corrected pairwise comparisons showed that participants were more likely to ignore the victimized peer in the social exclusion incident compared to the teasing incident ($F(1, 376) = 17.468, p = .000, \eta_p^2 = .044$ for RI; $F(1, 376) = 11.133, p = .001, \eta_p^2 = .029$ for RO; $F(1, 376) = 29.704, p = .000, \eta_p^2 = .073$ for VRI; $F(1, 376) = 38.278, p = .000, \eta_p^2 = .092$ for VRO). Moreover, Bonferroni corrected pairwise comparisons based on reality context showed that participants were more likely to ignore the victimized peer in the real condition compared to the virtual condition for the teasing incident, but this effect was only marginally significant ($F(1, 376) = 2.734, p = .099, \eta_p^2 = .007$) (please see Tables 3 and 4 for adjusted means).

3.2.1.3 Challenger Evaluation

For challenger evaluations, a 2 (individual, group evaluation) X 2 (ingroup, outgroup) X 2 (VR, real-life) repeated measure generalized linear model ANCOVA was conducted with group membership and reality as between-participant factors, and challenger evaluation type as within-participant factor to examine whether individual and group evaluations of challengers' behavior vary depending on the condition controlling for gender and empathy. There was no main effect of group membership ($F(1, 376) = 3.492, p = .062, \eta_p^2 = .009$) and reality context ($F(1, 376) = .003, p = .955, \eta_p^2 = .000$). However, Bonferroni corrected pairwise comparisons based on group membership

showed that participants were more likely to evaluate the challenger as more acceptable in the outgroup condition compared to the ingroup condition for individual evaluations of the challenger in the virtual condition ($F(1, 376) = 4.225, p = .041, \eta_p^2 = .011$). Moreover, participants were more likely to indicate that they would find the behavior of the challenger as acceptable compared to their group in all conditions ($F(1, 376) = 40.519, p = .000, \eta_p^2 = .097$ for RI; $F(1, 376) = 42.596, p = .000, \eta_p^2 = .102$ for RO; $F(1, 376) = 44.943, p = .000, \eta_p^2 = .107$ for VRI; $F(1, 376) = 42.853, p = .000, \eta_p^2 = .102$ for VRO) (please see Table 3 for adjusted means).

3.2.1.4 Perceived Support

For perceived support, 2 (ingroup, outgroup) X 2 (VR, real-life) ANCOVA was conducted controlling for rejection sensitivity anxiety, rejection sensitivity anger, and perceived rejection possibility to examine whether the perceived level of support from others for being a challenger varies depending on the condition. There was no main effect of reality context ($F(1, 378) = 2.518, p = .113, \eta_p^2 = .007$) but there was a main effect of group membership context indicating that participants were more likely to expect support for being a challenger when the excluded peer is an outgroup peer ($M = 4.375, SE = .078$) compared to being an ingroup peer ($M = 4.140, SE = .077$) ($F(1, 378) = 4.558, p = .033, \eta_p^2 = .012$). Bonferroni corrected pairwise comparisons based on group membership showed that participants were more likely to report that they would receive support from their peers when the excluded peer is an outgroup member ($M = 4.349, SE = .112$) over an ingroup member ($M = 3.991, SE = .110$) in the real-life context ($F(1, 378) = 5.235, p = .023,$

$\eta_p^2 = .014$). This effect was not found in virtual reality contexts irrespective of the group membership ($F(1, 378) = .531, p = .467, \eta_p^2 = .001$). Moreover, Bonferroni corrected pairwise comparisons based on reality context showed that participants were more likely to expect receiving support from their peers in the virtual reality context ($M = 4.289, SE = .110$) over real context ($M = 3.991, SE = .110$) when the excluded peer is an ingroup member, but this effect was only marginally significant ($F(1, 378) = 3.673, p = .056, \eta_p^2 = .010$).

3.2.1.5 Likelihood of Future Helping Behavior

For the likelihood of future helping behavior, a 4 (proactive, active, passive, no help) X 2 (ingroup, outgroup) X 2 (VR, real-life) repeated measure generalized linear model ANCOVA was conducted with group membership and reality as between-participant factors and helping types as within-participant factor to examine whether helping types varies depending on the condition controlling for gender, empathy, and ToM. Bonferroni corrected pairwise comparisons based on group membership showed that participants were more likely to show proactive help ($F(1, 368) = 3.904, p = .049, \eta_p^2 = .010$) and active help ($F(1, 368) = 4.005, p = .046, \eta_p^2 = .011$) for outgroup member over ingroup member in virtual reality context. On the contrary, participants were more likely to show passive help for outgroup over ingroup in the real-life condition ($F(1, 368) = 4.412, p = .036, \eta_p^2 = .012$). Further, they were more likely to report not helping ingroup members over outgroup members ($F(1, 368) = 3.900, p = .049, \eta_p^2 = .010$) in the virtual reality context (please see Table 3 for adjusted means).

When we compared real-life vs virtual reality Bonferroni corrected pairwise comparisons documented that participants were more likely to show proactive help in the virtual reality context over real-life context only when the excluded peer is an outgroup member ($F(1, 368) = 4.117, p = .043, \eta_p^2 = .011$). Finally, participants were more likely to show passive help in the virtual reality context over the real-life context only when the excluded peer is an ingroup member ($F(1, 368) = 14.752, p = .000, \eta_p^2 = .039$) (please see Table 3 for adjusted means).

3.2.1.6 Self-efficacy

For self-efficacy, a 2 (ingroup, outgroup) X 2 (VR, real-life) ANCOVA was conducted controlling for gender, empathy, and perceived rejection possibility to examine whether participants' self-efficacy levels vary depending on the condition. There was no significant main effect of reality context ($F(1, 374) = .052, p = .819, \eta_p^2 = .000$) or group membership context ($F(1, 374) = 1.115, p = .292, \eta_p^2 = .003$) as well as any significant interactions (please see Table 4 for adjusted means).

3.2.1.7 Forgiveness

For forgiveness, a 2 (ingroup, outgroup) X 2 (VR, real-life) ANCOVA was conducted controlling for rejection sensitivity anger and perceived rejection possibility to examine whether participants' forgiveness judgments vary depending on the condition. There was no significant main effect of reality context ($F(1, 379) = .509, p = .476, \eta_p^2 = .001$) or group membership context ($F(1, 379) = 1.422, p = .234, \eta_p^2 = .004$) as well as any significant

interactions (please see Table 4 for adjusted means).

3.2.2 Predictors of Bystander Responses and Judgments

3.2.2.1 Bystander Responses for Social Exclusion

For seven distinct bystander responses, hierarchical linear regression analyses were conducted to examine whether age, gender, group membership, reality context, empathy, ToM, rejection sensitivity anger, rejection sensitivity anxiety, and perceived rejection possibility predict each bystander response. In all regressions, in the first step, age, gender, group membership, and reality context were entered to understand the unique influence of group membership and reality context while examining demographic variables as potential controls. In the second step, empathy and ToM were entered. Then, rejection sensitivity anger, anxiety, and perceived rejection possibility were entered. Finally, dehumanization was entered. These social cognitive skills are added in sequential steps to examine their distinctive effect on bystander responses.

For explicit support, the final hierarchical regression model explained 13% of the variance ($F(10, 353) = 6.327, p = .000$) (see Table 5). Adolescents with higher empathy ($B = -.347, \beta = -.243, p = .000$), higher ToM ($B = -.112, \beta = -.108, p = .035$), and lower rejection sensitivity anger ($B = .204, \beta = .140, p = .012$) reported less explicit support to the actions of the excluder peer. None of the other variables were significant predictors of explicit support (all other p s $> .05$).

For the explicit challenge, the final hierarchical regression model explained 27% of the variance ($F(10, 353) = 14.116, p = .000$) (see Table 5).

Adolescents with lower age ($B = -.100, \beta = -.094, p = .040$), higher empathy levels ($B = .582, \beta = .394, p = .000$), higher ToM levels ($B = .124, \beta = .116, p = .014$), lower perceived rejection possibility levels ($B = .140, \beta = .108, p = .036$) and lower dehumanization levels ($B = .083, \beta = .107, p = .035$) reported showing more explicit challenge to stop the actions of the excluder peer. None of the other variables were significant predictors of explicit challenge (all other p s $> .05$).

For taking revenge from the excluder peer, the hierarchical regression model was not significant ($F(10, 353) = 1.119, p = .801$ in the first step, $p = .203$ in the second step, $p = .252$ in the third step, $p = .290$ in the final step) (see Table 5).

For talking to the excluded peer, the final hierarchical regression model explained 20% of the variance ($F(10, 353) = 9.960, p = .000$) (see Table 5). Participants with lower age ($B = -.140, \beta = -.124, p = .009$) and higher empathy levels ($B = .560, \beta = .360, p = .000$) reported that they would talk more with the excluded peer. None of the other variables were significant predictors of talking to the excluded peer (all other p s $> .05$).

For seeking help, the final hierarchical regression model explained 12% of the variance ($F(10, 353) = 5.823, p = .000$) (see Table 5). Participants with higher empathy levels ($B = .422, \beta = .238, p = .000$), higher rejection

sensitivity anger levels ($B = .282, \beta = .156, p = .006$) and lower dehumanization levels ($B = .117, \beta = .125, p = .024$) reported seeking more help to stop the actions of the excluder peer. None of the other variables were significant predictors of seeking help (all other $p_s > .05$).

For helplessness, the final hierarchical regression model explained 4% of the variance ($F(10, 353) = 2.361, p = .010$) (see Table 5). Only participants with lower empathy levels ($B = -.270, \beta = -.158, p = .007$) reported feeling more helpless to stop the actions of the excluder peer. None of the other variables were significant predictors of helplessness response (all other $p_s > .05$).

For ignoring, the final hierarchical regression model explained 11% of the variance ($F(10, 353) = 5.602, p = .000$) (see Table 5). Only participants with lower empathy levels ($B = -.495, \beta = -.318, p = .000$) reported more ignorance. None of the other variables were significant predictors of ignoring response (all other $p_s > .05$).

3.2.2.2 Bystander Responses for Teasing

Like bystander responses for social exclusion, seven distinct linear regression analyses were conducted with the same variables entered in the same steps.

For explicit support, the final hierarchical regression model explained 11% of the variance ($F(10, 353) = 5.610, p = .000$) (see Table 6). Participants with higher empathy levels ($B = -.328, \beta = -.271, p = .000$) and higher ToM levels

($B = -.119$, $\beta = -.136$, $p = .009$) reported showing less explicit support for the actions of the excluder peer. None of the other variables were significant predictors of explicit support for teasing (all other $ps > .05$).

For the explicit challenge, the final hierarchical regression model explained 20% of the variance ($F(10, 353) = 10.308$, $p = .000$) (see Table 6).

Participants with higher empathy levels ($B = .619$, $\beta = .399$, $p = .000$), higher ToM levels ($B = .134$, $\beta = .120$, $p = .015$), and lower perceived rejection possibility levels ($B = .154$, $\beta = .113$, $p = .035$) reported showing more explicit challenge to stop the actions of the excluder peer. None of the other variables were significant predictors of explicit challenge (all other $ps > .05$).

For taking revenge from the excluder peer, the final hierarchical regression model explained 2% of the variance ($F(10, 353) = 1.900$, $p = .044$) (see Table 6). Participants with higher empathy levels ($B = .252$, $\beta = .139$, $p = .018$) and higher rejection sensitivity anger levels ($B = .293$, $\beta = .159$, $p = .007$) reported showing more revenge. None of the other variables were significant predictors of taking revenge from the excluder peer for teasing (all other $ps > .05$).

For talking to the excluded peer, the final hierarchical regression model explained 21% of the variance ($F(10, 353) = 10.787$, $p = .000$) (see Table 6). Participants with lower age ($B = -.177$, $\beta = -.156$, $p = .001$), higher empathy levels ($B = .475$, $\beta = .303$, $p = .000$) and higher ToM levels ($B = .140$, $\beta = .124$, $p = .011$) reported that they would talk more with the excluded peer. None of

the other variables were significant predictors of talking to the excluded peer after teasing incident (all other $p_s > .05$).

