INVESTIGATING THE RELATIONSHIP BETWEEN MORAL DISENGAGEMENT AND SEXUALLY VIOLENT ATTITUDES AND BEHAVIOUR, WITH REFERENCE TO THE IMPACT OF EMERGING SEXUAL TECHNOLOGY

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Thesis submitted to the University of Nottingham for the degree of Doctor in Forensic Psychology

Submitted for Examination: January 2022

Abstract

Background: Moral Disengagement (MD) is a concept consisting of eight cognitive mechanisms that allow an individual to psychologically distance themselves from the moral standards that would usually prevent them from acting unethically or unlawfully. Sexual offenders have been found to exhibit higher levels of MD compared with non-sexual offenders and non-offenders, whilst further research has demonstrated a relationship between sexually violent attitudes and MD in community samples. However, evidence supporting these hypotheses is lacking, limiting the validity of these conclusions. Furthermore, sexual technology is rapidly advancing, and the way that sexually violent attitudes or behaviour may present is therefore also changing. Sex robots, holograms, virtual reality, and computer or video games have not only provided an opportunity for individuals to play out sexually violent fantasies, but research suggests may also increase the likelihood that interests will become more violent, potentially increasing the likelihood of contact offending. Since this technology is an emerging area of research, evidence is lacking regarding the consequences of their use.

Aims: Without this evidence, it remains unclear as to whether MD could be an assessment or treatment target for sexual offenders, or an early intervention target for non-offenders, and whether the use of advanced sexual technology could exacerbate sexual violence. The overall aim of this thesis was therefore to investigate the relationship between MD and sexually violent attitudes and behaviour, with reference to the influence of advanced sexual technology.

Method: A systematic review and psychometric critique investigated the evidence base and application of the MD Scale to sexual offender populations, whilst two research projects explored how psychological

constructs relate to attitudes towards and previous/ future use of advanced sexual technology. For the primary research project, participants completed an online questionnaire investigating how the dark tetrad, MD, demographics, and sexual aggression and child sexual abuse myth acceptance related to attitudes towards and use of sex dolls and robots. For the secondary research project, participants completed the same measures with the addition of four free text questions regarding attitudes towards sex dolls and robots, computer/ video games, virtual reality, and holograms simulative of sexual offending behaviour.

Results: A systematic review of the literature provided support for a relationship between MD and sexually violent attitudes and behaviour. Higher MD was found in sexual offenders compared with non-sexual offenders and non-offenders in turn. Higher MD was also found to increase the likelihood of engagement with sexually violent attitudes in non-offending males. However, most relationships were mediated by other factors, such as adverse childhood experiences. The primary research project revealed a lack of evidence for the use of MD in distinguishing between those accepting of and those not accepting of sex doll or robot use. Within the secondary project, no relationships were found between MD and attitudes towards or use of advanced sexual technology, as measured through linguistic patterns. However, within the primary project a relationship was found between acceptance of sexual aggression myths and future use of dolls or robots, whilst in the secondary project those willing to use sex dolls or robots in the future used more reward-based language when discussing advanced sexual technology simulative of sexual violence. Finally, a psychometric critique of the MD Scale and its adaptations revealed generally high reliability and validity; however, lacked

support for its use within sexual offending populations, given a lack of forensic norms and little adaptation for sexual attitudes and behaviour.

Discussion: This thesis provides mixed results concerning the relationship between MD and sexually violent attitudes and behaviour. The systematic review provided support for this relationship. However, the primary and secondary projects found no relationship between MD and attitudes towards sexual technology representative of sexual violence. Potential explanations for this are discussed, including the possibility that this technology is not widely understood as it remains relatively futuristic. Finally, a critique of the MD Scale indicated that research is lacking into the applicability of the scale to sexual offenders; however, it's use with community samples is supported. Recommendations are made for further research into MD, the risks of advanced sexual technology, and for an adapted scale for sexual attitudes and behaviour. Limitations are discussed, including social desirability bias and cultural considerations, whilst implications include consequences for legal frameworks and the possibility for MD to be an assessment and treatment target for both offending and community samples.

Acknowledgements

I would like to thank my academic supervisors for their support throughout the development of my thesis: Professor Kevin Browne and Dr Vincent Egan. I would also like to thank Nicole O'Brien for her support with developing a website for my research, and my brother Jim, and Andy and Ellis Eastwood for finding the time to advise me on my analysis. Finally, I would like to thank my parents, and my siblings Jim and Elly, for supporting me through three degrees and all seven years of my studies.

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Chapter One: Introduction

This chapter provides a description of the overarching aims and research questions of the thesis, the theoretical background, and a summary of the existing literature. An outline of the structure of the thesis is also provided.

Chapter One: Introduction

The main concept explored within this thesis is the potential relationship between Moral Disengagement (MD) and sexually violent attitudes or behaviour. MD is a concept consisting of eight cognitive mechanisms; of moral justification, euphemistic labelling, advantageous comparison, displacement of responsibility, diffusion of responsibility, distortion of consequences, dehumanisation, and attribution of blame (Bandura et al., 1996). Sexual violence refers to any form of unwanted sexual activity, including rape, sexual assault, and sexual abuse (Rape Crisis England & Wales, 2022). Research has demonstrated a relationship between higher MD and sexually violent beliefs, such as rape-supportive attitudes (Carroll, 2009), as well as with sexual offending. For example, Petruccelli et al. (2017a) reported that sexual offenders displayed higher levels of MD compared with non-sexual offenders, and non-offenders, respectively.

Meanwhile, technology has recently advanced to include sex robots, virtual reality pornography, and computer and video games depictive of sexually violent behaviour, and there is further talk surrounding the potential inclusion of holograms in the sex industry. The use of these products has been addressed by several popular science fiction television shows, films, and novels for many years, and the potential forensic implications explored. For example, during one episode of the television series Humans (Wax et al., 2015- 2018), two teenage boys undress a female robot and when the robot objects, they turn her off and attempt to

have sex with her. At this point, a female teenager intervenes and questions "Do you think it's normal to drag an unconscious woman to a room and rape her?" (Bastién, 2015), therefore addressing important questions regarding both whether sex with a robot can ever constitute rape, and how this appertains to the same behaviour towards real people. Another episode deals with the scenario of a robot attempting to rape a human, after mistakenly interpreting consent (Wicclair, 2018). The show therefore highlights risks associated with their use for both robots and humans as the potential victims. Other cultural depictions of such implications include Blade Runner (Scott, 1982), which many have argued includes a scene depicting the protagonist forcing an android into sex, despite this individual being portrayed as the "hero" of the film (Haywood, 2014). Additionally, the television show Black Mirror (Brooker et al., 2011-2019) raises several important debates depicted within a dystopian future, including those surrounding advanced sexual technology. One episode, 'Striking Vipers', deals with the question of whether sexual behaviour in a Virtual Reality video game, in which players can feel everything they do, including sex, can be classified as real sex and therefore whether this can be considered as infidelity. Although not explored in the programme, this raises questions regarding society's standpoint on the representation of sex within realistic games, for example whether forced sex within a game would be considered rape. Finally, The Stepford Wives (Forbes, 1975) considered a world in which human women had been replaced with compliant robots, which included sexual behaviour. This raises questions regarding the dangers of depicting women as sexually compliant objects and considers the

implications for society should robots become commonplace. With these depictions in mind, it is no surprise that concerns have been raised about the risks associated with technology such as this, with the Campaign Against Sex Robots being set up to oppose their introduction, arguing that they encourage a view of women and potentially children as ever consenting sex objects (Richardson, 2016). Research into both MD and advanced sexual technology is crucial when it comes to understanding the causes of sexually violent attitudes or offending, given the possibility that they would have a catalytic effect on this behaviour.

The thesis begins with a systematic review (Chapter Two) of the literature surrounding MD and sexually violent attitudes or offending. This provides a basis for the remainder of the thesis, since an understanding of the available literature was necessary prior to investigation of this relationship within further research. A relationship was identified between MD and sexually violent attitudes and behaviour and it was therefore considered appropriate to include MD in the research projects (Chapters Three and Four), which investigated attitudes towards advanced sexual technology, since versions of this technology have included representations of sexual violence such as rape and child sexual abuse. Research into advanced sexual technology is in its infancy and background evidence was therefore mostly drawn from the relationship between illegal pornography use and offending. The projects drew upon catharsis model, which theorises that unwanted emotions can be reduced through relieving activities, for example by reducing the possibility of future aggression by boxing (Bresin & Gordon, 2013). The question investigated regarding the use of advanced

sexual technology is therefore whether the likelihood of sexual violence would be increased or reduced through its use. Chapter Three investigates this question through the measurement of acceptance of sex dolls and robots. Both dolls and robots are referred to throughout the thesis, considering that research is lacking in both areas, and most existing literature is applicable to both. However, these are differentiated between when appropriate and definitions are provided in the primary research project. Chapter Four explores linguistic patterns when discussing various examples of advanced sexual technology. These projects filled a gap in the literature and represented the beginning of an evidence base into this technology. Since technology is considered almost impossible to control once released (Van de Poel, 2016), and the consequences of the use of this technology is yet unknown, this research has a wealth of implications. These range from the potential for legal frameworks to prohibit or monitor access to this technology if results indicate a risk of sexual offending, to the potential prosocial use of this technology, for example within rehabilitative/preventative therapy. The primary project was presented during the British Psychological Society Division of Forensic Psychology annual conference and received positive feedback (*Appendix A*), with respondents presenting with a clear interest in the vast implications of research in this area. Finally, a psychometric critique (Chapter Five) of the MD Scale (MDS) is presented, regarding its application to sexual offenders. Although the critique identifies several positive factors regarding the validity and reliability of the scale, since it was originally developed with children and adolescents, it's applicability to adult sexual offenders is questionable

and it is argued that an adaptation for this population is necessary. It is advised that an adapted MDS could in future be used in assessment of and intervention with sexual offenders.

The overall aims of the thesis are therefore to investigate the relationship between MD and sexually violent attitudes or behaviour, as well as to explore whether MD is implicated in sexually violent attitudes in relation to advanced sexual technology programmed to imitate rape or child sexual abuse. The research questions investigated were the following:

1. Is there a relationship between MD and sexually violent attitudes or behaviour and how in depth is the evidence base?
2. Is there a relationship between MD and sexually violent attitudes regarding advanced sexual technology?
3. Is the MDS suitable for use with sexual offenders?

When the chapters are combined, it will become clear whether the evidence base provides a sufficiently broad and in-depth investigation of the relationship between MD and sexually violent attitudes or sexual offending, and whether enough has been done to adapt for working with this population. This will also illuminate whether MD can be considered an important feature of sexually violent behaviour and therefore whether this concept should be applied to use of advanced sexual technology representative of sexual offending.