For seeking help, the final hierarchical regression model explained 16% of the variance ($F(10, 353) = 7.822, p = .000$) (see Table 6). Participants with higher empathy levels ($B = .473, \beta = .270, p = .000$) and lower dehumanization levels ($B = .143, \beta = .155, p = .004$) reported seeking more help to stop the actions of the excluder peer. None of the other variables were significant predictors of seeking help for teasing (all other $p_s > .05$).

For helplessness, the final hierarchical regression model explained 15% of the variance ($F(10, 353) = 7.530, p = .000$) (see Table 6). Participants with lower empathy levels ($B = -.530, \beta = -.330, p = .000$) and higher perceived rejection possibility ($B = -.332, \beta = -.235, p = .000$) reported feeling more helpless to stop the actions of the excluder peer. None of the other variables were significant predictors of helplessness in teasing (all other $p_s > .05$).

For ignoring, the final hierarchical regression model explained 21% of the variance ($F(10, 353) = 10.348, p = .000$) (see Table 6). Participants with lower empathy levels ($B = -.593, \beta = -.391, p = .000$) and lower ToM levels ($B = -.180, \beta = -.165, p = .001$) reported more ignorance. None of the other variables were significant predictors of ignoring in teasing (all other $p_s > .05$).

CHAPTER IV

DISCUSSION

There are various contextual and individual factors that affect prosocial bystander responses and judgments (e.g., empathy and group membership; Gönültaş et al., 2020). These factors are extensively studied but there are still important gaps in the literature that limit our understanding of bystander responses and justifications in different contexts. One of those gaps is the dearth of literature about the effect of changing reality contexts (i.e., VR vs real life) and the potential interaction between reality contexts and group membership. Considering the rapid digitalization of daily life, it is crucial to investigate adolescents' bystander moral judgments, responses, and likelihood of future helping in virtual reality contexts. Thus, this study aimed to investigate the role of group membership and the reality context on adolescents' bystander moral judgments, responses, and likelihood of future helping behavior.

4.1 Age and Gender-related Demographic Factors

Results showed that girls were less likely to rate both bullying incidents as acceptable, show more prosocial bystander responses (e.g., talking to the excluded, seeking help) and prosocial helping behavior, feel more self-efficacy for helping the excluded peer, and evaluate the challenger more positively compared to boys. These results were in line with the literature reporting that girls are more likely to show prosocial bystander responses and judgments compared to boys in bullying incidents (Mulvey et al., 2021).

In our study, age was negatively correlated with talking to the excluded peer in both bullying incidents. This might stem from the level of confidence that adolescents feel about comforting a sad peer and this confidence might increase as children get older. Moreover, being young predicted showing more explicit challenge behavior in the social exclusion incident and talking to the excluded peer in both incidents. This result is consistent with SDT approach because as children grow older their ability to draw on multiple domains increases. Hence, older age groups might be drawing more on both moral and conventional domains whereas the younger age group might be drawing more on moral domains. This can refrain older age groups from showing more defender bystander behavior since they consider social/conventional reasons like preserving group harmony, group unity, and group norms.

Furthermore, previous studies that employed the SDT approach note that younger age groups indicated more defending bystander behavior compared

to older age groups (Mulvey et al., 2018b). A second potential explanation might be related to the level of social experience of older age groups and their familiarity and knowledge with the high school environment and related social interactions in these environments. In other words, older age groups might have perceived it riskier to show defending behavior due to potential costs related to challenging the bully, such as being the next victim.

Nonetheless, age-related results might be scarce due to having a limited age range (i.e., 14-17). Thus, future studies should employ different age groups to be able to understand the developmental trajectory more clearly and examine the potential interaction between age and outcome variables.

4.2 Acceptability Judgments

The results related to H3 showed that participants in the ingroup conditions were more likely to judge the teasing behavior as acceptable in the real-life context compared to the VR context. This difference was not found for social exclusion incident. Participants might have perceived the teasing incident as more normative compared to the social exclusion incident in real-life contexts because it is more likely to be subjected to teasing-like bullying incidents in real-life contexts over VR contexts. In turn, this normativeness can be related to acceptability judgments in which what is experienced more can be viewed as more acceptable.

Even though results showed differences depending on the reality context, all participants judged the actions of the excluder peer as not acceptable below

the mean level (1: not acceptable, 6: acceptable). This shows that participants do not find social exclusion and teasing behaviors of the excluder peer acceptable even though mean acceptability levels still varied between VR and real-life conditions. Thus, measuring actual behavioral responses compared to asking for judgments could provide more information about the differences between conditions.

4.3 Bystander Responses

For the main effect of group membership, among seven bystander response categories, only talking to the excluded victim showed a significant difference depending on the group membership. In other words, participants were more likely to talk to the excluded victim when the victim was an outgroup member compared to when the victim was an ingroup member. Even though this result was contradictory to expectations (H2), in this study we did not identify a salient known outgroup such as Syrian immigrants in Turkey or Turkish immigrants in the UK. Most of the studies identify a salient outgroup that mostly receives negative attitudes from the majority ingroup members in real life (e.g., Brenick & Killen, 2014; Gönültaş & Mulvey, 2022a; Palmer et al., 2022; Palmer et al., 2023). For example, one of these studies even showed that the nationality of the outgroup peer shapes bystanders' moral judgments and responses such as showing significantly more active bystander responses to Australian peers compared to Turkish peers in a UK sample (Palmer et al., 2023). In the present study, for the outgroup members, the dissimilarity of the outgroup members was communicated to the participants by identifying the differences between the outgroup and ingroup members

(e.g., *Till now, [the excluded peer] has lived in another virtual universe which was different from yours. The schools and activities of the virtual universe where [the excluded peer] comes from are different from yours*). However, evoking dissimilarity in this way may not be enough compared to using a known definite outgroup and/or labeling the outgroup as immigrants. Moreover, participants could have imagined different nationalities like Syrian, Arabic or Ukrainian. We have adopted this strategy to be able to equate real-life and VR conditions as much as possible because it was not possible to identify a known outgroup in VR conditions without transferring the real-life judgments and attitudes into VR. Moreover, in literature negative attitudes and judgments towards outgroup members are only studied in real-life contexts hence we do not know the unique effect of VR environments on group processes.

Among seven bystander response categories, only explicit challenge and talking to the excluded victim showed a significant interaction effect between reality and group membership contexts. For explicit challenge, participants were more likely to show explicit challenge in the VR context compared to the real-life context when the excluded peer is an ingroup member in the social exclusion case. Moreover, participants were more likely to talk to the victim in the VR over the real-life context in the teasing incident when the victim was an outgroup member. These results are parallel with the literature because as mentioned in the introduction section, studies conducted with adolescents and young adults found more prosocial moral judgments in VR contexts compared to real contexts (e.g., Liu et al., 2023, Niforatos et al., 2020). A

potential reason for these results might stem from the fact that showing explicit challenge and talking to the excluded peer might be regarded as less costly in a VR environment compared to real life. In real life, certain actions like explicitly challenging the bully might be viewed as riskier compared to the risks of doing the same actions in a VR environment. For example, when adolescents challenge the bully in real-life, the bully can take revenge and retaliate in more severe forms (e.g., physical revenge). On the other hand, the potential revenge and retaliation of the bully can be less severe in VR environments such as being limited to excluding the challenger from a chat or starting a rumor. Moreover, the participants might have imagined themselves talking to the victim via chat in the VR conditions (similar to gaming platforms) which reduces the fear of retaliation compared to talking to the victim in real life where other peers can see and observe this occurrence. To investigate this possibility, future studies can manipulate the cost of intervening such as giving a cost of not being able to log into VR ever again if they challenge the bully or talk to the victim to console him/her. Finally, adolescents could have viewed reality contexts as more salient compared to group membership contexts.

With regard to the teasing incident, results documented that participants were more likely to show explicit challenge in the VR context compared to the real-life context when the excluded peer is an outgroup member. Similar to the above discussion, participants might have perceived it less costly to challenge the ingroup excluder when he/she excludes the outgroup peer in VR contexts compared to real-life settings.

In addition, for the teasing incident, participants were more likely to ignore the victim in real-life conditions compared to the VR conditions. Participants might be reporting more ignoring behavior in real-life contexts over VR contexts because they might be feeling more responsibility to intervene in the bullying incident in real-life contexts. Thus, to avoid this responsibility, they might be reporting more ignoring behavior.

Contrary to expectations (H3), there were no significant interaction effects in other bystander responses like seeking help, helplessness, and taking revenge. This shows the uniqueness of each context and the importance of examining varying reality contexts for moral development in adolescents.

It is important to note that regardless of the reality and group membership contexts, all participants judged that they would show active bystander responses (i.e., explicit challenge, talking to the excluded, and seeking help) above mean level, passive bystander responses (i.e., helplessness and ignoring) below mean level and negative bystander responses (i.e., revenge) below mean level (1: I definitely won't do it, 6: I definitely would do it). However, results still provided subtle differences across conditions in participants' responses.

4.4 Repetitive Nature of Bullying

With regard to the effect of repetitive bullying on bystander responses, as expected (H5), results documented that participants were less likely to support excluders/bullies in the teasing incident compared to the social

exclusion incident. Witnessing the continued victimization of the excluded peer might have motivated the participants to show less support to the bully.

Similarly, participants were less likely to ignore the teasing incident compared to the social exclusion incident. It seems that passive bystander responses tend to decrease as adolescents view repetitive antisocial acts towards the same victim.

Moreover, participants were more likely to show explicit challenge in the teasing incident compared to the social exclusion incident only when the excluded peer was an outgroup member in the VR context. This result might be related to viewing the cost of VR contexts as lower than real-life contexts. Moreover, the marginalization of the outgroup members might have encouraged the participants to show more explicit challenge behavior to stop the excluder in the teasing incident compared to the social exclusion incident.

For talking to the excluded, participants reported that they would be more likely to talk to the excluded peer in the teasing incident compared to the social exclusion in all conditions except for when the excluded peer is an outgroup member in the real-life context. Similarly, participants reported that they would feel more helpless in the social exclusion incident compared to the teasing incident in all conditions except for when the excluded peer is an outgroup member in the real-life context. Thus, even when bullying repeats, the saliency of being an outgroup member and the potential costs of talking to an outgroup peer (e.g., being left out, becoming the next victim) in real-life

contexts could have refrained the participants from talking to the excluded peer to console him/her. Moreover, due to saliency and potential costs participants could have continued to feel helpless. These results might help explain the continued victimization of real-life outgroups (e.g., Uyghurs in China; Jain, 2019, Syrian refugees in Turkey and other European countries; The Economist, 2024) even though people directly or indirectly witness their victimization.

As expected, participants were more likely to seek help in the teasing incident compared to the social exclusion incident in all conditions. Compared to talking to the excluded, seeking help items does not require the participants to directly engage with the excluded peer rather in the given items participants are given the choice to seek help from teachers or other friends in their class. Thus, participants may have felt more comfortable seeking help and perceived lower cost even in the outgroup member condition in real-life contexts compared to talking to the excluded.

As expected, participants were more likely to show retaliatory behavior (i.e., revenge) in the teasing incident compared to the social exclusion incident. That is, when the bullying repeats participants might view the excluder peer as deserving of more punishment and judge that he/she should experience a similar maltreatment. Current literature documents low levels of retaliatory desires in children and adolescents (e.g., McDonald & Lochman, 2012; Recchia et al., 2019) however this study shows that examining the repetitive nature of bullying might provide novel insights for retaliation. It is crucial to

study retaliatory desires and behaviors more because retaliation creates a vicious cycle by perpetuating further bullying. Overall, these results also show the importance of studying the repetitive nature of bullying to increase the ecological validity of the studies and investigate bystander responses more comprehensively.

4.5 Challenger Evaluation

With regard to challenger evaluations only in the VR conditions, participants were more likely to evaluate the behavior of the challenger as more acceptable when the excluded peer is an outgroup member over being an ingroup member. There might be three potential explanations for this result. First of all, participants might have viewed the outgroup member as more marginalized than the ingroup peer and this perception can be a lot higher for the VR contexts compared to the real-life contexts. Secondly, participants could have found it harder to challenge the bully when the victim is an outgroup member than being an ingroup member. Due to this, the actions of the challenger could have been viewed as more important in the outgroup condition compared to the ingroup condition. Finally, there is a possibility that the group processes in VR environments can be quite different than extensively studied and known real-life group processes. Thus, it is crucial to investigate the effect of VR environments in future bystander response studies.

Participants were more likely to indicate that they would judge the behaviors of the challenger peer as more acceptable compared to their group. This is in

line with the literature documenting that adolescents are more likely to report positive challenger evaluations compared to their groups (Gönültaş et al., 2022; Mulvey et al., 2018a; Mulvey & Killen, 2016). For example, both children and adolescents indicated that they would support a challenger more compared to their group in an aggression incident (Mulvey & Killen, 2016). Moreover, similar patterns are also observed in inclusivity judgments in which children reported being more inclusive towards non-English speaking outgroup members compared to their peers (Mulvey et al., 2018a). These imply that children and adolescents are able to differentiate between their own perspective and their peers' perspective. Thus, it is important to understand and compare children's and adolescents' judgments and their perceptions of their group's judgments. Regardless of the reality and group membership contexts, all participants evaluated the challenger as positively above the mean level (1: not acceptable, 6: acceptable).

4.6 Perceived Support

Contrary to expectations (H2) and the group membership literature, participants were more likely to expect support for being a challenger when the excluded peer is an outgroup member compared to being an ingroup member only in real-life conditions. There can be two potential explanations for this result. First of all, participants read about a challenger ingroup peer before they answered this question. Knowing the presence of a challenger and seeing that he/she does not experience any retaliatory act for showing resistance when an outgroup peer is victimized might be more impactful and effective compared to seeing a challenger when an ingroup peer is

victimized. In turn, this might have led participants to feel more encouraged and supported for showing challenging behavior for an outgroup member. Secondly, similar to previous discussions, not providing a definite outgroup or not identifying a specific status like 'immigrants' could have led participants to approach the outgroup peer without pre-formed negative attitudes and judgments and consider the marginalization of the outgroup peer.

Regardless of the reality and group membership contexts, all participants stated that they would receive above mean level support from their peers.

4.7 Helping Behavior

With regard to helping behaviors, participants were more likely to show proactive and active helping behaviors towards outgroup members compared to ingroup members only in the VR context. Further, they were less likely to show no help behaviors for the outgroup members compared to their ingroup members only in the VR context. These results contradict intergroup processes literature since existing studies document higher prosocial helping towards ingroup members over outgroup members (e.g., Elenbaas & Killen, 2016; Glidden et al., 2022; Gönültaş & Mulvey, 2022a). However, all these studies examined prosocial helping in real intergroup contexts and we found this pattern only in the VR contexts. It is plausible to discuss that intergroup processes in real intergroup settings are not transferred to the VR contexts in the same way as in real life. In other words, 'from another country' and 'from another virtual universe' might not have the same meaning or power for the participants. For example, in online gaming, individuals still know the

nationality of the other player even though everyone uses an avatar. Thus, group memberships can continue to be salient in gaming environments, but this might not be the case for the VR context in our study. Moreover, in addition to the ingroup we have created in the VR environment, there might be an additional group process in the VR contexts, such as human versus avatar. This might have created an additional group process that we could not control. Thus, future studies should study VR contexts more in-depth to understand the group membership mechanisms in VR environments.

Similar to bystander responses, results documented that participants were more likely to show proactive help in the VR context compared to the real-life context when the excluded peer is an outgroup member. This can be explained by the possibility that helping in the VR context can be less costly both in terms of time investments (an example item for proactive help: *Before the event, I make sure that the excluded peer spends time with us during breaks so that my classmates can warm up to him/her*) and relationship with the ingroup excluders and bullies (e.g., fear of potential retaliation and exclusion).

Lastly, for real-life conditions, participants were more likely to show passive help for outgroup members compared to ingroup members. This is in line with the previous literature documenting more passive bystander responses toward outgroup members compared to ingroup members in real-life contexts (Gönültaş & Mulvey, 2022a).

These mixed results between real life and VR contexts documented the need for future research on understanding the dynamic nature of these two contexts better. This might help us to understand why there are differences in moral behaviors in VR vs real-life contexts and which mechanisms predict these changes. Moreover, different group membership factors might be at play in VR contexts and real-life group processes might not be transferred to VR environments directly in the same manner. In addition, reality context could have been perceived as more salient compared to group membership context due to not defining a known and definite outgroup or because of the engaging nature of VR environments. Thus, future studies should study VR contexts more in-depth to understand the group membership mechanisms in VR environments.

Regardless of the reality and group membership contexts, all participants judged that they would demonstrate active helping behavior above the mean level, passive helping behavior above the mean level, and no helping behavior below the mean level.

4.8 Self-efficacy

Participants reported above mean level self-efficacy levels regardless of the condition, however, contrary to expectations, participants' self-efficacy levels did not show any difference depending on the condition. The ambiguity of the outgroup peers' nationality can explain this result because participants could have felt less self-efficacy for helping the excluded outgroup peer over the

excluded ingroup peer if the outgroup peer was labeled with a known community that receives discrimination and prejudice in real life.

4.9 Forgiveness

Participants' forgiveness levels did not show any difference depending on the condition. This result contradicts the literature since previous studies found adolescents are more likely to forgive ingroup transgressors than outgroup transgressors (Mulvey et al., 2022). However, in these studies transgressors commit a single transgression, hence the apology might have seemed more sincere. Since there were two consecutive bullying incidents committed by the same bullies in this study, participants might have viewed the sincerity of the apology lower and thought that the same harmful actions would be repeated by the transgressor in the future.

4.10 Social-cognitive and Contextual Correlates of Bystander Responses

4.10.1 Empathy

As expected, participants with higher empathy levels were more likely to show explicit challenge, talk to the excluded peer, and seek help whereas those with lower empathy levels were more likely to show explicit support, feel helpless, and ignore the incident in both bullying incidents. This is in line with the literature since studies report the positive relation between empathy and prosocial bystander behavior (e.g., Barchia & Bussey, 2011; Gönültaş et al., 2020; Kowalski et al., 2013). Contrary to expectations (H4), empathy had no significant relationship with taking revenge in the social exclusion incident. Nonetheless, empathy was significantly related with taking revenge in the

teasing incident. Seeing the repetitiveness of the bullying might have prompted participants to feel way worse for the excluded peer and this might have led the participants to show more retaliatory behavior. Another potential explanation might be the differences between bullying types. The teasing incident might have created more empathy compared to the social exclusion incident because it is in a more direct form, and it involves an insult toward a product of hard work (i.e. the robot). Further, participants were asked to help the organization of the second activity hence they actively contributed to the preparation of this activity which might lead them to internalize this activity more.

4.10.2 Theory of Mind

As expected, participants with higher ToM levels were more likely to show explicit challenge whereas those with lower ToM levels were more likely to show explicit support to the bully in both bullying incidents. Contrary to expectations (H4), ToM did not predict talking to the excluded, seeking help, helplessness, ignoring, and seeking revenge. Nonetheless, we found a significant positive relationship between ToM and the talking to excluded and a negative relationship between ToM and ignoring in the teasing incident. These differences can be explained by the differences in the type of bullying. More specifically, teasing might have activated and required participants to use their mental states more compared to social exclusion.

4.10.3 Rejection Sensitivity

Participants who scored higher in rejection sensitivity anger were more likely

to show explicit support and seek help. These results were only found for the social exclusion incident and the difference in the type of bullying incidents might explain why this pattern was not found for the teasing incident. That is, the influence and saliency of rejection sensitivity can be higher for the social exclusion case compared to teasing. Showing explicit support and seeking help seems contradictory. However, this can be explained by the possibility of the fact that high levels of rejection sensitivity anger can lead adolescents to give explicit support to bullies to avoid being rejected or seek help to assist the excluded peer. Moreover, participants who scored higher in rejection sensitivity anger were more likely to report taking revenge only in the teasing incident. Thus, witnessing the repetitiveness of the bullying motivated the adolescents with high rejection sensitivity anger to get back with the excluder peer because research finds that rejection sensitivity anger is related to aggressive responses in social exclusion incidents (London et al., 2007).

As expected (H4), participants who perceived a higher rejection possibility were less likely to show explicit challenge in both bullying incidents. This is in line with the literature because research shows that adolescents who expect rejection have a heightened sensitivity towards rejection (Gönültaş et al., 2020). This makes them less likely to show explicit challenge due to the fear of being rejected by their group (Gönültaş et al., 2020). Finally, participants who perceived a higher rejection possibility were more likely to feel helpless in the teasing incident.

Contrary to expectations (H4), no bystander response had a significant

relationship with rejection sensitivity anxiety. Previous research documented that children with high rejection sensitivity anxiety would be more likely to report higher social anxiety and withdrawal (London et al., 2007). This might explain the non-significant relationship between rejection sensitivity anxiety and prosocial bystander responses. As we expected, rejection sensitivity anger predicted showing explicit support and seeking help. This implies that rejection sensitivity anger is a more salient factor for bystander responses compared to rejection anxiety.

4.10.4 Dehumanization

As expected (H4), participants who scored higher in dehumanization were less likely to show explicit challenge only in the social exclusion incident. The differences in the nature of the bullying incidents can explain why there was no significant relationship between dehumanization and explicit challenge in the teasing incident. That is, social exclusion was done for person-oriented reasons (i.e., belonging to a different country/virtual environment or being shy) whereas teasing is done through the physical appearance of a robot hence the saliency of the teasing incident might be lower in terms of personalization.

Moreover, in line with the expectations, participants who scored higher in dehumanization were less likely to seek help to assist the excluded peer in both bullying incidents. Since dehumanization leads adolescents to see the excluded peer as less of a human with lower human characteristics (Forsberg et al., 2014), their motivation to seek help to aid the excluded peer or show

explicit challenge tends to be lower.

Contrary to expectations (H4), other prosocial bystander responses like talking to the excluded had no significant negative relationship with dehumanization and other antisocial bystander responses like ignoring and explicit support had no significant positive relationship with dehumanization. The nature of our dehumanization measure could be a potential limitation because if we were to analyze dehumanization for four conditions separately then we could have found a significant relationship between dehumanization and antisocial bystander responses. However, doing this would have decreased our power a lot due to decreasing the number of participants. Thus, we decided to examine the role of dehumanization as a predictor.

4.11 Limitations and Future Directions

This study documents novel findings regarding the differences in bystanders' moral judgments, responses, and likelihood of future helping behavior in different contexts. However, our results should be evaluated by considering some limitations. Firstly, an elaborative scenario and appropriate virtual environment introduction were made to be able to increase the contextual richness of the material and increase the immersion level of the participants into the virtual world as much as possible. However, using a hypothetical scenario with relevant images to create the VR environment might not be enough to replicate a true VR context. For example, studies that used a VR headset to measure moral behaviors might find higher prosocial responses due to heightened emotional responses (e.g., Liu et al., 2023; Niforatos et al.,

2020). Moreover, by using a VR headset, it would be possible to create an interactive environment in which participants can communicate with non-verbal cues (e.g., gestures) and facial expressions as well as react and intervene to the bullying incident as they like without being constrained by multiple-choice bystander responses. Nonetheless, to the best of our knowledge, no other studies have measured bystander responses of adolescents in different reality contexts while considering the potential effect of group membership. Thus, this study can be a crucial first step to analyze this relationship and future studies should use VR headsets to be able to create a complete VR environment that is contextually rich that targets to examine both group membership and reality context in the same study.

Moreover, it is possible to find different results if VR technologies were a daily part of adolescent's life. For example, online gaming technologies are commonly used and familiar technologies that even those who choose not to play online games frequently have some familiarity with and knowledge of these games. Thus, as children and adolescents are accustomed to VR technologies and/or get exposed to them via their social circle, their perceptions of these technologies and hence their moral behaviors and judgments in these contexts can change. In turn, it will be easier to study moral behaviors and judgments within these contexts.

The second limitation was not identifying a definite known outgroup in our study. Many studies used real-life outgroups that receive negative attitudes from majority ingroup members to study bystander responses and judgments

in the bullying literature (e.g., Gönültaş & Mulvey, 2022a; Palmer et al., 2023). However, it was not possible to create an outgroup in the VR condition without transferring real-life discriminations and prejudices. For example, if the outgroup member is identified as a Syrian peer in the real-life condition, then we had to find a similar outgroup identity for the VR condition. However, it was not possible to identify such an outgroup for the VR condition. In the end, not giving a specific outgroup might have prevented the activation of preexisting negative attitudes in our study.