Chapter Two: Systematic Review

Moral Disengagement and Sexually Violent Attitudes and Behaviour: A Systematic Review

Overview of Chapter

This review directly investigates the overarching research question of whether a relationship exists between MD and sexually violent attitudes and behaviour, including sexual offending. This was explored through the identification and discussion of the current evidence base regarding how MD has been applied to and tested within both sexual offending and community non-offending samples. It was considered crucial to complete this review prior to the other chapters since this would provide the author with a broad understanding of the existing literature regarding how MD has already been applied to sexual attitudes and behaviour. It was hoped that this would inform the background and methods of the research projects and psychometric critique described later in the thesis.

Abstract

Aim: This review aims to examine studies which have investigated the relationship between Moral Disengagement (MD) and sexually violent behaviour and attitudes, including rape, child sexual abuse, and sexual harassment. Populations therefore include convicted sexual offenders, with comparisons with non-sexual offenders and non-offenders.

Method: A systematic search of major electronic databases, such as OvidSP, was conducted, followed by hand searching of reference lists and contacting of experts in the field. This review provides a summary of the findings of the identified papers published on this topic, between 1996 and 2019. Inclusion/ exclusion and quality appraisal criteria were applied to each study.

Results: Nine papers, containing 13 studies, met the inclusion criteria. Results highlighted relationships between MD and sexually violent attitudes and behaviour, of sexual offending, rape or sexual harassment supportive attitudes, and cognitive distortions related to sexual behaviour. Higher MD was found in sexual offenders compared with non-sexual offenders and non-offenders in turn, although this was mediated by factors such as substance misuse and Adverse Childhood Experiences. Amongst non-offending males, MD was found to increase the likelihood of engaging with sexually violent attitudes or behaviour, when combined with factors such as fraternity group membership.

Conclusions: Overall, the identified studies demonstrate the influence of several factors on the relationship between MD and violent sexual attitudes

and behaviour, including fraternity group membership and sexual harassment myth acceptance. The studies indicate than when these factors occur in association with MD, the likelihood of engaging with sexually violent attitudes or behaviour is increased. Therefore, non-offending adult males can be differentiated from each other, and certain influences could be targeted to reduce harmful attitudes. Implications for practice are discussed, such as treatment targets for sexual offenders and psychoeducation programmes for non-offending males. Both a lack of research in the area and the questionable quality of existing studies calls for further research.

Moral Disengagement and Sexually Violent Attitudes and Behaviour: A Systematic Review

The social-cognitive theory of moral agency draws upon Moral Disengagement (MD) in explaining why people behave unethically (Shulman et al., 2011). Bandura (1986) theorised that from an early age we develop a set of moral standards, which guide our behaviour and prohibit immoral actions. Therefore, when people behave in ways that meet their moral standards, they experience positive feelings, whilst if they violate these, they are likely to feel negative emotions and experience social punishments such as being imprisoned (Page & Pina 2018). When met with the opportunity to behave in a way that might violate another person, Bandura (1999) states that individuals have the choice to exert self-influence and sanction their actions, or instead they may choose to behave inhumanely. One of the primary motivations for avoiding crime is therefore the individual's concept of morality (DeLisi et al., 2014). However, MD provides the opportunity to bypass these moral standards without experiencing negative internal consequences, through a process of eight cognitive mechanisms (Bandura, 2002), as outlined in *Table 1.*

These mechanisms combine to generate a distorted view that the behaviour is ethical (Moore, 2015), and according to Bandura (1991), the more mechanisms employed, the greater the likelihood that self-censure will be reduced, meaning the individual is more likely to engage in deviant behaviour. Empirical evidence suggests that adolescents with higher MD are more likely to engage in antisocial behaviour, and declining levels of MD

have been associated with a reduction in official records of offending (Shulman et al., 2011). Previous research has drawn attention to the importance of understanding the cognitive mechanisms behind sexual aggression (Johnson & Beech, 2017). According to Scarparti and Pina (2017), if individuals consistently apply MD, they may eliminate the cognitive conflict between the desire to sexually offend and to abide by their morals. Sexual offenders have been shown to demonstrate all eight mechanisms of Euphemistic Labelling (D'Urso et al., 2019), Displacement of Responsibility, Diffusion of Responsibility, Attribution of Blame, Distortion of Consequences, Dehumanisation of Victim, Advantageous Comparison, and Moral Justification (Petruccelli et al., 2017a). Indeed, Bandura et al. (1986) initially discussed the role of MD in perpetration of sexual abuse via the acceptance of 'rape myths', referring to how the offender attributes blame to the victim, thereby removing individual responsibility. Researchers have also suggested that MD could be embodied within sexual harassment myths, resulting in the development of an MD in Sexual Harassment Scale (MDiSH) (Page et al., 2015).

Table 1.

The Eight Cognitive Mechanisms of MD (Bandura, 2002).

Moral Justification (MJ)	Unethical behaviour is cognitively reconstructed by portraying it as serving a moral purpose.
Euphemistic Labelling (EL)	Language use is altered to lessen the severity of a behaviour, for example soldiers "wasting" people rather than "killing" them.
Advantageous Comparison (AC)	The behaviour is compared with something worse, for example terrorists might consider their behaviour moral when compared with the cruelty inflicted on people they identify with (Bandura, 1990).
Displacement of Responsibility (DisoR)	The individual views the behaviour as stemming from others, such as authority figures, and therefore take no personal responsibility.
Diffusion of Responsibility (DifoR)	Group decision making enables a person to split the responsibility, meaning they are not wholly responsible.
Distortion of Consequences (DoC)	Harmful results of the behaviour are ignored, minimised, distorted, or disbelieved.
Dehumanisation of the Victim (DoV)	Victims of the behaviour are stripped of their human qualities, and therefore are not identified with or seen as real people with hopes and feelings. They may also be demonised or considered animals.
Attribution of Blame (AoB)	Blaming other people or circumstances, for example the victims for provoking them. Behaviour is considered forced upon the person, considering their circumstances.

The Current Review

MD is not considered a stable trait; rather, it is a collection of cognitive distortions developed over time. This means that it has the potential for adaptation by intervention (Moore, 2008), with potential treatment focusing on the breaking down of these cognitive processes to prevent reoffending (Gulotta & Curci, 2010). To date, there has been little

research into the role of MD in sexual harassment and sexual aggression (Page & Pina, 2018), and a systematic review is yet to be carried out, to the author's knowledge. However, Johnson and Beech (2017) completed a systematic review on rape myth acceptance by sexual offenders, and highlighted differences between sexual and non-sexual offenders, demonstrating that cognitive distortions may be contributing to sexual offending.

Overall, little attention has been paid to MD and the corresponding risk factors in sexual offenders, despite researchers recognising the role of MD in sexual offences and therefore its potential as a treatment target. It is possible that psychoeducation about the use of MD or perhaps talking therapy aimed at altering these thoughts could be beneficial. This review offers the opportunity to gain a clearer perspective on the association between morality and violent sexual attitudes and behaviour. The relevant population was deemed to be males, considering they make up the majority of sexual offenders, with 10,832 males imprisoned for sexual offences, compared with 103 females, in 2011 (Ministry of Justice, Home Office & the Office for National Statistics, January 2013).

Aims and Objectives

The aim of this review is to explore MD as a criminogenic need for adult males in relation to engaging with sexually violent attitudes or behaviour.

The specific objectives of the review were:

1. To determine whether adult, male sexual offenders could be distinguished from adult, male non-sexual offenders, and adult, male non-offenders, on measures of MD.

2. To determine whether there were differences in MD between groups of non-offending adult males in terms of likelihood to hold attitudes supportive of or to behave in a sexually violent manner.

Method

Scoping Exercise

An electronic search of the Cochrane Database of Systematic Reviews and the International Prospective Register of Systematic Reviews (PROSPERO) was conducted on 30/10/19 and repeated on 04/12/20 to establish whether reviews of a similar nature had been completed or planned. No such reviews were identified. A scoping search was then completed on 29/06/20 and 02/07/20, by searching Google Scholar, PsycINFO, MEDLINE, and PubMed with search terms related to MD and risk factors for sexually violent attitudes or behaviour. Eleven relevant papers were identified, which was considered sufficient to continue with the main search. The protocol was completed on 28/07/20, outlining the proposed rationale and methods.

Overview of Search Strategy

The conduct and reporting of this review adhere to the general principles recommended by the Centre for Reviews and Dissemination (2009). Searches were devised in collaboration with an information

specialist at The University of Nottingham. *Table 2* details the search syntax used for each database. The bibliographic software Endnote was used to store and manage the search results. The main search was carried out in three stages. Firstly, on 27/07/20, ten databases were searched to identify relevant published and unpublished literature from the inception of the MD Scale (MDS) (*Appendix B*) in 1996 until July 2020. Secondly, reference lists of the full text articles which met the inclusion criteria were hand searched for relevant articles which could have been missed during the main search. Thirdly, an expert in the field (Dr Vincent Egan) was contacted and asked if they were aware of any further relevant studies, producing no further results. The authors of several identified articles, Professors Petruccelli, Fabrizi, and Simonelli, and Dr Malamuth, were contacted, requesting data from their respective studies. This was necessary since they had reported utilising the MDS, but either had not presented results from the scale (Hunter et al., 2010) or had not presented in full article form (Fabrizi et al., 2008; Simonelli et al., 2008). Professor Simonelli responded with five studies; however these were either already included or did not meet inclusion criteria, and no further information or data regarding her own studies was provided. Dr Malamuth responded that he no longer had access to the data.

Table 2.

Search Syntax Used for Each Database, Including Filters in Italics, Along with Number of Exported Citations.

Database	Date of search	Syntax & filters	*N*
Ovid Medline(r)	24/07/20	Exp Morals/ OR (moral*adj3 disengage* AND exp Sexual Behavior/ OR exp Sex Offenses/ OR exp Pedophilia/ OR Sex* behavio?r.mp. OR (sex* adj4 offen*).mp. OR (sex* adj4 crim*).mp. OR (sex* adj4 assault*).mp. OR P?edophil*.mp. OR (child* adj4 sex* offen*).mp. OR (rape* or rapist*).mp. OR (sex* adj4 violen*).mp.	3865
PsycINFO	27/07/20		1498
Embase			1434
The Cumulative Index to Nursing and Allied Health Literature		Moral disengagement AND sexual behaviour OR sexual offences OR pedophilia OR sexual crime OR sexual assault OR child sex offenders OR rape OR sexual violence	109
Cochrane		Moral or moral disengagement in Title Abstract Keyword AND Sexual Behavior or Sex Offenses or Pedophilia or Sex* behavio?r.mp. or (sex* adj4 offen*).mp or (sex* adj4 crim*).mp or (sex* adj4 assault*).mp or P?edophil*.mp or (child* adj4 sex* offen*).mp or (rape* rapist*).mp or (sex* adj4 violen*).mp in Title Abstract Keyword	40
National Criminal Justice Reference Service Abstracts Database		(("morals") or ("moral* disengage*")) AND (("Sex* behavio?r) or ("sex* offen*") or ("sex* crim*") or ("sex* assault*") or ("P?edophil*") or ("child* sex* offen*") or ("rape*") or ("rapist*") or ("sex* violen*")	64
JSTOR		(((morals or moral* disengage*)) AND ((Sex* behavio?r or sex* offen* or sex* crim* or sex* assault* or P?edophil* or child* sex* offen* or rape* or rapist* or sex* violen*))) *[Filters: Criminology & criminal justice, law, psychology].*	25

ProQuest Dissertations & Thesis A&I	28/07/20	(("morals") or ("moral* disengage*")) AND (("Sex* behavio?r) or ("sex* offen*") or ("sex* crim*") or ("sex* assault*") or ("P?edophil*") or ("child* sex* offen*") or ("rape*") or ("rapist*") or ("sex* violen*") *[Filters: Topic- law, social psychology, criminology, clinical psychology, ethics, psychology, social research, developmental psychology, international law, mental health, behavioural psychology, counselling psychology.* *Key words- women, ethics, gender, law, trauma, violence, crime, police, morality, mental health, men, justice, prison, college students, criminal justice, punishment, rape, incarceration, psychology, law enforcement, sex offenders, delinquency, moral development, attitudes, personality, sexual assault, decision making, moral injury, aggression, policing]*	2375
Web of Science		TS= ((morals) OR ("moral* near/3 disengage*")) AND TS= (("Sex* near/4 behavio?r") OR ("sex* near/4 offen*") OR ("sex* near/4 crim*") OR ("sex* near/4 assault*") OR (P?edophil*) OR ("child* near/4 sex* offen*") OR (rape*) OR (rapist*) OR ("sex* near/4 violen*"))	295
Scopus		((morals) OR ("moral* disengage*")) AND (("Sex* behavio?r") OR ("sex*offen*") OR ("sex* crim*") OR ("sex* assault*") OR (p?edophil*) OR ("child*sex*offen*") OR (rape*) OR (rapist*) OR ("sex* violen*")) *[Filters: Excluded to subject area- psychology; Key words- violence, psychology, morality, psychological aspect, sexual behavior, sexual crime, crime, ethics, rape, offender, aggression, decision making, victim, social behaviour, child sexual abuse, sex offenses, morals, attitude, punishment, risk assessment, sexual violence, social psychology, sexual abuse, legal aspect, mental health, child abuse, crime victims, risk factors, law, sexual assault, criminal law, 'child abuse, sexual', prison, sex offenders, victimization, criminal justice, criminals, forensic psychiatry, criminal behavior, prisoner, prisoners, antisocial behaviour, sex factors, crime victim, criminology; Dates- 1980-2020].*	550

Inclusion and Exclusion Criteria

Since this review does not intend to evaluate the efficacy of any intervention, some components of the Population, Intervention, Comparators, Outcome, Study design, and Setting (PICOSS) framework were not relevant. 'Exposure' rather than 'Intervention' was used, and it was highlighted that a study could still be included should it meet the exposure criteria but not the comparator, and vice versa. This was necessary since it was possible that the exposure and comparator would be investigated in separate studies. Studies were eligible if: a) participants were adult males; and b) the exposure of interest was a version of the MDS in relation to sexual behaviour or attitudes. Studies were excluded if: a) participants were males under 18, or female; b) MD was not assessed; or c) MD was measured in relation to behaviour or attitudes other than sexual. Since MD assessment was required, this ruled out qualitative studies and narrative reviews. There were no restrictions based on setting, study design, geographical region, or language. Two reviewers independently screened all titles and abstracts, and full-text papers considered relevant by either reviewer were obtained where possible. The relevance of each remaining study was assessed according to the inclusion criteria stated in *Table 3*, using an inclusion form (*Appendix C*). Studies that did not meet the criteria were excluded and details stored in a separate file, including reason for exclusion. There were no discrepancies between reviewers. Had there been, a third reviewer would have been enlisted.

Table 3.

Inclusion Criteria using the PI(E)COSS Framework.

Population	Males over the age of 18.
Exposure	Participants must have been exposed to a psychometric measure of MD related to sexual attitudes or behaviour and must have been convicted of a sexual offence.
Comparator	Participants must have been exposed to a psychometric measure of MD related to sexual attitudes or behaviour and must not have been convicted of a sexual offence.
Outcome	Evidence of MD related to sexual attitudes or behaviour as measured by a psychometric scale.
Study design	Any
Setting	Any

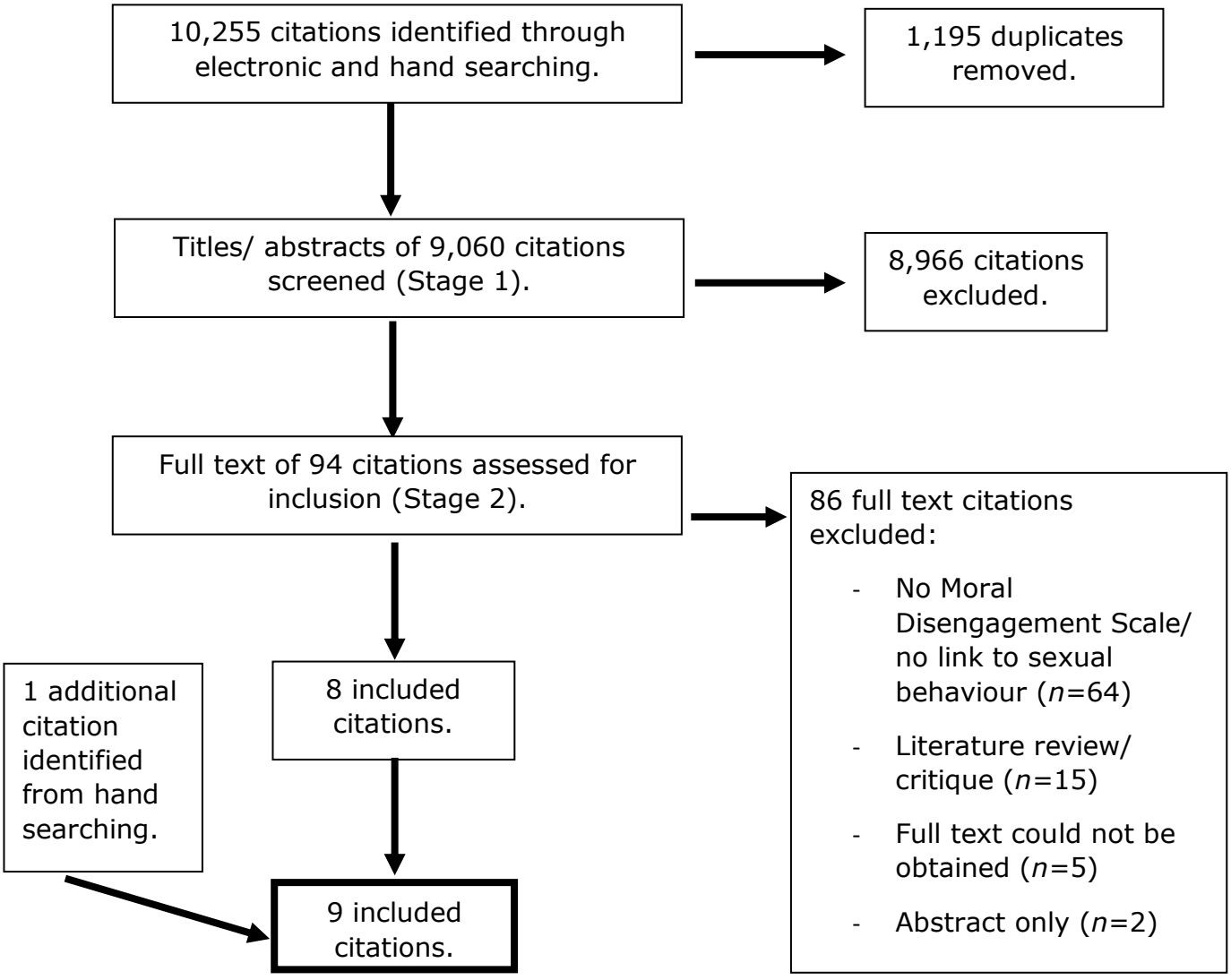
Screening and selection of studies

Electronic and hand searches identified 10,255 citations, which once duplicates were removed, left 9,060 unique citations to be screened for inclusion. Their titles and abstracts were assessed for relevance to the review (Stage 1 screening), resulting in 94 potential citations being retained. After applying inclusion criteria to the 94 remaining papers (Stage 2 screening), 86 were excluded, including five which could not be obtained. As explained under *Inclusion and Exclusion Criteria*, qualitative papers were excluded since no psychometric measure of MD would have been facilitated. Should qualitative studies have been included, only two potential papers explicitly investigating MD and sexual offending were identified (Christanti & Putra, 2019; Thurston, 2005). It was not considered that the contribution of these papers to the review would have been

significant enough to warrant the challenges such contrasting methodology would have presented.All quantitative papers explored investigated statistically significant relationships between sexual behaviour and MD, whereas qualitative papers involve generating themes following interview, therefore producing markedly different forms of data. This would have made narrative synthesis challenging, resulting in a lack of clarity for the reader. It is proposed that a future review could explore solely qualitative studies of MD and sexual behaviour. After exploring the original scoping search, one more study (Jones, 2019) was identified. As such, nine citations were included in the review (*Figure 1*).

Figure 1.

Flowchart of the study selection process.



Quality Assessment

The quality assessment procedure refers to the measurement of the degree to which studies utilise procedures minimising bias and error (Khan et al., 2003). The Quality Assessment Tool for Quantitative Studies (Effective Public Health Practice Project, 1988- (EPHPP)) was adapted (*Appendix D*), deemed appropriate due to its clear assessment of eight areas of bias, and its application to several study designs. Its application to the nine studies can be found in *Appendix E.* No "cut-off point" for exclusion was applied, due to the small number of studies (n=9) included. The tool covered selection, allocation, performance, attrition, reporting, and analysis bias. It was decided that confounding bias was not relevant, since participants in the included studies were not given an intervention and therefore differences in participant characteristics were expected and there were no treatment outcomes to influence. Detection bias was also not considered relevant, since researchers being aware of groups could not impact results, as all data was self-report. Quality assessment was carried out by two assessors.

Data Extraction

An extraction form (*Appendix F)* was used to extract general information, study characteristics, participant characteristics, and results. *Table 4* details characteristics of the nine included papers.

Results

Overview of Included Studies

Table 5 depicts a summary of the synthesised data for the nine studies, allowing for evaluation of how MD is linked to sexual attitudes and behaviour amongst offenders and non-offenders.

Table 4.

Characteristics of Each Included Study.

Study	Country	Age	Sex	*N*	Population	Design	General study focus
Carroll (2009)	USA	18-22	Male	200	Fraternity (66) and non-fraternity (134) students.	Cross-sectional	Relationship between MD and rape supportive attitudes on university campuses.
D'Urso et al. (2018)	Italy	21-78 (*M*=42.88 *SD*=12.75)	Male	120	Sexual offenders, Italian prisons.	Cross-sectional	Relationship between MD and cognitive distortions towards women, in relation to traumatic infancy, institutionalisation, and substance misuse during adolescence.
D'Urso et al. (2019)							Relationship between MD and cognitive distortions in relation to being physically and/ or sexually abused.
Jones (2019)	USA	*M*=23.78 *SD*=5.83	25% Males/ 75% females	109	University students.	Case-control	Relationship between MD, Adverse Childhood Experiences (ACEs), and sexual misconduct.