Thirdly, as discussed in previous sections, there might be additional unknown group processes in VR environments such as human versus avatar. Thus, scarce research on VR group processes might have prevented us from controlling additional unwanted group factors so that only the effect of ingroup and outgroup membership could be observed.

Additionally, we have selected adolescents as our sample as they might be more familiar with VR technologies. In addition, the hypothetical scenario and following surveys were a bit long for younger age groups. Thus, we have limited the sample of our study to adolescents. Future studies should study younger age groups to be able to study the age-related differences and the overall developmental picture of bystander responses in varying reality and group membership contexts.

Furthermore, as discussed in previous sections, participants could have perceived it less costly to intervene in VR environments compared to real-life

contexts. Thus, future studies can provide a similar cost for intervening in both contexts to be able to match the negative consequences that one can face for being a challenger. In addition, future studies can also include a negative consequence for the story challenger such as telling the participants that the challenger is outcasted from his/her social group for telling the excluder peer that what he/she is doing is not acceptable. To the best of our knowledge, no study has included a negative consequence for the challenger of bullying. In this way, participants can understand the result of being a challenger which can alter their bystander responses, and the effect of this manipulation can be understood better if it is presented in between bullying incidents.

In addition, the current study had a cross-section design which prevents us from making causational claims. Future studies can adopt a longitudinal design and try to observe the effect of these contexts on adolescents' bystander judgments and responses and understand the developmental picture more by studying changes in these behaviors and attitudes as children grow older.

Further, regardless of the reality and group membership contexts, all participants judged that they would show active bystander responses (i.e., explicit challenge, talking to the excluded, and seeking help) above mean level, passive bystander responses (i.e., helplessness and ignoring) below mean level and negative bystander responses (i.e., revenge) below mean level. This might be related to the social desirability effect in which

participants try to present themselves in a more favorable light by stating that they would show prosocial bystander responses towards a victimized peer (Gönültaş & Mulvey, 2021b). To eliminate this, future studies can use implicit measures or behavioral measures to understand bystander responses.

4.12 Conclusion and Implications

As previously discussed, VR technologies are becoming more common, and they are becoming a part of children's and adolescents' daily lives. Social interactions, especially with peers are one of the common features of real-life and VR contexts. Interactions with peers can be positive or negative. Extant literature has already identified the detrimental outcome of negative peer interactions (e.g., poor psychological and social outcomes; Smokowski & Evans, 2019). Thus, it is important to study these interactions in different reality contexts. In this way, if needed, it would be possible to take preventive actions before these technologies become widespread. In addition, understanding the nature of VR interactions could be beneficial for using these technologies in educational areas and for taking proactive actions to use VR technologies to support moral development. In this way it would be possible to develop appropriate social policies that can employ these technologies for promoting moral development in educational settings.

Additionally, group membership is an important factor that affects the nature of social interactions. Similar to real-life group processes, in the future, VR contexts can also have their unique group processes. Thus, it is important to study the interaction between reality and group membership contexts and

investigate the potential similarities and differences between them to be able to understand the mechanisms behind children's and adolescents' bystander judgments and responses.

In line with these aims, the current study provides unique insights into moral development in different contexts. For example, we have found that there is a difference in the transfer and/or manifestation of real-life moral rules in VR environments. This implies that group processes might work differently in VR and real-life contexts. Another potential explanation can be the difference in the saliency of reality vs group membership contexts and this saliency can depend on various factors (e.g., higher engagement and arousal levels in VR). Thus, future studies should focus more on different reality contexts to understand the moral mechanisms behind these contexts.

Furthermore, this study also provides novel insights about studying the repetitive nature of bullying. Currently in the literature, most bullying studies investigated bystanders' moral judgments and responses in a single isolated bullying incident. Even though this methodology provides insights into children's and adolescents' moral development, bullying is made up of continuous repetitive negative interactions in the real-life context. Further, any bullying incident also affects future social interactions with both bystanders and the bully. Thus, it is crucial to investigate the repetitive nature of bullying by specifically focusing on investigating bystander responses, potential changes in these responses, and how these negative interactions influence future behaviors such as future helping. With this aim, in the current

study, we created repetitive bullying incidents to be able to analyze participants' moral judgments, responses, and likelihood of future helping behavior more comprehensively. We found that when adolescents experienced the repetitiveness of bullying, their prosocial responses toward bullying were increased. Thus, intervention programs can use this as a preventive tool to raise children's and adolescents' bullying awareness by highlighting the repetitiveness and continuity of bullying. In this way, children and adolescents could be more inclined to intervene from the social exclusion incident by knowing that these types of events will repeat if they choose to remain passive.

Overall, it is important to investigate children's and adolescents' bystander moral judgments, responses, and likelihood of future helping behavior in different contexts, namely in group membership and reality contexts.

Especially VR contexts should be studied in advance to investigate both the opportunities (i.e., educational usage) and threats (i.e., novel manifestation of group processes) of these contexts to children's and adolescents' moral development. The current study provides promising results for using VR technologies to promote prosocial moral behaviors and judgments in adolescents. Apart from this, recent studies also found that VR technologies can be effective in preventing bullying incidents in school contexts by increasing students' empathy levels (Ingram et al, 2019). Moreover, these technologies can be employed to enhance the perspective-taking skills of adolescents by allowing adolescents to experience different roles in a bullying scenario such as the role of a victim (e.g., Badger et al., 2023;

Oyekoya et al., 2021). In this way, children and adolescents understand the perspective of a victimized peer before learning how to stop these incidents as a bystander (Badger et al., 2023). Thus, it is important to investigate these contexts to be able to employ these technologies as a protective factor against bullying.

In addition, using VR technologies can overcome some limitations of self-report measures in bullying literature such as errors related to recall and the actions in these VR environments can be prone to less social desirability (Sargent et al. 2020). For instance, a study documented a difference in adolescent's behavior in the face of antisocial peer pressure in a VR environment vs a self-report measure (Sargent et al. 2020). Moreover, in immersive VR environments, children and adolescents can act more freely to intervene in bullying incidents which would allow scholars to measure actual behavior more accurately.

Finally, the current study showed that socio-cognitive and contextual factors shape adolescents' moral bystander judgments and responses which shows the multifaceted nature of moral development. Sociol-cognitive skills can also be used as tools to increase prosocial bystander responses hence it is crucial to understand social cognitive abilities like empathy and ToM to gain insights for designing intervention studies. Therefore, future studies should acknowledge the multi-faceted nature of moral development and study the effect of different reality contexts and potential interactions between these contexts to understand children's and adolescents' moral development

further and, if needed, devise appropriate intervention strategies to foster prosocial moral development.



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APPENDICES

APPENDIX A: TABLES

Table 1: Descriptive Statistics by Condition for the Social Exclusion Incident

Outcome Variables	Real Ingroup (<i>N</i> = 94)		Real Outgroup (<i>N</i> = 93)		Virtual Ingroup (<i>N</i> = 94)		Virtual Outgroup (<i>N</i> = 93)	
	<i>M</i>	<i>SE</i>	<i>M</i>	<i>SE</i>	<i>M</i>	<i>SE</i>	<i>M</i>	<i>SE</i>
Exclusion Evaluation (1-6)	2.192	.117	1.874	.118	1.981	.117	2.016	.078
Explicit Support BR (1-6)	2.208	.100	2.056	.101	2.154	.101	2.017	.101
Explicit Challenge BR (1-6)	4.321	.097	4.394	.098	4.662	.097	4.630	.105
Revenge BR (1-6)	2.362	.112	2.313	.114	2.324	.113	2.397	.112
Talk to Excluded BR (1-6)	4.165	.102	4.364	.104	4.341	.103	4.531	.102
Seek Help BR (1-6)	3.443	.125	3.653	.127	3.697	.126	3.774	.125
Feeling Helpless BR (1-6)	2.889	.126	2.721	.127	3.104	.126	2.906	.127
Ignoring (1-6)	2.749	.110	2.588	.112	2.743	.111	2.718	.110
Individual Evaluation of Challenger Act (1-6)	5.302	.087	5.363	.089	5.210	.088	5.465	.088
Group Evaluation of Challenger Act (1-6)	4.601	.111	4.633	.112	4.464	.112	4.741	.111
Perceived Support for Challenging Behavior (1-6)	3.991	.110	4.349	.112	4.289	.110	4.402	.110
Proactive Help (1-6)	4.097	.095	4.306	.096	4.315	.096	4.583	.096
Active Help (1-6)	4.675	.086	4.775	.087	4.757	.087	5.002	.087
Passive Help (1-6)	4.624	.084	4.874	.085	5.081	.084	5.030	.085
No Help (1-6)	2.396	.095	2.181	.096	2.390	.096	2.122	.096

Note. BR = Bystander Response

Table 2: Descriptive Statistics by Condition for the Teasing Incident								
Outcome Variables	Real Ingroup (<i>N</i> = 94)		Real Outgroup (<i>N</i> = 93)		Virtual Ingroup (<i>N</i> = 94)		Virtual Outgroup (<i>N</i> = 93)	
	<i>M</i>	<i>SE</i>	<i>M</i>	<i>SE</i>	<i>M</i>	<i>SE</i>	<i>M</i>	<i>SE</i>
Teasing Evaluation (1-6)	1.490	.078	1.475	.078	1.258	.078	1.404	.078
Explicit Support BR (1-6)	1.631	.084	1.739	.085	1.527	.085	1.557	.085
Explicit Challenge BR (1-6)	4.421	.104	4.534	.105	4.572	.104	4.829	.105
Revenge BR (1-6)	3.092	.131	2.900	.133	2.822	.132	2.854	.131
Talk to Excluded BR (1-6)	4.390	.106	4.510	.107	4.590	.107	4.823	.106
Seek Help BR (1-6)	3.746	.120	4.038	.122	4.035	.121	4.250	.120
Feeling Helpless BR (1-6)	2.326	.112	2.527	.113	2.462	.112	2.238	.113
Ignoring BR (1-6)	2.283	.101	2.210	.103	2.130	.102	2.025	.102
Self-efficacy (1-6)	3.732	.093	3.849	.095	3.772	.094	3.852	.093
Forgiveness (1-6)	3.800	.114	4.046	.116	3.827	.114	3.854	.114

Note. BR = Bystander Response

Table 3: Regression Analyses for Variables Predicting Social Exclusion Bystander Responses in Different Group Membership and Reality Contexts

	Explicit Support			Explicit Challenge			Revenge			Talking to Excluded			Seeking Help			Helplessness			Ignoring		
Variables	<i>B</i>	<i>SE</i>	<i>B</i>	<i>B</i>	<i>SE</i>	β	<i>B</i>	<i>SE</i>	<i>B</i>	<i>B</i>	<i>SE</i>	β	<i>B</i>	<i>SE</i>	β	<i>B</i>	<i>SE</i>	β	<i>B</i>	<i>SE</i>	β
Step 1																					
Age	.08	.05	.08	-.08	.05	-.07	-.01	.06	-.01	-.14	.06	-.12 ^a	-.10	.07	-.07	-.02	.07	-.01	-.02	.06	-.02
Gender	.37	.11	.17 ^b	-.53	.11	-.25 ^c	-.14	.12	-.06	-.50	.12	-.22 ^c	-.41	.14	-.16 ^b	.25	.13	.10	.46	.12	.20 ^c
ConIO	.13	.11	.06	-.03	.11	-.01	-.04	.12	-.02	-.19	.11	-.08	-.17	.13	-.06	.14	.13	.06	.13	.12	.06
ConVR	-.06	.11	-.03	.32	.11	.15 ^b	.02	.12	.01	.21	.11	.10	.19	.13	.08	.15	.13	.06	.01	.12	.00
Sig.		.003			.000			.801			.000			.004		.166			.003		
Adjusted <i>R</i> ²		.03			.08			-.01			.07			.03		.01			.03		
<i>F</i> for change in <i>R</i> ²		4.02 ^b			8.72 ^c			.41			7.93 ^c			3.88 ^b		1.63			4.07 ^b		
Step 2																					
Age	.08	.05	.08	-.08	.05	-.08	-.01	.06	-.01	-.14	.05	-.13 ^b	-.10	.07	-.08	-.01	.06	-.01	-.02	.06	-.02
Gender	.16	.11	.08	-.21	.10	-.10 ^a	-.04	.13	-.02	-.20	.11	-.09	-.18	.14	-.07	.11	.13	.04	.23	.12	.10
ConIO	.15	.10	.07	-.05	.10	-.02	-.05	.12	-.02	-.20	.11	-.09	-.18	.13	-.07	.16	.13	.06	.15	.11	.07
ConVR	-.07	.10	-.03	.31	.10	.15 ^b	.01	.12	.00	.20	.11	.09	.17	.13	.07	.15	.12	.06	.02	.11	.01
Empat	-.37	.08	-.26 ^c	.62	.07	.42 ^c	.22	.09	.15 ^b	.60	.08	.39 ^c	.48	.10	.27 ^c	-.27	.09	-.16 ^b	-.46	.08	-.30 ^c
ToM	-.14	.05	-.13 ^b	.12	.05	.11 ^a	-.03	.06	-.03	.02	.05	.02	-.04	.07	-.03	-.10	.06	-.08	-.06	.06	-.05
Sig.		.000			.000			.203			.000			.000		.006			.000		
Adjusted <i>R</i> ²		.11			.25			.01			.20			.09		.03			.11		
<i>F</i> for change in <i>R</i> ²		17.24 ^c			43.22 ^c			3.45 ^c			30.24 ^c			13.06 ^c		5.93 ^b			16.79 ^c		
Step 3																					
Age	.07	.05	.07	-.10	.05	-.09	-.01	.06	-.01	-.14	.05	-.12 ^b	-.11	.06	-.09	-.00	.06	.00	-.02	.06	-.01
Gender	.17	.11	.08	-.17	.11	-.08	-.04	.13	-.02	-.17	.12	-.07	-.12	.14	-.04	.09	.14	.04	.26	.13	.12 ^a
ConIO	.15	.10	.08	-.04	.10	-.02	-.05	.12	-.03	-.21	.11	-.09	-.17	.13	-.07	.14	.13	.06	.14	.11	.06
ConVR	-.07	.10	-.04	.32	.10	.15 ^b	-.02	.12	-.01	.20	.11	.09	.15	.13	.06	.14	.13	.06	.01	.11	.01
Empa	-.36	.08	-.25 ^c	.60	.08	.41 ^c	.22	.10	.15 ^a	.56	.08	.36 ^c	.44	.10	.25 ^c	-.28	.10	-.16 ^b	-.50	.09	-.32 ^c

Table 3 (cont'd)

ToM	-.11	.05	-.11 ^a	.12	.05	.12 ^a	-.01	.06	-.01	.01	.06	.01	-.00	.07	-.00	-.11	.07	-.09	-.06	.06	-.05
RSAng	.21	.08	.15 ^b	.06	.08	.04	.13	.10	.08	-.06	.08	-.04	.26	.10	.15 ^a	-.14	.10	-.08	-.05	.09	-.03
RSAnx	-.06	.07	-.06	.05	.06	.05	-.03	.08	-.03	.10	.07	.09	.06	.08	.04	.03	.08	.03	.11	.07	.10
RSC	.08	.07	.07	.15	.07	.11 ^a	-.06	.08	-.05	-.01	.07	-.00	.10	.09	.06	-.14	.09	-.09	-.04	.08	-.03
Sig.		.000			.000			.252			.000			.000			.007			.000	
Adjusted R^2		.13			.26			.01			.20			.13			.04			.11	
F for change in R^2		2.70 ^a			1.70			.10			.85			3.03 ^a			1.47			1.29	
Step 4																					
Age	.08	.05	.07	-.10	.05	-.10 ^a	-.02	.06	-.01	-.14	.05	-.12 ^b	-.12	.06	-.09	.00	.06	.00	-.01	.06	-.01
Gender	.15	.11	.07	-.14	.11	-.07	-.02	.13	-.01	-.16	.12	-.07	-.07	.14	-.03	.08	.14	.03	.25	.13	.11
ConIO	.12	.11	.06	.02	.10	.01	-.03	.12	-.01	-.20	.11	-.09	-.10	.13	-.04	.12	.13	.05	.12	.12	.05
ConVR	-.02	.11	-.01	.25	.10	.12 ^a	-.05	.12	-.02	.19	.11	.08	.04	.14	.02	.18	.14	.07	.05	.12	.02
Empa	-.35	.08	-.24 ^c	.58	.08	.39 ^c	.22	.09	.14 ^a	.56	.08	.36 ^c	.42	.10	.24 ^c	-.27	.10	-.16 ^b	-.50	.09	-.32 ^c
ToM	-.11	.05	-.11 ^a	.12	.05	.12 ^a	-.01	.06	-.01	.01	.06	.01	-.00	.07	-.00	-.11	.07	-.09	-.06	.06	-.05
RSAng	.20	.08	.14 ^a	.07	.08	.05	.13	.09	.08	-.06	.09	-.04	.28	.10	.16 ^b	-.14	.10	-.08	-.06	.09	-.04
RSAnx	-.06	.06	-.05	.05	.06	.04	-.03	.08	-.03	.10	.07	.09	.05	.08	.04	.03	.08	.03	.12	.07	.10
RSC	.09	.07	.07	.14	.07	.11 ^a	-.06	.08	-.05	-.01	.07	-.00	.09	.09	.06	-.14	.09	-.09	-.03	.08	-.03
Dehuman	-.06	.04	-.08	.08	.04	.11 ^a	.04	.05	.05	.01	.04	.01	.12	.05	.13 ^a	-.04	.05	-.05	-.04	.05	-.05
Sig.		.000			.000			.290			.000			.000			.010			.000	
Adjusted R^2		.13			.27			.01			.20			.12			.04			.11	
F for change in R^2		2.22			4.46 ^a			.58			.06			5.11 ^a			.61			.77	

Note. ^a indicates $p < .05$. ^b indicates $p < .01$. ^c indicates $p < .001$.

Table 4: Regression Analyses for Variables Predicting Teasing Bystander Responses in Different Group Membership and Reality Contexts

Variables	Explicit Support			Explicit Challenge			Revenge			Talking to Excluded			Seeking Help			Helplessness			Ignoring		
	<i>B</i>	<i>SE</i>	β	<i>B</i>	<i>SE</i>	β	<i>B</i>	<i>SE</i>	β	<i>B</i>	<i>SE</i>	β	<i>B</i>	<i>SE</i>	β	<i>B</i>	<i>SE</i>	β	<i>B</i>	<i>SE</i>	β
Step 1																					
Age	.07	.05	.08	-.03	.06	-.02	.06	.07	.04	-.16	.06	-.14 ^b	-.09	.07	-.07	-.02	.06	-.01	-.01	.06	-.01
Gender	.07	.09	.04	-.29	.12	-.13 ^a	-.11	.14	-.04	-.51	.12	-.22 ^c	-.49	.13	-.19 ^c	.29	.12	.12 ^a	.25	.12	.11 ^a
ConIO	-.09	.09	-.05	-.17	.12	-.08	.09	.14	.04	-.19	.11	-.09	-.26	.13	-.10 ^a	.03	.12	.01	.13	.11	.06
ConVR	-.14	.09	-.08	.25	.12	.11 ^a	-.14	.14	-.05	.29	.11	.13 ^b	.28	.13	.11 ^a	-.11	.12	-.05	-.24	.11	-.11 ^a
Sig.		.179			.011			.604			.000			.000			.175			.043	
Adjusted R^2		.01			.03			-.00			.09			.06			.01			.02	
F for change in R^2		1.58			3.29 ^a			.68			9.63 ^c			6.39 ^c			1.60			2.48 ^a	
Step 2																					
Age	.08	.04	.09	-.03	.05	-.03	.06	.07	.04	-.17	.05	-.15 ^b	-.10	.06	-.07	-.01	.06	-.01	-.00	.05	-.00
Gender	-.12	.09	-.07	.04	.11	.02	.01	.15	.01	-.22	.11	-.10	-.22	.13	-.09	.04	.13	.02	-.07	.11	-.03
ConIO	-.07	.09	-.04	-.20	.11	-.09	.09	.14	.03	-.21	.11	-.09 ^a	-.28	.12	-.11 ^a	.05	.12	.02	.15	.10	.07
ConVR	-.15	.09	-.09	.25	.11	.11 ^a	-.16	.14	-.06	.29	.11	.13 ^b	.27	.12	.11 ^a	-.10	.12	-.05	-.24	.10	-.11 ^a
Empat	-.35	.06	-.29 ^c	.62	.08	.40 ^c	.28	.10	.15 ^b	.53	.08	.34 ^c	.54	.09	.31 ^c	-.49	.09	-.31 ^c	-.59	.08	-.39 ^c
ToM	-.14	.04	-.16 ^b	.15	.05	.13 ^b	-.07	.07	-.05	.14	.05	.13 ^b	.02	.06	.02	-.10	.06	-.09	-.20	.05	-.18 ^c
Sig.		.000			.000			.102			.000			.000			.000			.000	
Adjusted R^2		.11			.19			.01			.21			.14			.10			.20	
F for change in R^2		22.04 ^c			37.72 ^c			3.95 ^a			28.97 ^c			17.93 ^c			19.54 ^c			41.17 ^c	
Step 3																					
Age	.08	.04	.09	-.04	.05	-.04	.05	.07	.03	-.18	.05	-.15 ^c	-.11	.06	-.09	.01	.06	.01	.01	.05	.01
Gender	-.14	.10	-.08	.04	.12	.02	.05	.15	.02	-.16	.12	-.07	-.16	.14	-.06	.03	.13	.01	-.08	.12	-.03
ConIO	-.08	.09	-.05	-.18	.11	-.08	.09	.14	.03	-.20	.11	-.09	-.27	.12	-.11 ^a	.02	.11	.01	.14	.10	.06

Table 4 (cont'd)

ConVR	-.17	.09	-.10	.28	.11	.12 ^b	-.19	.14	-.07	.31	.11	.14 ^b	.27	.12	.11 ^a	-.15	.11	-.06	-.27	.10	-.12 ^b
Empa	-.33	.07	-.27 ^c	.63	.08	.41 ^c	.26	.11	.14 ^a	.48	.08	.31 ^c	.50	.10	.29 ^c	-.53	.09	-.33 ^c	-.60	.08	-.40 ^c
ToM	-.12	.05	-.14 ^b	.13	.06	.12 ^a	-.02	.07	-.02	.14	.06	.12 ^a	.03	.06	.03	-.09	.06	-.07	-.18	.05	-.16 ^b
RSAng	.12	.07	.10	-.01	.08	-.01	.29	.11	.16 ^b	-.02	.08	-.01	.10	.10	.06	-.06	.09	-.03	.06	.08	.04
RSAnx	-.07	.06	-.08	-.02	.07	-.02	-.01	.09	-.01	.13	.07	.11	.09	.08	.07	.06	.07	.05	.01	.07	.00
RSC	-.06	.06	-.06	.16	.07	.12 ^a	.03	.10	.02	.12	.07	.08	.15	.09	.10	-.33	.08	-.23	-.17	.07	-.10
Sig.		.000			.000			.033			.000			.000			.000			.000	
Adjusted R^2		.11			.20			.03			.21			.14			.15			.20	
F for change in R^2		1.51			2.40			2.55			1.42			1.51			8.73 ^c			2.10	
Step 4																					
Age	.08	.04	.09	-.05	.05	-.04	.04	.07	.03	-.18	.05	-.16 ^c	-.12	.06	-.09	.01	.06	.01	.01	.05	.01
Gender	-.15	.10	-.08	.07	.12	.03	.07	.15	.02	-.15	.12	-.07	-.11	.14	-.04	.03	.13	.01	-.09	.12	-.04
ConIO	-.09	.09	-.05	-.13	.11	-.06	.12	.14	.04	-.18	.11	-.08	-.18	.13	-.07	.03	.17	.01	.11	.11	.05
ConVR	-.15	.09	-.09	.21	.11	.10	-.22	.15	-.09	.27	.11	.12 ^a	.14	.13	.06	-.17	.12	-.07	-.22	.11	-.10 ^a
Empa	-.33	.07	-.27 ^c	.62	.08	.40 ^c	.25	.11	.14 ^a	.48	.08	.30 ^c	.47	.10	.27 ^c	-.53	.09	-.33 ^c	-.59	.08	-.39 ^c
ToM	-.12	.05	-.14 ^b	.13	.06	.12 ^a	-.02	.07	-.02	.14	.06	.12 ^a	.03	.06	.03	-.09	.06	-.07	-.18	.05	-.17 ^b
RSAng	.12	.07	.10	-.00	.08	-.00	.29	.11	.16 ^b	-.01	.08	-.01	.13	.10	.07	-.05	.09	-.03	.05	.08	.03
RSAnx	-.07	.06	-.08	-.02	.07	-.02	-.01	.09	-.01	.13	.07	.11	.08	.08	.06	.06	.07	.05	.01	.07	.01
RSC	-.06	.06	-.05	.15	.07	.11 ^a	.02	.10	.01	.11	.07	.08	.14	.09	.09	-.33	.08	-.23 ^c	-.13	.07	-.10
Dehuman	-.02	.04	-.03	.07	.04	.09	.04	.06	.04	.04	.04	.05	.14	.05	.16 ^b	.02	.05	.02	-.05	.04	-.07
Sig.		.000			.000			.044			.000			.000			.000			.000	
Adjusted R^2		.11			.20			.02			.21			.16			.15			.21	
F for change in R^2		.33			2.94			.56			.84			8.21 ^b			.17			1.63	