Page & Pina (2018)	UK	Study 1- 18-69 (*M*=29.2 *SD*=10.4)	Male	120	Community males recruited online.	Cross-sectional	Relationship between MD and harassment proclivity.
		Study 2- 18-67 (*M*=26.6 *SD*=9.3)		119			
		Study 3- 18-49 (*M*=25.8 *SD*=6.9)		123			
Page et al. (2015)	UK	Study 1- 18-76 (*M*=23.6 *SD*=8.7)	Male	338	University students & community males recruited online.	Cross-sectional	Development and validation of the MDiSH Scale, and relationship with sexual harassment myth acceptance.
		Study 2- 18-72 (*M*=30.5 *SD*=9.8)		332			
		Study 3- 18-72 *(M*=32.2 *SD*=11.5)		195			
Petruccelli et al. (2017a)	Italy	Offenders (*M*= 41.6, *SD*=10.5); non-offenders 23-	Male	362	Sexual offenders (42); non-sexual offenders (52), Italian prisons; University students (268).	Case-control	MD in sexual offenders, non-sexual offenders, and non-offenders.

		48, (*M*=34.8 *SD*=7.6)					
Petruccelli et al. (2017b)	Italy	Not reported	Male	79	Sexual offenders (50) & non-sexual offenders (29), Italian prisons.	Case-control	Relationship between MD, offending, and psychopathy.
Vance et al. (2015)	USA	17-34 (*M*=19.65 *SD*=1.96)	Male (88) & female (282) & missing gender (10)	484 (380 analysed)	University students	Cross-sectional	Effects of viewing morphed female bodies in advertisements on attitudes towards rape & violence, and the relationship between MD and rape likelihood via rape myth acceptance.

Table 5.

Results of Each Included Study.

Study	Outcome measures	Statistical analysis	Summary of Findings
Carroll (2009)	MDS (Bandura et al., 1996), Defining Issues Test-2 (Bebeau & Thoma, 1998), Rape-Supportive Attitudes (Decision & Response variables)	*t*-test, Correlation, Path analysis	- MD scores: both groups (*M*=72.73, *SD*=18.17); fraternity (*M*=89.7, *SD*=16.03); non-fraternity (*M*=64.37, *SD*=12.46). - Higher MD correlated with lower moral judgement. MD positively correlated with the Personal Interests score of moral judgement. - MD positively correlated with both measures of rape-supportive attitudes.
D'Urso et al. (2018)	Semi-structured interview (De Leo et al., 2004), MDS (Caprara et al., 1996) & Vindictive Rape Attitude Questionnaire (Hanson, 2020)	ANOVA, Correlation, Regression	- Sexual offenders who used drugs during adolescence significantly higher on overall MD, MJ, AC, DisoR. - Sexual offenders institutionalised in adolescence significantly higher on EL and DifoR. - High positive correlations between cognitive distortions toward women and overall MD, AoB, DisoR & DifoR. - AoB a positive predictor of negative attitudes towards women.
D'Urso et al. (2019)	Semi-structured interview (De Leo et al., 2004), MDS (Caprara et al., 1996) & Hanson Sex Attitude Questionnaire (Hanson et al., 1994)	MANOVA, Correlation, Regression	- Sexual offenders with a history of sexual abuse higher in all scales. - Sexual offenders who were physically and sexually abused had higher MD, and more endorsement of 'sexy kids' and sexual entitlement beliefs (the idea that a man has a right to sex when he wants).

			- MD a positive predictor of 'sexy child' belief and sexual entitlement beliefs.
Jones (2019)	Demographics, MDiSH Scale (Page et al., 2015), ACE Questionnaire (adapted from Felitti et al., 1998), perpetrator/ victim of sexual misconduct	Correlation, Logistic regression	- Overall MD scores (*M*=71.14, *SD*=29.13). - Victims of sexual misconduct: ACEs (*M*=3.03, *SD*=2.33) and MD (*M*=60.7, *SD*=23.47). Perpetrators: ACEs (*M*=3.67, *SD*=2.33) and MD (*M*=70.3, *SD*=8.5). No significant difference in MD between participants with and without sexual misconduct experience. - Strong negative, non-significant correlation between ACEs and MD. - No significant relationship between sexual misconduct and MD, or between all three variables.
Page & Pina (2018)	8 item version MDiSH Scale (Page et al., 2015), Moral Judgment (adapted from Page et al., 2015), Harassment proclivity (vignette & questions), Impression Management (IM) scale (Balanced Inventory of Desirable Responding; Paulhus, 1991),	MANOVA, mediation analysis, linear regression, hierarchical regression, t-test, correlation	**Study 1:** - Positive correlation between MD and harassment proclivity, even when IM controlled. - Moral judgement significant negative predictor of harassment proclivity. - Effect of MD on harassment proclivity non-significant when moral judgement removed, indicating full mediation of moral judgement. - Men with stronger MD perceived harassment as being less morally wrong, which predicted greater harassment proclivity.

	emotions (guilt, shame, happiness)		**Study 2:** - Positive correlation between MD and harassment proclivity in overall sample. - MD significant positive predictor of harassment proclivity. - Full mediation of moral judgement, negative affect, and positive affect. **Study 3:** - Positive correlation between MD and harassment proclivity, even when IM controlled. - Full mediation of positive affect.
Page et al. (2015)	MDiSH Scale (Page et al., 2015) & Illnois Sexual Harassment Myth Acceptance (ISHMA) Scale (Lonsway et al., 2008), Gender Identity Scale (Leach et al., 2008), Ambivalent Sexism Inventory (Glick & Fiske, 1996), Moral Judgment, Emotions (adapted from Gordijn et al., 2006), Support for Behavioural Intentions (restitution/ avoidance),	Exploratory Factor Analysis, Correlation	**Study 1:** - MDiSH highly positively correlated with ISHMA. **Study 2**: - MDiSH highly positively correlated with ISHMA, even when IM controlled. - Significant correlation between MDiSH and IM. **Study 3:** - Moderate positive correlation between MDiSH and attribution of blame to complainant. - MDiSH positively correlated with both dimensions of male gender identification.

	Attribution of Blame, IM Scale		- MDiSH highly positive correlated with Hostile Sexism, uncorrelated with Benevolent Sexism. - MDiSH uncorrelated with negative affect and sympathy, but moderate positive correlation with happiness in response to the vignette - Men high on MDiSH supported less restitution and greater avoidance by perpetrators.
Petruccelli et al. (2017a)	Semi-structured interview (De Leo et al., 2004) & MDS (Caprara et al., 1996).	Exploratory Factor Analyses, ANCOVA, MANCOVA, univariate tests.	- Significant differences on MD between control (*M*=2.1) and offenders, and between sexual offenders (*M*=2.8) and non-sexual offenders (*M*=2.54). - Significant differences between the three groups in all MD mechanisms, apart from EL. - MJ, AoB, AC, DoC, DoV: control group significantly lower than offenders, but sexual offenders and non-sexual offenders did not differ. - DisoR & DifoR: control and non-sexual offenders not significantly different, but both significantly lower than sexual offenders.
Petruccelli et al. (2017b)	MDS (Caprara et al., 1996) & PCL-R (Italian adaptation) (Caretti et al., 2011).	Correlation, *t*-test	- Significant correlation between psychopathy and MD (positive for AoB, AC & DisoR). - PCL-R Component 1 (interpersonal) positively correlated with overall MD, AC, and AoB. PCL-R Component 3 (lifestyle) positively correlated with overall MD and AoB. PCL-R Factor 1 (interpersonal/ emotional) positively correlated with blame attribution.

			- Significant difference between sexual offenders and non-sexual offenders for PCL-R Component 2 (emotional). Significant differences between rapists and child sexual offenders for PCL-R social deviance factor and component 4 (antisocial).
Vance et al. (2015)	MDS (Bandura et al., 1996), Acceptance of Interpersonal Violence questionnaire, Rape Myth Acceptance Scale, Adversarial Sexual Beliefs Scale (Burt, 1980), Rape Likelihood Scale (Briere & Malamuth, 1983).	ANOVA, mediation tests.	- Males (*M*=65.16, *SD*=17.64) higher than females (*M*=55.62, *SD*=13.39) on MD, and on rape myth acceptance subscale 1 for males (*M*=22.31, *SD*=6.83) compared with women (*M*=18.10, *SD*=5.38) and subscale 2 for males *(M*=11.55, *SD*=4.99) compared with females (*M*=9.07, *SD*=4.33). - Significant path from MD to rape myth acceptance to rape likelihood. - Rape myth acceptance mediated link between MD and rape likelihood.

Methodological Characteristics

There was some variability in study dates, with the oldest published in 2009 (Carroll, 2009), and the most recent in 2019 (D'Urso et al., 2019; Jones, 2019). Study design was similar, with the majority being cross-sectional (*n=6*), followed by case-control (*n=3*). Studies were conducted across three countries: the USA (*n=3*), Italy (*n=4*), and the UK (*n=2*).

Participants

Four studies used convicted offenders recruited from Italian prisons, and the remaining five used non-offenders, mainly recruited via universities and online platforms. Two studies used the same sample, but utilised different outcome measures (D'Urso et al., 2018; D'Urso at el., 2019). Participants ranged in age from 18 to 78; however, one study (Petruccelli et al., 2017b) neglected to report age. Sample sizes varied greatly, from 79 to 484, and it is notable that studies utilising offenders included smaller samples, due to difficulties recruiting.

Study Focus

The studies focused on a variety of factors linked to MD and sexual attitudes or behaviour. Four focused on the relationship between MD and cognitive distortions/ attitudes towards sexual offending, mediated by the following: fraternity membership (Carroll, 2009), traumatic infancy, substance misuse, and institutionalisation (D'Urso et al., 2018), experience of childhood physical or sexual abuse (D'Urso et al., 2019), and advertisements (Vance et al., 2015). One focused on the relationship

between MD, ACEs, and sexual misconduct (Jones, 2019), one on MD and sexual and non-sexual offending (Petruccelli et al., 2017a), two on MD and sexual harassment proclivity (Page & Pina, 2018; Page et al., 2015), and one on MD and psychopathy (Petruccelli et al., 2017b).

MD Measures

The 32-item MDS (*Appendix B*) was developed for use with children and adolescents by Bandura et al. (1996). Each mechanism is represented by four subscale items and scored on a Likert scale. The scale has since been adapted for multiple populations, such as adults (Detert et al., 2008) and behaviours, such as sexual coercion (Hunter et al., 2010), although the latter adaptation does not appear publicly available, and results of its use have not been presented. All included studies used a version of the MDS, with two utilising Bandura et al.'s (1996) original scale (Carroll, 2009; Vance, 2015), four the Caprara et al. (1996) Italian version (D'Urso et al., 2018; D'Urso et al., 2019; Petruccelli et al., 2017a; Petruccelli et al., 2017b); two the 32-item Page et al. (2016) MDiSH Scale (Jones, 2019; Page et al., 2015), and one the shorter, 8-item MDiSH (Page & Pina, 2018).