Note. ^a indicates $p < .05$. ^b indicates $p < .01$. ^c indicates $p < .001$

APPENDIX B: VR INTRO

Introductory virtual reality photos and Techno-Vision glasses:



Note: These images are only given in VRI member and VRO conditions.

APPENDIX C: VIRTUAL UNIVERSE SELECTION



Note: These images are only given in VRI and VRO conditions.

APPENDIX D: SCHOOL PHOTOS

School photo for VRI and VRO Conditions:

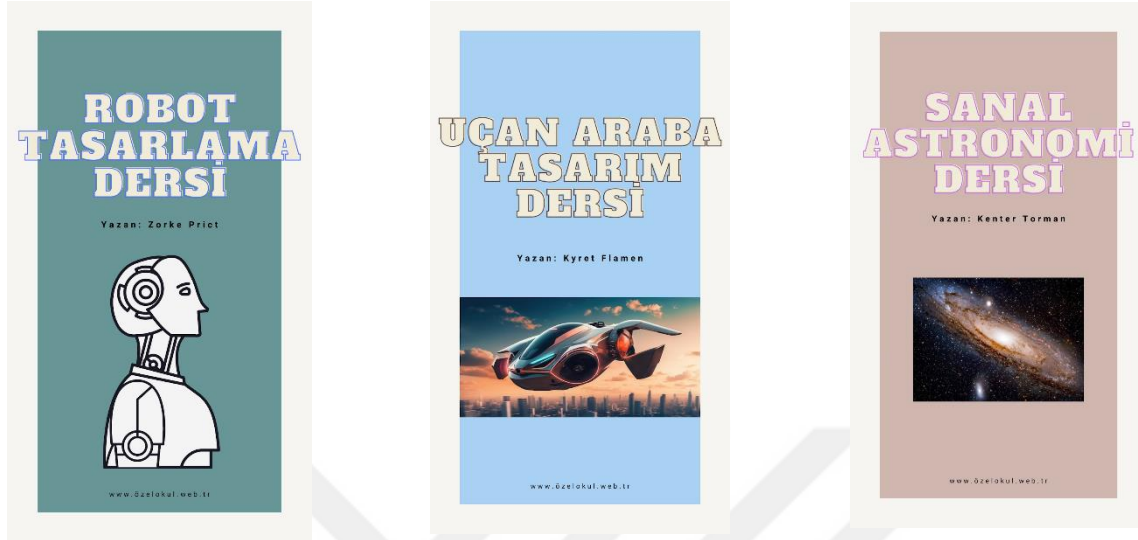


School photo for RI and RO conditions:

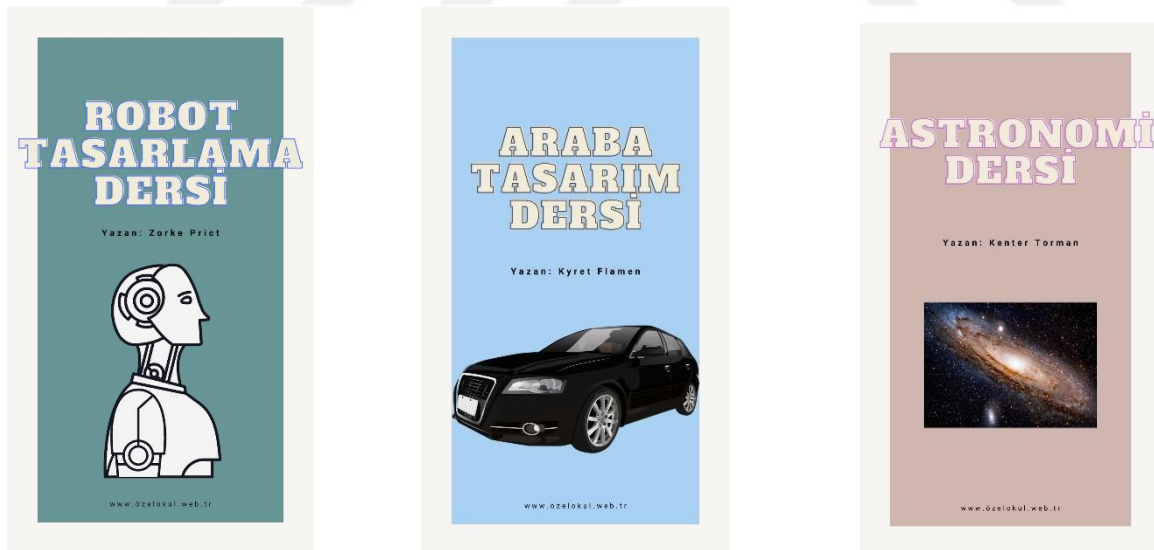


APPENDIX E: CLASS SELECTION

Class selection for VRI and VRO conditions:



Class selection for RI and RO conditions:

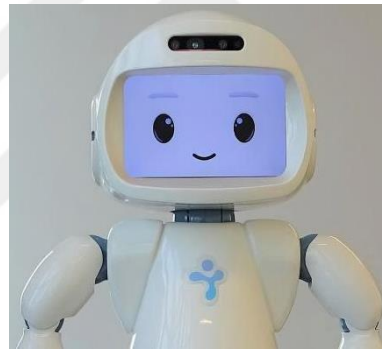
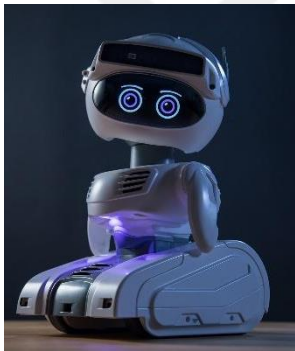


APPENDIX F: ROBOT SELECTION

Robot selection for VRI and VRO conditions:



Robot selection for RI and RO conditions:



APPENDIX G: HYPOTHETICAL SCENARIO FOR VRO CONDITION

Sanal gerçeklik, görüntüleri iki boyutlu ekranlardan algılamak yerine üç boyutlu gerçeklikte deneyimlemeye yarayan bir teknolojidir. Bu özel teknoloji sayesinde, kullanıcılar gördükleri şeyleri sadece izlemekle kalmaz, aynı zamanda dokunabilir, duyabilir ve hatta koklayabilirler. Böylece bu teknolojiyi kullanan kişiler, sanki o an orada gerçekten yaşıyormuş gibi hissedebilirler.



2050 yılında olduğumuzu ve herkesin şu an kendi olduğu yaşta olduğunu hayal et. Artık herkes bir gözlük sayesinde bağlandığı sanal evrenlerde yaşıyor. Bu gözlüklerin adı Tekno-Görüş. Sen de yukarıdaki fotoğraflardaki gibi kendi Tekno-Görüş gözlüklerini kullanarak kendine sanal bir evren yarattın ve orada bir hayatın var.

Bağlandığın sanal evrenin aşağıdakilerden hangisi olmasını istersin?



Şimdi kendine bu sanal evrendeyken kullanmak için bir isim seç:

- a) Bytea b) Kuantia c) Teknaro d) Zekatron

Sanal gerçeklik gözlüğünü takıp bu dünyaya adım attığında, renkli ışıklar, ilginç varlıklar ve uçsuz bucaksız dijital manzaralar seni karşılıyor. Gününün çoğunu bu sanal evrende geçiriyorsun. Bu kurduğun sanal evrende okula, sanal alışverişe, artırılmış gerçeklik sinemasına, stadyumda maç izlemeye ve daha birçok yere gidebiliyorsun.



Artırılmış Gerçeklik Sineması



Sanal Alışveriş



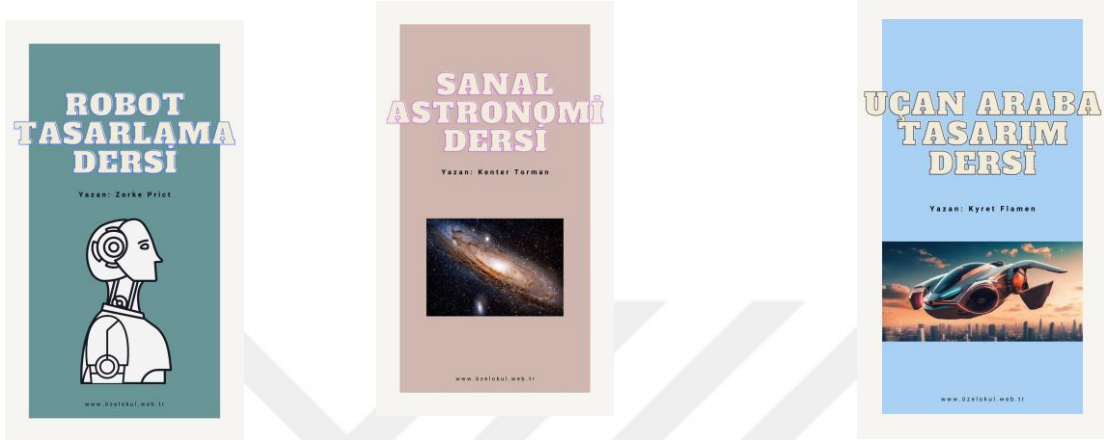
Stadyum

Artık okula gitmek için Tekno-Görüş gözlüklerini takman yeterli oluyor çünkü sadece gözlüklerini takarak birkaç saniye içerisinde okula varmış oluyorsun. Senin gibi bu sanal evrene bağlanan ve buradaki okula giden bir sürü arkadaşın var. Okul son derece gelişmiş teknolojilerle donanmış bir okul. Bu okulda birçok yeni yetenek geliştirebilme imkanın var.



Bu okulda “Robot Tasarlama Dersi”, “Sanal Astronomi Dersi”, ve “Uçan Araba Tasarım Dersi” isimli farklı dersler veriliyor. Sen okulunda bu derslerden hangisine katılmak istersin?

a) Robot Tasarlama Dersi b) Sanal Astronomi Dersi c) Uçan Araba Tasarım Dersi



Seçtiğin dersi seninle beraber alan bir sürü sınıf arkadaşın var. Bütün sınıf arkadaşların senin yaşadığın sanal evrende yaşayan gençler.

Bir gün sınıfına **senin sanal evreninden olmayan yani başka bir sanal evrenden olan bir öğrenci katılıyor**. Bu öğrencinin ismi Zey1ka. **Zey1ka şimdiye kadar seninkinden farklı olan başka bir sanal evrende yaşamış. Zey1ka’nın geldiği bu sanal evrendeki okullar ve yapılan aktiviteler seninkilerden daha farklı**. Ama artık Zey1ka sanal evrenini değiştiriyor ve senin evrenine bağlanarak senin evrenine taşıyor.