The reliability of the MDS has been assessed by Cronbach's alpha coefficient, with Bandura et al.'s (1996) MDS reported as .82 overall in the original paper, a number carried over by Carroll (2009) and Vance et al. (2015). The reliability of Caprara et al.'s (1996) adapted MDS was reported at .92 overall with subscale reliability of .69 (MJ), .71 (DisoR), .74 (AoB), .68 (DifoR), .56 (EL), .48 (DoC), .74 (AC), and .69 (DoV) (Petruccelli et al., 2017a). However, Petruccelli et al. (2017a) note that although the

subscales are internally coherent, they only address face-validity requirements since they are not supported by evidence regarding factorial structure. Petruccelli et al. (2017a) therefore note that they only analysed the MD mechanism scores in a descriptive manner and results must be interpreted with caution. Petruccelli et al. (2017b) report an overall reliability of .81, D'Urso et al. (2018) a subscale range of .76-.91, and D'Urso et al. (2019) an overall assessment of .93. Finally, Page et al. (2016) report a range of .95-.98 across three studies for the MDiSH, carried over by Jones (2019), and Page & Pina (2018) report .87 for the 8-item version.

Risk of Bias

Overall, methodological quality was poor. No studies were randomised; however, given the nature of the research questions this was not strictly necessary. Regardless, counterbalancing of psychometric assessments may have reduced bias. A significant problem consistent across most studies was a lack of blinding of participants, meaning they were aware of the research aims. Given that all studies were self-report, this could have had a significant effect on results. *Table 6* outlines the risk of bias ratings for each quality area, including an overall rating. Studies were considered weak overall should they achieve 'weak' in two or more areas, moderate for 'weak' in one area, and strong for no 'weak' ratings, as directed by EPHPP. Eight of the nine studies were assessed as weak, and therefore of high risk of bias. They were mostly considered strong in data collection methods, withdrawals and dropouts, reporting, and analysis. However, risk was high due to the influence of poor study design and lack

of blinding. The remaining study (Vance et al., 2015) was considered moderate, since participants were blinded. However, study design remained poor. Given that the studies were all lacking in similar areas, it was decided that a quality score, out of a maximum 21, might be more informative. Weak was represented by the number '1', moderate by '2', and strong by '3', which were then summed. All scored between 15 and 17, indicating that although most were weak in terms of bias, they were all of reasonable and similar quality across the range of areas measured.

Table 6.

Risk of Bias for each Included Study.

Study	Selection	Study Design	Blinding	Data Collection	Withdrawals/ Dropouts	Reporting	Analyses	Overall Risk of Bias	Quality Score (0-21)
Carroll (2009)	Moderate	Weak	Weak	Strong	Strong	Strong	Strong	Weak	16
D'Urso et al. (2018)	Moderate	Weak	Weak	Moderate	Strong	Strong	Strong	Weak	15
D'Urso et al. (2019)	Moderate	Weak	Weak	Moderate	Strong	Strong	Strong	Weak	15
Jones (2019)	Moderate	Weak	Weak	Moderate	Strong	Strong	Strong	Weak	15
Page & Pina (2018)	Moderate	Weak	Weak	Strong	Strong	Strong	Strong	Weak	16
Page et al. (2015)	Moderate	Weak	Weak	Strong	Strong	Strong	Strong	Weak	16

Petruccelli et al. (2017a)	Moderate	Weak	Weak	Moderate	Strong	Strong	Strong	Weak	15
Petruccelli et al. (2017b)	Moderate	Weak	Moderate	Weak	Strong	Strong	Strong	Weak	15
Vance et al. (2015)	Moderate	Weak	Strong	Strong	Moderate	Strong	Strong	Moderate	17

Narrative Data Synthesis

The included studies varied in aims, methodology, and participant group, meaning results were not homogenous. Therefore, it was not considered appropriate to combine the results and evaluate them as part of a meta-analysis. Alternatively, a narrative data synthesis will be carried out, highlighting key findings in relation to the aims outlined in the introduction.

Are there differences between adult male sexual offenders, non-sexual offenders, and non-offenders, on measures of MD? One study explicitly compared sexual offenders, non-sexual offenders, and non-offenders (Petruccelli et al., 2017a). Researchers reported that non-offenders were significantly lower than non-sexual offenders, who in turn were significantly lower than sexual offenders in terms of overall MD. More specifically, non-offenders were significantly lower on MJ, AoB, AC, DoC, and DoV, compared with both groups of offenders, who did not significantly differ from each other. Regarding DisoR and DifoR, non-offenders were not significantly different from non-sexual offenders, but both were significantly lower than sexual offenders. It was concluded that offenders generally displayed higher levels of overall MD, but sexual offenders more so than non-sexual offenders. A second study (Petruccelli et al., 2017b) explicitly compared sexual offenders with non-sexual offenders, with a primary focus on psychopathy. Researchers reported a significant correlation between psychopathy and MD, specifically with AoB, AC, and DisoR. No significant correlations were found between psychopathy and DifoR or DoV. Researchers concluded that high levels of MD were associated with high

levels of psychopathy in sexual offenders, with MD mechanisms allowing these individuals to rationalise sexual offending. They concluded that offenders considered psychopathic could be treated with a specific intervention targeted at MD (Petruccelli et al., 2017b). However, Petruccelli et al.'s (2017b) study provides little data concerning the direct link between MD and sexual offending.

Two studies investigated MD and cognitive distortions in sexual offenders, with regards to childhood experiences. D'Urso et al. (2018) reported that sexual offenders who used substances during adolescence showed significantly higher MD, specifically MJ, AC and DisoR, compared with those who had not. Researchers suggested this may be the result of early deviancy influencing the development of cognitive mechanisms to justify behaviour. Furthermore, sexual offenders who were institutionalised during adolescence reported higher MD, and researchers suggested that these mechanisms may have been beneficial for surviving institutions and avoiding punishment. This disconnection from social rules may then have carried over to adulthood. They also found that overall MD, AoB, DisoR, and DifoR, positively predicted negative attitudes towards women. Adverse adolescent experiences therefore appear to influence MD, whilst MD appears to influence attitudes towards women. This may in turn impact upon sexual offending (D'Urso et al., 2018), given research indicating that hostile attitudes towards women may maintain or accelerate sexual offending (Ward & Beech, 2006). D'Urso et al. (2019) expanded on this by measuring the same participant group with alternative aims. They reported that sexual offenders with a history of physical or sexual abuse, compared

with those without, demonstrated higher levels of MD and greater sexual cognitive distortions towards children. The researchers suggested that abuse could therefore be considered a risk factor for the onset of deviance and of problematic attitudes towards children. MD was a positive predictor of both the 'sexy child' belief and sexual entitlement, indicating that sexual offenders who utilise MD are more likely to believe that children are sexually motivated and attractive. This means that MD could facilitate the justification of sex with children (D'Urso et al., 2019).

Overall, these studies indicate that sexual offenders can be distinguished from non-sexual offenders and non-offenders, regarding levels of MD. Although these results vary across each MD mechanism, overall higher scores appeared common in sexual offenders compared with non-sexual offenders, who in turn appeared higher than non-offenders. Various factors appear to mediate this relationship, with sexual offenders who had used substances, been institutionalised, or physically or sexually abused, appearing to utilise more MD.

Are there differences in MD between groups of non-offending adult males in terms of likelihood to hold attitudes supportive of or to behave in a sexually violent manner? Two studies investigated the relationship between MD and rape-supportive attitudes in non-offending participants. In Carroll's (2009) study of fraternity and non-fraternity males, these attitudes were measured using a sexual assault vignette, a 'Decision' variable, derived from the decision to dismiss or pursue a case of sexual assault, and a 'Response' variable, derived from where responsibility

was placed. Carroll (2009) reported a significant positive correlation between MD and rape-supportive attitudes, with higher MD increasing the likelihood of dismissing the case and blaming the victim. This was more likely in university fraternity members, who were also significantly higher in MD. MD was not significantly related to the Response variable in the non-fraternity sample, indicating that group membership moderated this relationship. Higher MD also predicted lower moral judgement, although only significantly for fraternity men. Overall, higher MD was associated with higher rape-supportive attitudes, a path which was strengthened for fraternity men when moral judgement was low. It was concluded that fraternity settings influence sexual aggression by removing inhibitions against this behaviour (Carroll, 2009). A second study (Vance et al., 2015) investigated the relationship between MD and rape likelihood, via rape myth acceptance, specifically regarding the effects of viewing morphed, digitally altered, female bodies in advertisements. The study reported a significant path from MD to rape myth acceptance, and from rape myth acceptance to rape likelihood for males. An indirect effect of MD on rape likelihood via rape myth acceptance was significant; however, there was no significant direct effect of MD on rape likelihood, indicating that rape myth acceptance fully mediated this link (Vance et al., 2015).

One study (Jones, 2019) investigated the relationship between MD, sexual misconduct, and ACEs. Jones (2019) reported no significant difference in MD for those who had and had not experienced sexual misconduct, and no significant correlations between the experience of ACEs and MD. However, those with more ACEs were more likely to have lower

MD. Researchers suggested this correlation could be explained by victims of ACEs becoming more aware of sexual misconduct, compared with those who had not experienced ACEs, and suggest the small sample size may have resulted in non-significance. They suggested this may also explain the non-significant relationship between sexual misconduct and MD, which conflicted with previous literature. It is noteworthy that Jones (2019) reported results in relation to both being the perpetrator and the victim of sexual misconduct and for both male and female participants and did not explicitly differentiate throughout. It is therefore difficult to draw conclusions in relation to the aims of this review.

Across three separate studies, Page et al. (2015) investigated how MD related to sexual harassment and sexual harassment myth acceptance. In the first study a significant, highly positive correlation was found between the MDiSH and sexual harassment myth acceptance. In Study 2 the same relationship remained, and Study 3 identified a positive correlation between MDiSH and attribution of blame to the victim. Therefore, those men who scored higher on MDiSH perceived the conduct of the perpetrators in the vignette to be less morally wrong. MDiSH was also positively correlated with male gender identity (self-investment and self-definition), and with 'hostile sexism'. Furthermore, men high on MDiSH supported less punishment and greater avoidance by male perpetrators. MDiSH mechanisms further appeared to reduce negative emotions and to instead increase feelings of happiness related to moral breaches. The researchers asserted that these findings corroborate previous research which found that masculinity and sexist constructs are positively associated with attitudes and beliefs that

encourage sexual harassment. It was concluded that MDiSH provides a conceptualisation of the mechanisms used to justify sexual harassment (Page et al., 2015). In addition to this and again across three separate studies, Page and Pina (2018) investigated the efficacy of the MDiSH scale in non-offending males. In Study 1, they reported a positive correlation between MD and harassment proclivity; however, this was fully mediated by moral judgement, as men who expressed stronger MD perceived the harassment vignette as less morally wrong, which in turn predicted greater harassment proclivity. In Study 2 the same pattern was observed; however, the path between MD and harassment proclivity was mediated by negative and positive affect, as well as moral judgement. In Study 3, the same pathway was identified and mediated by positive affect, meaning that MD only led to higher harassment proclivity when participants felt positively about the scenario (Page & Pina, 2018).

Overall, these studies demonstrate the influence of several factors on the relationship between MD and violent sexual attitudes and behaviour, including fraternity group membership and male gender identity. The studies indicate than when these factors occur in association with MD, the likelihood of engaging with sexually violent attitudes or behaviour is increased. Therefore, non-offending adult males can be differentiated from each other, and certain influences could be targeted to reduce harmful attitudes.

Discussion

Main Findings

Using systematic review methodology, this review investigated whether there was an association between MD and violent sexual attitudes or behaviour. All nine studies confirmed a relationship, although this was almost always mediated by other factors, such as psychopathy. The results indicate that sexual offenders can be distinguished from non-sexual offenders and non-offenders on measures of MD; however, differences varied for each mechanism. Studies of non-offending populations conclude that several factors, such as fraternity membership, influence MD and the endorsement of rape- and harassment-supportive attitudes. Collectively, these studies are consistent with Bandura's (1986) notion that sexual offenders will utilise mechanisms that justify deviant behaviour.

Strengths and Limitations

Application of the inclusion criteria to the search results identified nine papers, with thirteen studies. This was a surprisingly small number given the large number of citations retrieved from the search. Overall, the literature on MD is extensive; however, studies investigating the relationship between MD and sexual attitudes or behaviour are lacking. Piloting of the search strategy and supplementation of the results of the electronic search with hand searching, searching of reference lists, and communication with experts, allows confidence that all relevant, available research was included. Therefore, conclusions are based on the synthesis of all accessible evidence. However, it was not possible to include all evidence, due to a lack of access to two contributions in abstract form (Fabrizi et al., 2008; Simonelli et al., 2008). A strength of this process was

the inclusion of a second reviewer, who supported screening, selection, quality appraisal, and data extraction, limiting the likelihood that relevant articles were missed. It seems unlikely that the inclusion criteria restricted the number of identified studies, since all forms Of sexual attitudes and behaviour were included, and all psychometric measures of MD. It appears that the only factor that could have increased numbers would have been the inclusion of all cognitive distortions, rather than only MD. For example, Wegner et al. (2015) found that perpetrators of child sexual abuse utilised moral justifications such as victim blaming, but did not measure MD as a construct. Future reviews could therefore use broader inclusion criteria.

All studies were at significant risk of bias, and the small sample sizes of sexual offenders were problematic. Most studies utilised a convenience sample, meaning results cannot be generalised to all offenders, and only one directly compared offenders with non-offenders. Furthermore, these studies were conducted by similar researchers with similar methodology, and therefore any methodological issues are likely present across multiple studies. Page et al. (2015) noted that participant group may have been particularly influential when only students were recruited, since students are likely to demonstrate niche responses in comparison to the wider population, and they often lack experience such as a work environment, relevant given the inclusion of work harassment vignettes. Vance et al. (2015) further noted that all their participants were university students, and most universities utilise rape awareness initiatives, which may have influenced responses. In addition, students are likely to be wealthier,

healthier, younger, better educated, and more predominately of White ethnicity, skewing the sample diversity (Vance et al., 2015).

A further limitation across all studies was the social desirability effect, given that all utilised self-report. This may have been particularly problematic for prisoners, since there are clear motivations for offenders to present themselves positively, given that assessments may influence recommendations regarding their release. Furthermore, sexual offenders have been shown to exhibit more social desirability bias than violent offenders, perhaps explained by negative social stigma (Tan & Grace, 2008). This also applies to non-offenders, who may have moderated responses so as not to breach social norms. Vance et al. (2015) noted that their attempts to prevent participants from guessing study aims may have been unsuccessful, since 22% stated that they believed the study was examining morality. Furthermore, Page et al. (2015) found in their second study that Impression Management significantly impacted results, indicating that participants may have altered their answers to appear more prosocial. Social desirability must therefore be considered when interpreting all results.

Regarding the review process itself, this review was quality assessed using the PRISMA checklist (*Appendix G*) (Page et al., 2020). The review performed well in providing a rationale, protocol, full search strategy, and details regarding screening and risk of bias. However, the question being investigated resulted in a lack of homogeneity, with methodological processes varying greatly across studies, meaning there could be no meta-

analysis. Therefore, the review provided no statistical analysis, and the resulting narrative synthesis provides little direct comparison, instead focusing on several contributing factors to the relationship.

Implications for Practice and Future Direction

The evidence base investigated in this review indicates that MD may be particularly pervasive in sexual offenders and it may therefore be beneficial to develop and facilitate interventions targeting MD for this group. Future research could compare MD in offending and non-offending groups more directly, to better direct intervention. Should this be investigated with greater homogeneity across data collection, it would then be possible for a meta-analysis to be completed within a future review, which would allow for clearer interpretation of results. It is also important that future studies implement blinding, since there is a strong possibility that a lack of this contributed to risk of bias. Regarding non-offenders, it is possible that MD could be targeted as a training need within workplaces, schools, and universities. This is important since according to Page and Pina (2015), individuals that show signs of MD towards sexual harassment could be more likely to demonstrate an escalation in severity of behaviour, for example from inappropriate sexual comments to committing rape. Previous research has demonstrated that interventions targeting MD can be successful. For example, Bustamante and Chaux (2014) demonstrated a significant reduction in MD relating to stealing after a critical thinking intervention. Another study, by McAlister et al. (2000) found a reduction in MD after implementing a behavioural journalism approach. Although neither focused

on sexual offending, there is little other research investigating the efficacy of MD interventions and future research should therefore focus on trialling these. This is particularly important given the far-reaching implications of MD, which is prevalent across many groups, including university students, community samples, and offenders. Interventions could therefore be employed in several settings.

Chapter Three: Primary Research Project

The Rise of the Sexbots: Moral Disengagement, the Dark Tetrad, and Sexual Crime Myths in Association with Attitudes towards Sex Robots.

Overview of Chapter

The primary research project aims to investigate the overarching thesis concept through an exploration of the relationship between MD and sexually violent attitudes related to advanced sexual technology. The project focuses primarily on attitudes towards sex robots; however, questions surrounding previous and future use of robots also refer to sex dolls. This was considered important since robots are a recent technological advancement, meaning they remain costly and relatively obscure. This is explored in more detail in the project discussion. Other psychological constructs including dark personality traits are also investigated, with an overall aim to identify personality traits, sexually violent attitudes, and demographics associated with attitudes towards this technology. A relationship between MD and sexually violent attitudes and behaviour was uncovered by the systematic review and MD was therefore considered appropriate for further investigation in relation to sexually violent attitudes.

A quantitative approach was taken for this project. Although a qualitative design would have likely yielded rich, detailed data, quantitative was considered appropriate for several reasons. Firstly, recruitment of those who have used sex robots who would be willing to discuss their experience in detail was a concern. This group is extremely niche, meaning that once those unwilling or unable to take part had been removed, a very small pool of participants would have remained. Secondly, since this is a new area of research it was hoped that a large quantity of data surrounding attitudes towards this sexual technology would be a greater and more useful

contribution to the field. It was planned that more in depth analysis of data would be collected in the secondary research project through analysis of free text. Finally, since this research is likely to contribute to a high rate of social desirability bias, it was hoped that more nuanced and subconscious patterns would emerge in quantitative data, particularly since social desirability bias is often cited as a limitation of qualitative research (Bergen & Labonté, 2020).

A community sample was utilised due to difficulties with the recruitment of a sample who had used advanced sexual technology previously. It was further thought that the recruitment of individuals who used this technology would not be ethically sound, given the research questions employed in the study. However, ethical issues remain, with the potential for the research to appear targeted against this group of individuals. Following the advertisement of the study on the social media page Reddit, this issue culminated in a complaint to the ethics committee in which the author was accused of bias and leading a 'witch hunt' against sex doll/ robot users. The complainant, who referred to themselves as a 'sex doll enthusiast', claimed that the study was 'dishonest', with 'leading questions' and 'presumptions'. This complaint was dismissed by the committee. However, it is emphasised here that this research was exploratory and tentative hypotheses were made using relevant research. Informed consent was obtained; however, information regarding the research questions was kept brief to minimise social desirability bias. This may have contributed to the complainant's insinuations that the study was dishonest. Full aims and research questions were outlined in the debrief

form to minimise this potential harm and participants were given the opportunity to withdraw; however, no withdrawals were requested. Ethical considerations are considered in more detail in Chapter Six.

Abstract

Recent advances in technology have facilitated a new era of sex toys. Robots capable of mimicking orgasms, sexual orifices, and conversation are now being developed, including those programmed to reject sexual advances and to appear childlike. Researchers have highlighted the possibility of using such toys to treat sexual offenders, in line with catharsis theory. However, several issues concerning their use have arisen, for example the blurring of sexual consent and the potential objectification and abuse of women and children as a result. Since there is a paucity of evidence surrounding these issues, the current study aimed to investigate whether those who were more accepting of or more likely to use sex robots were also more accepting of sexual aggression and child sexual abuse myths, as well as whether there were effects of demographics, Moral Disengagement, and the Dark Tetrad (antisocial personality traits of narcissism, psychopathy, Machiavellianism, and sadism). Participants completed online psychometric questionnaires measuring attitudes and personality traits, in a within-subjects design. Since analysis revealed effects of gender across all outcome variables, further analysis was conducted separately for male and female respondents. Linear regressions demonstrated effects of pornography use on several outcomes, including acceptance of sex robots and future use of sex dolls or robots. They further revealed an effect of sexual orientation on agreement that child sex robots should be legal. Logistic regressions demonstrated effects of age and sexual aggression myth acceptance on previous and future sex doll/ robot use. It was concluded that there may be cause for concern regarding the relationship between attitudes towards sexual aggression and sex doll/

robot use. Implications for sexual offending and the application of legal frameworks regarding sex robots are discussed. Limitations include social desirability bias and the influence of polarising responses, given the controversial nature of the topic.

Key Words: Sex Robots, Sexual Aggression Myths, Child Sexual Abuse Myths, Moral Disengagement, Dark Tetrad

The Rise of the Sexbots: Moral Disengagement, the Dark Tetrad, and Sexual Crime Myths in Association with Attitudes towards Sex Robots.

Sexual protheses have a long history, and those created in human form are becoming increasingly common. Products which began as inflatable dolls with basic apertures have now evolved into robots, capable of mimicking body heat, skin texture, orgasms, and facsimile sexual orifices. Artificial Intelligence (AI) means they can now engage in conversation and imitate personalities (Danaher, 2017a). Danaher (2017a) defines sex robots as meeting the three conditions of:

1. Humanoid form;
2. Human-like movement/ behaviour;
3. A degree of AI (capable of deciphering and responding to information).