Diğer bütün sınıf arkadaşlarının senin sanal evreninde seninle benzer şekilde yaşayan ve benzer aktivitelerden keyif alan çocuklar olduğunu hatırla. Zey1ka’nın başka bir sanal evrenden geldiğini hatırla.

Sınıf arkadaşlarınızla beraber hafta sonları çeşitli okul dışı etkinlikler yapıyorsunuz. Bu hafta sonu da robot tasarlama yarışması yapacaksınız. Herkes aşağıdaki fotoğrafta gördüğün özel çizim kalemi ‘RoboKreatif Kalem’ ile çeşitli şekillerde robotlar tasarlayacak.



Bu yarışların sonunda en yetenekli robotu tasarlayan kişi yarışı kazanacak. Bu robot yarışı için aşağıdaki robotlardan hangisini tasarlamak isterdin?



Sınıf arkadaşlarınızla beraber robot tasarlama yarışının saat kaçta başlayacağını konuşurken Zey1ka da bu yarış etkinliğini duyuyor ve katılmak istediğini söylüyor. Ventaro, Zey1ka'nın yarışa katılmasını istemediği için **etkinlik saatini yanlış söylüyor**. Ertesi hafta Zey1ka yine devam eden robot tasarlama yarışmasına katılmak istediğini fakat geçen hafta yarış alanına gittiğinde orada kimseyi bulamadığını söylüyor. Bu hafta saat kaçta toplanacaklarını sorduğunda Ventaro **“Sen farklı bir sanal evrenden geliyorsun. Sen bizim sanal evrenimizden olmadığın için bize benzemiyorsun, o yüzden yarışmaya katılmanı istemiyoruz”** diyor.

Şu ana kadar hikayeyi doğru anlayıp anlamadığını kontrol etmek istiyoruz. Aşağıdaki soruya doğru cevap vermen hikayeyi anladığını göstermen için çok önemli.

Ventaro'nun Zey1ka'yı istememesinin sebebi farklı bir sanal evrenden gelmesi ve onlara benzememesi midir?

- a) Evet, Ventaro Zey1ka farklı bir sanal evrenden geldiği ve onlara benzemediği için istemiyor
- b) Hayır, Ventaro Zey1ka'yı dondurma sevmediği için istemiyor

Acceptability Judgment for Social Exclusion:

Ventaro'nun bu davranışını nasıl değerlendirirsin?

Hiç doğru değil	Doğru değil	Biraz doğru değil	Biraz doğru	Doğru	Çok doğru
1	2	3	4	5	6

Bystander Responses for Social Exclusion:

Bu olaya tanık olduktan sonra aşağıda verilenleri yapma ihtimaline göre cevaplamanı istiyoruz. Bunların doğru ya da yanlış cevabı yok, sadece senin düşüncelerini öğrenmek istiyoruz.

	Kesinlikle yapmam	Yapmam	Belki yapmam	Belki yaparım	Yaparım	Kesinlikle yaparım
Ventaro'nun haklı olduğunu düşünerek onu desteklerim.	1	2	3	4	5	6
Bunun büyütülecek bir şey olmadığını düşündüğüm için bu durumu önemsemem.	1	2	3	4	5	6
Bu durumu komik bulur ve olayı görmeyen arkadaşlarıma da anlatırım.	1	2	3	4	5	6
Yaptıklarımın hiçbir şeyi değiştirmeyeceğini düşündüğüm için hiçbir şey yapmam.	1	2	3	4	5	6
Beni ilgilendiren bir durum olmadığı için bir şey yapmadan orada beklerim.	1	2	3	4	5	6
Zeylka'ya yardım etmek ve onu rahatlatmak için onunla konuşurum.	1	2	3	4	5	6
Durum daha da kötüye gitmesin diye hiçbir şey yapmam.	1	2	3	4	5	6
Zeylka'yı olan biten hakkında öğretmenlerle konuşmaya cesaretlendiririm.	1	2	3	4	5	6
Bu olayı durdurmak için öğretmenlerimden yardım isterim.	1	2	3	4	5	6
Ben de Ventaro'yu üzmem için onunla olan arkadaşlığımı sonlandırırım.	1	2	3	4	5	6
Ventaro'ya yaptığı şeyin sonuçlarını anlatmak için onunla konuşurum.	1	2	3	4	5	6
Bu olayı durdurmak için sınıftaki başka arkadaşlarımdan yardım isterim.	1	2	3	4	5	6
Ventaro'nun söyledikleri Zeylka'yı üzebileceği için onu durdurmaya çalışırım.	1	2	3	4	5	6

Ventaro'nun yaptığını yaşaması için diğer sınıf arkadaşlarımı Ventaro'yu dışlaması için ikna ederim.	1	2	3	4	5	6
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Ventaro'nun sözlerine ve yaptıklarına şahit olan sınıf arkadaşın Guxel ise Ventaro'nun yaptığının yanlış olduğunu ve farklı bir sanal evrenden gelse de Zey1ka'yı davet etmesi gerektiğini söylüyor.

Evaluation of the Challenger Act:

Guxel'in bu davranışını nasıl değerlendirirsin?

Hiç doğru değil	Doğru değil	Biraz doğru değil	Biraz doğru	Doğru	Çok doğru
1	2	3	4	5	6

Guxel'in bu davranışını diğer sınıf arkadaşların nasıl değerlendirir?

Hiç doğru değil	Doğru değil	Biraz doğru değil	Biraz doğru	Doğru	Çok doğru
1	2	3	4	5	6

Perceived Support for Challenging Behavior:

Sen de Guxel gibi Zey1ka'nın robot tasarım yarışına katılması gerektiğini söylersen sınıftaki arkadaşların seni destekler mi?

Hiç desteklemezler	Desteklemezler	Biraz desteklemezler	Biraz destekler	Destekler	Çok destekler
1	2	3	4	5	6

Likelihood of Future Helping:

Guxel söylediklerine rağmen Ventaro'nun kararından vazgeçmediğini görünce Zey1ka'yı çağırabileceği yeni bir etkinlik düzenlemeye karar veriyor. Ancak Guxel yaşananlardan dolayı tek başına Zey1ka'nın da davet edilebileceği bir etkinlik düzenlemekte zorlandığını söylüyor. Bu nedenle senden kendisine yardımcı olmanı istiyor. Guxel'in bu isteğinden sonra aşağıda verilenleri yapma ihtimaline göre cevaplamanı istiyoruz. Bunların doğru ya da yanlış cevabı yok, sadece senin düşüncelerini öğrenmek istiyoruz.

	Kesinlikle yapmam	Yapmam	Belki yapmam	Belki yaparım	Yaparım	Kesinlikle yaparım
Guxel'in düzenleyeceği etkinlik için gerekli malzemeleri hazırlamasına yardımcı olurum.	1	2	3	4	5	6
Guxel'in herkesin gelmek isteyebileceği bir etkinlik bulmasına ve herkesi davet etmesine yardımcı olacağımı söylerim.	1	2	3	4	5	6
Düzenlenecek olan bu etkinliğe katılırım.	1	2	3	4	5	6
Zey1ka'nın gelmesini istemeyen sınıf arkadaşlarımı bu konu hakkında ikna edeceğimi söylerim.	1	2	3	4	5	6
Zey1ka'yı çok tanımadığım için yardımcı olmam.	1	2	3	4	5	6
Guxel'in fikrini beğendiğimi ve kendisini bu konu hakkında desteklediğimi söylerim.	1	2	3	4	5	6
Etkinlikten önce sınıf arkadaşlarımla Zey1ka'ya ısınması için Zey1ka'nın teneffüslerde bizimle vakit geçirmesini sağlarım.	1	2	3	4	5	6
Bu durum beni ilgilendirmedeği için yardım etmeyeceğimi söylerim.	1	2	3	4	5	6

Sonunda Guxel Zey1ka'yı da davet ettiği bir etkinlik düzenliyor. Sen de Guxel'in düzenlediği bu etkinliğe katılıyorsun. Zey1ka ve Ventaro dahil olmak üzere çoğu sınıf arkadaşının geldiğini görüyorsun. Bu etkinlikte tasarladığınız robotlar ile sanal evrenin çeşitli yerlerine saklanmış olan dijital paraları bulduğunuz bir oyun oynayacaksınız. En

çok dijital parayı bulan kişi ise oyunu kazanacak.

Herkesin toplanmasını ve oyunun başlamasını beklerken Ventaro'nun en yakın arkadaşı Altero ile beraber Zey1ka'nın robotunun tuhaf ve çirkin olduğunu söyleyerek onunla dalga geçtiklerini duyuyorsun. Zey1ka geldiği sanal evrende daha önce tasarladığı robotu ile oyuna katıldığı için onun robotu sizlerin tasarladığınız robotlardan daha farklı görünüyor. Bunu duyan Zey1ka ise oyuna katılmaktan vazgeçtiğini söyleyip kenara oturuyor.

Acceptability Judgment for Teasing:

Ventaro ve arkadaşı Altero'nun bu davranışını nasıl değerlendirirsin?

Hiç doğru değil	Doğru değil	Biraz doğru değil	Biraz doğru	Doğru	Çok doğru
1	2	3	4	5	6

Bystander Responses for Teasing:

Zey1ka'nın önce dışlandığını sonra da onun robotuyla alay edildiğini hatırla.

Yani Zey1ka'nın sürekli bu tarz durumlara maruz kaldığına tanık oluyorsun.

Aşağıda verilen soruları bu tarz durumların tekrarlandığını düşünerek cevaplamayı istiyoruz.

	Kesinlikle yapmam	Yapmam	Belki yapmam	Belki yaparım	Yaparım	Kesinlikle yaparım
Ventaro ve Altero'nun haklı olduğunu düşünerek onları desteklerim.	1	2	3	4	5	6
Bunun büyütülecek bir şey olmadığını düşündüğüm için bu durumu önemsemem.	1	2	3	4	5	6
Bu durumu komik bulur ve olayı görmeyen arkadaşlarıma da anlatırım.	1	2	3	4	5	6
Yaptıklarımın hiçbir şeyi değiştirmeyeceğini düşündüğüm için hiçbir şey yapmam.	1	2	3	4	5	6
Beni ilgilendiren bir durum olmadığı için bir şey yapmadan orada beklerim.	1	2	3	4	5	6
Zey1ka'ya yardım etmek ve onu rahatlatmak için onunla konuşurum.	1	2	3	4	5	6
Durum daha da kötüye gitmesin diye hiçbir şey yapmam.	1	2	3	4	5	6
Zey1ka'yı olan biten hakkında öğretmenlerle konuşmaya cesaretlendiririm.	1	2	3	4	5	6
Bu olayı durdurmak için öğretmenlerimden yardım isterim.	1	2	3	4	5	6
Ben de onları üzmem için Ventaro ve Altero ile arkadaşlığımı sonlandırırım.	1	2	3	4	5	6
Ventaro ve Altero'ya yaptıkları şeyin sonuçlarını fark ettirmek için onlarla konuşurum.	1	2	3	4	5	6
Bu olayı durdurmak için sınıftaki başka arkadaşlarımdan yardım isterim.	1	2	3	4	5	6
Ventaro ve Altero'nun söyledikleri Zey1ka'yı üzebileceği için onları durdurmaya çalışırım.	1	2	3	4	5	6
Yaptıklarını onların da yaşaması için arkadaşlarımı Ventaro ve Altero ile dalga geçmeye ikna ederim.	1	2	3	4	5	6

Self-efficacy:

Ventaro ve Zey1ka arasında yaşananları hatırla. İlk başta Ventaro Zey1ka'nın robot tasarım yarışmasına katılmasını istememişti. Sonra da onun robotu ile dalga geçmişti.

Bunu düşündüğünde aşağıda söylenenleri yapmak senin için ne kadar zor ya da kolaydır?