In comparison, a sex doll is defined as a realistic doll made of silicone and used for sexual purposes (Harper et al., 2021). Sex robots are predicted to hold a significant share of the multi-billion-dollar sex technology industry in the future (Appel et al., 2019). Their impact potential is high since they could change society dramatically, changing the way humans develop relationships with others. The consequences of this potential impact are currently uncertain, given that new technology is often initially easy to control, but at later stages this becomes impossible (Van de Poel, 2016). There is ongoing debate concerning whether sex robots should be prohibited, owing to their potential for harm, both for the user and for the

individuals the robots represent. It is possible that sex with a robot would become more physically gratifying and less emotionally demanding than with a human, resulting in life with humans becoming overwhelming (Herzfeld, 2017). Furthermore, users may be encouraged to internalise problematic sexual norms (Danaher, 2017b). Alternatively, researchers have highlighted the possibility of treating sexual offenders with sex dolls and robots, as explained by the catharsis model of behaviour (Cox-George & Bewley, 2018). One creator of child robots is self-proclaimed paedophile Shin Takagi, who advocates their use as an alternative to offending (Maras & Shapiro, 2017). According to the catharsis model, unwanted emotions can be reduced through relieving activities, such as by aggressing to reduce emotional tension and the possibility of future aggression (Bresin & Gordon, 2013). However, research has indicated that expressing anger may instead be catalytic and reinforce the underlying drive, therefore increasing aggressive behaviour (Bushman, 2002), as explained by social learning models (Bandura, 1973).

Sex robots are not currently forbidden by law, and according to the Harm Principle (Mill, 1859), power should only be exercised to prevent harm to others (McArthur, 2017). Furthermore, although the construction of child robots is not currently a criminal offence (Chatterjee, 2017), the CREEPER (Curbing Realistic Exploitative Electronic Paedophilic Robots) Act of 2017 was introduced to prevent their distribution or importation in the United States (Tiehen, 2018), whilst in the United Kingdom (UK) the landmark 2017 David Turner ruling determined that they constitute obscene articles

and cannot be imported (Passingham, 2018). The Campaign Against Sex Robots (CASR) was further set up to oppose the introduction of all sex robots, with the argument that they promote dehumanisation and power imbalances during sex (Richardson, 2016). One important distinguishing feature from other sex toys is that sex robots mimic sexual encounters with humans, meaning their treatment may represent attitudes towards real people (Danaher, 2017b). Several issues therefore arise with their introduction, including the potential objectification, dehumanisation, and abuse of women and children (Langcaster-James & Bentley, 2018), and the blurring of boundaries related to sexual consent (Cox-George & Bewley, 2018). It has been suggested that the use of adult or child robots could distort understanding of sexual consent and may represent a step back in the fight against sexual aggression myths, embedding a view of real people as ever consenting sex objects (Gutiu, 2012). The potential for harm is highlighted by companies such as True Companion, who have reportedly developed sex robots with personalities that, although not explicitly, insinuate the involvement of both rape and children, with 'Frigid Farrah' programmed to reject sexual advances and 'Young Yoko' marketed as 'barely 18' (Das, 2017).

Empirical investigation into the characteristics and behaviours of those who use sex dolls is currently lacking (Harper & Lievesley, 2020), and those who use sex robots even more so. In the absence of this literature and when addressing the question of risk, it is considered important to explore the relationship between illegal pornography use and subsequent

behaviour, with some researchers claiming that its consumption increases the likelihood of sexual offending (McCarthy, 2010). For example, in line with the catalytic model, research has demonstrated that exposure to violent pornography can increase the desire to engage in violent sex (Linz et al., 1989). Individuals have also been documented as expressing violent desires on sex dolls (Sparrow, 2017), and concerns centre around the view that aggressors could become habituated to applying harm, resulting in an escalation of assaults to achieve the same thrill. This is particularly pertinent since sex robots have not been designed to mimic human emotions, meaning that aggression would not be paired with signs of distress (Maras & Shapiro, 2017). The user therefore would not experience any negative outcomes from violence, which may motivate sexual aggression.

Research has also found links between consumption of Child Exploitation Material (CEM) and contact offending, with one study reporting that 85% of CEM offenders sampled had also sexually abused a child (Bourke & Hernandez, 2009). Watching CEM is often considered a progressive, catalytic addiction which escalates in severity, following desensitisation to the material. Fantasy may become paired with orgasm, meaning the individual receives positive reinforcement from CEM, potentially increasing the risk of harm to real children (Maras & Shapiro, 2017). Establishing a link between CEM and contact offending begs questioning of whether the same can be applied to child sex robots, with some researchers suggesting that those capable of having sex with a child robot are also capable of abusing a child (Danaher, 2017c). Their use by

people with paedophilic tendencies could lower inhibitions and increase the likelihood of deviant sexual acts (Sharkey et al., 2017), potentially solidifying child exploitation schemas (Maras & Shapiro, 2017), and normalising child abuse (Chatterjee, 2019). Between 2016 and 2017 in the UK, 123 child dolls were intercepted, and seven individuals charged. One defendant was found to possess 34,000 indecent images of children (Rawlinson, 2017), indicating there may be a link between the two offences. It is possible that the desire to progress from robots to humans would be stronger than following the use of CEM, since the psychological distance from offending would be reduced (Danaher, 2017c). There is also a risk of dolls and robots being used for grooming, for example in the case of R v Dommeson (2014) when a child was encouraged to have sex with an adult doll (Brown & Shelling, 2019). It is argued that child sex dolls or robots could be of greater benefit for an offender than adult versions in normalising sexual contact with children, considering that CEM has previously been used in the grooming process (Cohen-Almagor, 2013). Overall, it is difficult to apply The Harm Principle to robots and other technology such as computer-generated CEM since it causes no direct harm, and accordingly, an American court ruled that only CEM depicting an actual child could be prohibited (Maras & Shapiro, 2017). However, others claim that CEM, whether actual or virtual, eroticises inequality (Levy, 2002), and philosophers have argued that despite there being no legal victim, child sex robots should be prohibited simply because they are morally objectionable (Strikwerda, 2017).

However, other researchers have argued that sex dolls and robots are unlikely to inspire harmful behaviour. Recent evidence published by Harper et al., (2021), who conducted the first empirical investigation into the personality of sex doll owners, found no significant difference between doll owners and controls with regards to sexual aggression proclivity, sexual objectification, and dark personality traits. Researchers discovered an emerging profile of doll ownership, made up of higher coercive sexual fantasies and lower sexual aggression proclivity, suggesting that dolls may have a cathartic effect on forceful sexual fantasies (Harper et al., 2021). It is also possible that since robots are humanlike and interactive, people will be less willing to disobey social norms when using them (Strikwerda, 2017). In one related study, it was found that participants were reluctant to smash a fake baby's head on a table (Cushman et al., 2012), suggesting that individuals may be more likely to treat humanlike objects with respect. There is further no causal connection between CEM and contact offending, and this evidence base is contentious, with some studies indicating that internet offenders are more likely to hold protective factors preventing them from contact offences (Babchishin et al., 2015). A systematic review investigating this question summarised that most CEM-exclusive offenders did not go onto commit contact sexual offences, but that some did commit further CEM offences (Babchishin et al., 2018). A link therefore exists between virtual offending and further virtual offending. However, it remains unclear how this relationship might apply to child sex doll or robot use since their use is not currently considered an offence. This requires further research, since a relationship between their use and offending may be

stronger considering their similarity to sex with a human and their engagement of the user's entire body.

It is also important to consider the potential benefits of sex robot use. Firstly, they have the potential to create safe and controlled situations for people with anxiety to prepare for human relationships (McArthur, 2017). There are further direct hedonic benefits, with it being well documented that increasing the frequency of sex increases happiness (Blanchflower & Oswald, 2004) and improves health. According to the sexual rights dilemma, everyone is entitled to sexual satisfaction, but not everyone has this available to them (Strikwerda, 2017). Consequently, it is argued that we should allow the choice to have sex if the other option is celibacy (McArthur, 2017).

Overall, the debate centres on whether sex robot use can be considered cathartic, creating a space where problematic sexual desires could be expressed without harming others, or instead catalytic and encouraging of sexually problematic behaviour (Danaher, 2017b). The CASR argues against catharsis and the idea that robots can substitute victims of sexual crime, since sex toys, pornography, the sex trade, and sexual crime have co-existed for several years, and perhaps reinforced each other (Richardson, 2016). The dilemma lies in the following: robots may be a better substitute for harmful sexual feelings; however, the step between using sex robots and offending may be small (Strikwerda, 2017). Researcher's call for empirical evidence, since the current evidence base

focuses on the use of illegal pornography, which is disputed and correlational (Danaher, 2017b).

Current Study

As outlined above, research on this topic is in its infancy. The first systematic survey of views of sex robots was completed by Scheutz and Arnold (2016) and replicated and extended by the same authors in 2017. Participants were asked for opinions on appropriate uses and forms of robots, as well as possible advantages, disadvantages, and general views (Scheutz & Arnold, 2017). Meanwhile, Harper et al.'s (2021) study represented the first empirical research into various psychological constructs related to sex doll use. Excepting these examples, most published material on this subject has included reviews of the literature, philosophical standpoints, or calls for further research. The current study therefore drew upon a wider research pool of sexual attitudes and behaviour, as well as the aforementioned studies, when developing hypotheses and research aims.

Researchers have argued that replicating violence such as rape with dolls or robots reflects cruel and morally deficient personalities (Sparrow, 2017). Since much of the debate centres on whether use of sex robots can be considered morally sound, it is important to consider the influence of moral standards, which guide and regulate behaviour (Bandura et al., 1996). These standards can be overridden through a process of Moral Disengagement (MD), which consists of eight cognitive mechanisms that separate internal moral standards from actions (Bandura, 1986): moral

justification, distortion of consequences, diffusion and displacement of responsibility, dehumanisation, advantageous comparison, euphemistic labelling, and attribution of blame. All contribute to a person's distortion that their behaviour is ethical (Moore, 2015). Research suggests that those engaging in high MD are more likely to display aggression, delinquent behaviour, and lower levels of guilt and prosocial orientation (Bandura et al., 1996). They are also more likely to make unethical decisions, a trait which has been correlated with unethical (Detert et al., 2008), and criminal behaviour (Kish-Gephart et al., 2010). MD further represents a key factor in sexual abuse cases (DeLisi et al., 2014), with sexual offenders utilising several cognitive distortions to justify their behaviour (Murphy & Carich, 2001), and their view of children as sexual objects (D'Urso et al., 2019). Sexual offenders have been shown to display higher levels of MD than other offenders and non-offenders (Petruccelli et al., 2017a), and it has been suggested that MD mechanisms are embodied within sexual aggression myths that serve to blame the victim and vindicate the offender (Bandura, 1986). In support of this, research has demonstrated an association between higher MD in male college participants and more supportive attitudes of rape (Carroll, 2009). The current research therefore aimed to investigate the relationship between MD and attitudes towards sex robots.