	Çok zor	Oldukça zor	Biraz zor	Biraz kolay	Oldukça kolay	Çok kolay
Ventaro'yu Zey1ka'yı etkinliklere davet etmesi için ikna etmeye çalışmak.	1	2	3	4	5	6
Zey1ka'yı teselli etmek.	1	2	3	4	5	6
Zey1ka'yı dışlanmak ve alay edilmek konusunda bir öğretmen ile konuşmaya cesaretlendirmek.	1	2	3	4	5	6
Ventaro'ya Zey1ka'yı dışlamayı ve onunla dalga geçmeyi bırakmasını söylemek.	1	2	3	4	5	6
Ventaro'ya Zey1ka ile dalga geçmenin ve onu etkinliklere davet etmemenin yanlış olduğunu söylemek.	1	2	3	4	5	6

İlerleyen haftalarda Zey1ka'yı yavaş yavaş tanıma şansı edinen Ventaro davranışları için pişman oluyor. Bu nedenle Zey1ka'dan özür diliyor ve kendisini affetmesini istiyor. Aynı zamanda bundan sonra yapacağı tüm etkinliklere davetli olduğunu söylüyor.

Forgiveness:

Sence Zey1ka, Ventaro'yu affeder mi?

Kesinlikle affetmez	Affetmez	Belki affetmez	Belki affeder	Affeder	Kesinlikle affeder
1	2	3	4	5	6

APPENDIX H: DEHUMANIZATION SCALE

Sana anlatılan sanal evreni ve gerçek hayatı düşünerek aşağıdaki soruları cevaplamayı istiyoruz.

	Kesinlikle Doğru	Doğru	Biraz Doğru	Ne Yanlış Ne doğru	Biraz Yanlış	Yanlış	Kesinlikle Yanlış
Sanal evrendeki kişiler farklı konular ve olaylar üzerinde mantık yürütme yeteneğine sahiptir.	7	6	5	4	3	2	1
Sanal evrendeki kişiler mantıklı düşünüp davranabilen rasyonel kişilerdir.	7	6	5	4	3	2	1
Sanal evrendeki kişiler ahlaki değerlere sahip kişilerdir.	7	6	5	4	3	2	1
Sanal evrendeki kişiler zihinsel becerileri olan kişilerdir (örn: soyut düşünme, problem çözme).	7	6	5	4	3	2	1

APPENDIX I: SELF-EFFICACY FOR VIRTUAL ENVIRONMENT

Sana anlatılan sanal evreni ve gerçek hayatı düşünerek aşağıdaki soruları cevaplamayı istiyoruz.

	Kesinlikle Katılmıyorum	Katılmıyorum	Biraz Katılmıyorum	Biraz Katılıyorum	Katılıyorum	Kesinlikle Katılıyorum
Herhangi bir sanal gerçeklikte yaşamayı ve gündelik aktivitelerimi sürdürmeyi öğrenebileceğimi düşünüyorum.	1	2	3	4	5	6
Denesem bile sanal gerçeklikte nasıl yaşayacağımı ve gündelik aktivitelerimi nasıl sürdürmem gerektiğini anlamanın benim için zor olacağını düşünüyorum.	1	2	3	4	5	6
Sanal evrende bir şeyler inşa etme konusunda başarılı olacağımı düşünüyorum.	1	2	3	4	5	6
Sanal gerçeklikte yaşamayı ve gündelik aktivitelerimi sürdürmeyi öğrenmek konusunda ustalaşabileceğimi düşünüyorum.	1	2	3	4	5	6

APPENDIX J: PERCEIVED LIKING OF VIRTUAL ENVIRONMENT

Sana anlatılan sanal evreni ve gerçek hayatı düşünerek aşağıdaki soruları cevaplamayı istiyoruz.

	Kesinlikle Katılmıyorum	Katılmıyorum	Biraz Katılmıyorum	Biraz Katılıyorum	Katılıyorum	Kesinlikle Katılıyorum
Sanal gerçeklikte yaratılan sanal evrende okula gitmek isterim.	1	2	3	4	5	6
Sanal gerçeklikte yaratılan sanal evrende arkadaşlarımla sinema, tiyatro gibi sosyal etkinlikler yapmak isterim.	1	2	3	4	5	6
Genel olarak sanal gerçeklikte yaratılan sanal evrende yaşamayı tercih ederim.	1	2	3	4	5	6
Sanal gerçekliği olabildiğince çok kullanmak isterim.	1	2	3	4	5	6

APPENDIX K: EMPATHY SCALE

	Hiçbir Zaman	Nadiren	Bazen	Genellikle	Her Zaman
Arkadaşları tarafından dışlanan bir öğrenci üzüldüğünde ben de üzülürüm.	1	2	3	4	5
Arkadaşları tarafından dışlanan bir öğrenci üzüldüğünde onu rahatlatmak isterim.	1	2	3	4	5
Arkadaşları tarafından dışlanan bir öğrenci ağlamaya başladığında ben de kendimi kötü hissederim.	1	2	3	4	5
Bir öğrenci arkadaşları tarafından dışlandığında onun adına öfkelenmeye başlarım.	1	2	3	4	5
Arkadaşları tarafından dışlanan bir öğrencinin nasıl hissettiğini anlayabilirim.	1	2	3	4	5
Arkadaşları tarafından dışlanan bir öğrencinin nasıl kötü hissettiğinin farkına varabilirim.	1	2	3	4	5
Arkadaşları tarafından dışlanan öğrenci söylemese bile nasıl hissettiğini tahmin edebilirim.	1	2	3	4	5

APPENDIX L: REJECTION SENSITIVITY QUESTIONS

1) Bir yere yeni taşındığını hayal et ve okuldan eve yürüyorsun. Keşke eve birlikte yürüyeceğim biri olsa diye düşünüyorsun. Önünde sınıftan başka bir çocuğun olduğunu görüyorsun ve bu çocuğa doğru yürümeye ve onunla konuşmaya karar veriyorsun. Ona yetişmek için acele ederken, **seninle** konuşmak isteyip istemeyeceğini merak ediyorsunuz.

a. O ANDA, onun **seninle** konuşmak isteyip istemeyeceği konusunda ne derecede **ENDİŞELİ** hissederdin?

Hiç endişeli hissetmezdim 1 2 3 4 5 6 Çok, çok endişeli hissederdim

b. O ANDA, onun **seninle** konuşmak isteyip istemeyeceği konusunda ne derecede **ÖFKELİ** hissederdin?

Hiç öfkeli hissetmezdim 1 2 3 4 5 6 Çok, çok öfkeli hissederdim

c. Sence çocuk **SENİNLE** konuşmak isteyecek mi?

Kesinlikle istemeyecek	istemeyecek	Belki istemeyecek	Belki isteyecek	istemeyecek	Kesinlikle isteyecek
1	2	3	4	5	6

2) Şimdi sınıfta olduğunu hayal et. Öğretmenin sınıf için bir parti düzenlemeye yardım edecek bir gönüllü istiyor. Bir sürü çocuk elini kaldırıyor ve öğretmen **seni** seçecek mi diye merak ediyorsun.

a. O ANDA öğretmenin seni seçip seçmeyeceği konusunda ne derecede

ENDİŞELİ hissederdin?

Hiç endişeli hissetmezdim 1 2 3 4 5 6 Çok, çok endişeli hissederdim

b. O ANDA öğretmenin seni seçip seçmeyeceği konusunda ne derecede **ÖFKELİ** hissederdin?

Hiç öfkeli hissetmezdim 1 2 3 4 5 6 Çok, çok öfkeli hissederdim

c. Sence öğretmen **SENİ** seçecek mi?

Kesinlikle Seçmeyecek	Seçmeyecek	Belki Seçmeyecek	Belki Seçecek	Seçecek	Kesinlikle Seçecek
1	2	3	4	5	6

3) Yine sınıfta olduğunu hayal et ve herkes özel bir projede birlikte çalışmak üzere altı farklı gruba ayrılıyor. Sen olduğun yerde oturuyor ve diğer çocukların gruplara seçilmesini izliyorsun. Beklerken, çocukların **seni** grupları için isteyip istemeyeceklerini merak ediyorsun.

a. O ANDA, seni seçip seçmeyecekleri konusunda ne derecede **ENDİŞELİ** hissederdin?

Hiç endişeli hissetmezdim 1 2 3 4 5 6 Çok, çok endişeli hissederdim

b. O ANDA, seni seçip seçmeyecekleri konusunda ne derecede **ÖFKELİ** hissederdin?

Hiç öfkeli hissetmezdim 1 2 3 4 5 6 Çok, çok öfkeli hissederdim

c. Sence sınıfındaki çocuklar kendi grupları için **SENİ** seçecekler mi?

Kesinlikle Seçmeyecekler	Seçmeyecekler	Belki i Seçmeyecekler	Belki Seçecekler	Seçecekler	Kesinlikle Seçecekler
1	2	3	4	5	6

4) Bir arkadaşınla önceki gün gerçekten çok kötü bir kavga ettiğinizi hayal et.

Şu anda ciddi şekilde sorun yaşıyorsunuz ve arkadaşınla konuşabilmeyi umuyorsun.

Dersten sonra arkadaşını beklemeye ve onunla konuşmaya karar veriyorsun.

Arkadaşının **seninle** konuşmak isteyip istemeyeceğini merak ediyorsun.

a. O ANDA, arkadaşının **seninle** konuşmak ve sorununu dinlemek isteyip istemeyeceği konusunda ne derecede **ENDİŞELİ** hissederdin?

Hiç endişeli hissetmezdim 1 2 3 4 5 6 Çok, çok endişeli hissederdim

b. O ANDA öğretmeninin seni seçip seçmeyeceği konusunda ne derecede **ÖFKELİ** hissederdin?

Hiç öfkeli hissetmezdim

1

2

3

4

Çok, çok öfkeli hissederdim

5

6

c. Sence arkadaşın **SENİNLE** konuşmak ve sorununu dinlemek isteyecek mi?

Kesinlikle istemeyecek	İstemeyecek	Belki istemeyecek	Belki isteyecek	İsteyecek	Kesinlikle isteyecek
1	2	3	4	5	6

APPENDIX M: THEORY OF MIND

1- Murat başıboş ve doğruları söylemeyen biri. Murat'ın kardeşi Ahmet, Murat'ın böyle olduğunu ve asla doğruyu söylemediğini biliyor. Murat bir gün Ahmet'in futbol topunu alıyor. Ahmet, Murat'ın futbol topunu bir yere sakladığını biliyor fakat yine de sakladığı yeri bulamıyor ve çok sinirleniyor. Ardından Murat'ı bulup "Futbol topum nerede? Ya dolabına ya da yatağının altına saklamış olmalısın çünkü diğer her yere baktım. Nerede, dolapta mı yoksa yatağının altında mı?" diye soruyor.

Murat ona topun yatağın altında olduğunu söylüyor. Ahmet topu bulmak için neden dolaba bakacak?

2- Ayşe'nin karnı sürekli aç. Bugün okulda Ayşe'nin en sevdiği yemek var – köfte. Ayşe çok açgözlü bir çocuk ve eve gittiğinde annesinin ona çok güzel bir yemek hazırlamış olacağını bilmesine rağmen o gün okulda herkesten daha fazla köfte almak istiyor. Fakat, herkesin 4 tane köfte alma hakkı var; daha fazla değil. Yemek sırası Ayşe'ye geldiğinde, Ayşe 'Lütfen 8 tane köfte alabilir miyim? Eve gittiğimde hiç yemek yiyemeyeceğim de!' diyor.

Ayşe neden böyle söylüyor?

APPENDIX N: CONTROL QUESTIONS FOR VR CONDITIONS

Daily Internet Usage Frequency:

Ortalama bir günde kaç saat internet kullanıyorsun (sosyal medya, blog, video izleme uygulamaları ve mesajlaşma uygulamaları dahil olmak üzere)?

1-2 saat	3-5 saat	6-8 saat	9 saatten fazla
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Weekly Online Gaming Frequency:

Ortalama bir haftada online oyun oynama sıklığının nedir (örn: PUBG Mobile, World of Warcraft, Call of Duty, Valorant, Sims)?

Hiç	Haftada 1 kez	Haftada 3 kez	Her gün
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Virtual Gaming Experience:

Yukarıda bahsedilen gözlüklerin benzeri gözlükler ile oynanan bazı sanal oyunları var (örn: Playstation VR, Oculus Quest 2, Windows Mixed Reality). Eğer bu tarz sanal oyunlar ile deneyiminiz var ise ortalama bir haftada bu sanal oyunları oynama sıklığınız nedir?

Hiç/Deneyimim yok	Haftada 1 kez	Haftada 3 kez	Her gün
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