Researchers have also proposed a relationship between dark personality traits and attitudes towards sex robots and recommended that future research investigate this (Appel et al., 2019). The Dark Triad consists of psychopathy, narcissism, and Machiavellianism, three traits predictive of

immoral and criminal behaviour (Paulhus & Williams, 2002). Research has demonstrated links between psychopathy and Machiavellianism and MD (Egan et al., 2015), and narcissism and engagement with sexual fantasies. Psychopathy has further been linked with sadomasochistic fantasies (Baughman et al., 2014), sadism, and sexual assault (Williams et al., 2009), and researchers have concluded that this 'Dark Triad' facilitates exploitative sexual strategies (Baughman et al., 2014). Later work illuminated sadism as a fourth trait, and the concept was therefore expanded to become the Dark Tetrad (Paulhus, 2014). Sadism has been linked to perpetration of non-sexual and sexual violence, as well as the severity of this behaviour (Robertson & Knight, 2014), and has been associated with positive emotions whilst eliciting aggression (Chester et al., 2019). Researchers have suggested that these traits could predict the appeal of sex robots (Appel et al., 2019). Since individuals with narcissistic traits are likely to have vulnerable self-esteem, it is thought that they may be easily threatened by other people (Bushman & Baumeister, 1998) and may therefore find sex robots that are programmed to flatter the user attractive. Furthermore, sadism could motivate an individual to carry out harmful or cruel behaviours (Kirsch & Becker, 2007), and researchers suggest that the reduced risk of harm with sex robots might make them attractive to an individual with sadistic traits (Appel et al., 2019). Since research indicates that Dark Tetrad characteristics are linked with sexual aggression and perhaps with attitudes towards sex robots, it was considered an important variable of interest for the current study.

Further, research has consistently demonstrated relationships between adherence to sexual aggression myths and both sexual entitlement (Bouffard, 2010) and sexual objectification (Samji & Vasquez, 2020). Bohner et al. (2013) suggest that endorsement of sexual aggression myths may rationalise sexually violent tendencies and potentially turn them into actions. In their study, a relationship between rape proclivity and sexual aggression myth acceptance was identified, and they therefore concluded that sexual aggression myth acceptance is a major factor that needs addressing in preventing sexual violence (Bohner et al., 2013). These findings are pertinent given Harper et al.'s (2021) discovery that sex doll owners were more likely to view women as sex objects and to report greater sexual entitlement compared with non-owners. Since research has identified that sexually aggressive attitudes may escalate to behaviour, it was considered important that the current research investigate relationships between both sexual aggression and child sexual abuse myth acceptance and attitudes towards sex robots.

Research also indicates clear demographic variations when it comes to the psychological constructs examined in the current study and attitudes towards sex robots. In one study, two thirds of men reported being in favour of using a sex robot in the future and identified more appropriate uses and forms of robots, whilst two thirds of women were opposed (Scheutz & Arnold, 2016). Men also appear more likely to engage in MD (Detert et al., 2008), to hold Dark Tetrad personality traits (Neumann et al., 2021), and to be more accepting of sexual aggression myths (Davies et al., 2012)

compared with women. Other research has found younger people to be more accepting of robots (Eichenberg et al., 2019), which researchers attribute to younger generations having likely experienced technology at a younger age. They even suggest that brain wiring may eventually change for generations who have spent their entire lives in the presence of technology, which could one day facilitate the normalisation of sex with robots (Hernandez, 2018). Furthermore, Harper et al. (2021) found that 55.7% of their sample of doll owners were single, compared with 33.3% of the control group, suggesting that those in a relationship or married may be less likely to use sex dolls. They further reported a mean of 14.35 years of education for doll owners, compared with 14.7 years for the control group (Harper et al., 2021). Although they did not conduct statistical analysis on the demographic data, these figures indicate potential group differences. Sexual orientation is also of importance when investigating sexual behaviour, with one study finding that heterosexual women scored lower on all studied variables compared with homosexual/ bisexual women, including pornography use and masturbation (Træen & Daneback, 2012), suggesting sexual orientation could also influence attitudes towards sex robots. Finally, research indicates a relationship between pornography use and sexual attitudes, with those who use pornography more frequently showing more interest in what researchers described as 'kinky' sex, including use of sex toys and 'playful dominating' (Morgan, 2011, pg. 12). Researchers have called for investigations into the influence of demographics on attitudes towards sex robots, in order to better

understand the part that robots will play in future society (Scheutz & Arnold, 2016).

The rationale of the current research was to extend existing findings in an empirical investigation of attitudes and use of sex robots in relation to various psychological constructs. The current study examined the influence of prominent factors from the literature, of sexual aggression and child sexual abuse myths, MD, and the Dark Tetrad. These links were hypothesised in response to the argument that robots symbolise non-consenting humans, as well as to the development of robots created to imitate rape and child sexual abuse. Further investigations consisted of the influence of demographic factors of age, gender, ethnicity, relationship status, sexual orientation, and years of education, and the more pertinent factor of pornography use. This study attempts to build upon research conducted by Harper et al. (2021) by empirically investigating whether sex robot use is associated with sexual violence and could therefore have far-reaching implications for legal frameworks and victim safety.

Research Aims

This study evaluated whether those who were more accepting of sex robots, both in adult and child form, and those who had previously used sex dolls or robots or wished to in the future, were more likely to hold certain attitudes, psychological constructs, or demographic groups.

Hypotheses

Based on the existing literature, it was hypothesised that participants who were more accepting of adult sex robots, who held stronger beliefs that child sex robots should be legal, and who had used sex dolls or robots previously or wished to in the future would:

1. Be more accepting of sexual aggression myths.
2. Be more accepting of child sexual abuse myths.
3. Have higher MD scores.
4. Have higher Dark Tetrad scores.
5. Be primarily male.
6. Be primarily of a younger age group.
7. Consume pornography more frequently.
8. Be primarily single.
9. Be primarily of homosexual or bisexual orientation.
10. Be of a particular ethnicity.
11. Have completed fewer years of education.

Method

Ethics

Ethics was approved on the 22nd of May 2020 by the Faculty of Medicine and Health Sciences Research Ethics Committee, The University of Nottingham (*See Appendix H*). Considering the sensitive nature of the research, several ethical concerns were deliberated prior to the study taking place. Firstly, participants were informed during advertisement of the research that the study included themes of sexual behaviour (see *Procedure*) and that they should only take part if they were over the age of

18. Participants were also informed and reminded of their right to withdraw on several occasions and were provided with details of relevant organisations in the debrief form, should they require support following participation in the research. Background information and research questions were provided in the debrief form in order to minimise psychological harm.

Design

This experiment investigated whether there were significant relationships between several variables of interest and acceptance of adult sex robots (Dependent Variable (DV1)), beliefs about legality of child sex robots (DV2), previous use of sex dolls or robots (DV3), and future use of sex dolls or robots (DV4). The variables of interest were acceptance of sexual aggression myths (Independent Variable (IV1)), acceptance of child sexual abuse myths (IV2), MD (IV3), Machiavellianism (IV4), psychopathy (IV5), narcissism (IV6), sadism (IV7), gender (IV8), age group (IV9), ethnicity (IV10), relationship status (IV11), years of education (IV12), sexual orientation (IV13), and pornography use (IV14). This was a within-subjects design, since all participants completed all questionnaires. Questionnaires were counterbalanced so that participants were randomly assigned to one of 24 study layouts. Each included a different order of the psychometric assessment pages, to counteract boredom effects.

Participants

A G*Power analysis (Faul et al., 2009) indicated that 166 participants were required for a medium effect size at a power level of .8 when using a

.01 criterion for statistical significance of $p<.01$. Participants were recruited online via an advert (*Appendix I*) on social media sites including Facebook, Instagram, LinkedIn, Twitter, and Reddit, in a convenience sample (See *Appendix J* for a full list of Reddit forums accessed). The study was also advertised on websites designed for collecting participants, including 'SurveyCircle' and 'Psychological Research on the Net'. Seven hundred and eighteen participants took part. One participant was removed for declining to consent, and 18 for selecting 'other' gender (as explained under *Data Preparation*), leaving 699 participants for analysis. *Table 7* outlines the breakdown of each demographic. Age ranged from 18-80 (M=29.89, SD=9.84).

Materials

Laptops, computers, and smart phones were used to complete the questionnaire, which was created using Online Surveys (Jisc, 2020). The following psychometric assessments were included:

1. Short Dark Triad 3 (SD3); 27 statements (1[strongly disagree]-5[strongly agree]) (Jones & Paulhus, 2014).
2. Short Sadistic Impulse Scale (SSIS); 10 statements (like me or unlike me) (O'Meara et al., 2011).
3. Moral Disengagement Scale (MDS); 32 statements (1[strongly disagree]-5[strongly agree]) (Detert et al., 2008).
4. Acceptance of Modern Myths about Sexual Aggression Myth Scale (AMMSA; 30 statements (1[completely disagree]-7[completely agree]) (Gerger et al., 2013).

5. Child Sexual Abuse Myth Scale (CSAMS); 15 statements (1[strongly disagree]-5[strongly agree]) (Collings, 1997).

Procedure

A pilot study was administered via social media and eight participants took part. Feedback included that the link was interpreted as untrustworthy, and a website (www.sexrobotresearch.co.uk) (*Appendix K*) was therefore developed. The finalised study was advertised on social media, including a warning (detailed below) that the study focused on sexual behaviour and may therefore be distressing. It was further specified that only individuals over the age of 18 should take part:

I'm looking for participants for my doctoral research, for which I'm studying public attitudes towards sex robots. Anyone over 18 can take part and it should take about 20 minutes to complete. Some of the questions involved are very personal, regarding attitudes towards sex and controversial sexual behaviours. Please don't take part if you are under 18 or feel uncomfortable answering these questions.

The website included an option to 'learn more' or to 'take survey', the latter redirecting participants to the questionnaire. They were then presented with an information sheet (*Appendix L*) and consent form (*Appendix M*). They were provided with minimal information on the information sheet, with the research being described as a study of public opinions of sex robots. This was necessary to minimise social desirability bias, given the controversial nature of the topic. If they answered 'no' on the consent form they were redirected to the 'thank you' page, followed by the debrief form. If they

answered 'yes' they continued onto seven demographic questions (*Appendix N*). On the following page they were presented with a definition of sex robots and several questions about their opinions towards them *(Appendix O*). These consisted of whether they had previously or would in the future use sex dolls or robots, fifteen questions requesting their views on *uses* of sex robots, and eleven questions on *forms*, followed by questions on whether they believed adult and child sex robots should be legal. These questions were based on Scheutz and Arnold's (2017) study and were scored on a scale from Strongly Disagree (1) to Strongly Agree (5). Previous and future use included both dolls and robots, given that robots are still relatively new and remain costly, meaning dolls are more commonly used. This was also important given that the inflated price of robots may have prevented participants from answering 'yes' to future use.

Participants then answered the five psychometric assessments detailed above (See *Appendices B, P, Q, R & S*), presented in various orders across the 24 versions. Participants were also asked to complete four qualitative questions regarding their views of sexual technology; these findings are presented in Chapter Four. They finally viewed a 'thank you' page, informing them that they had finished the questionnaire and to click 'submit' to view the debrief form (*Appendix T*). The debrief form detailed the true aims of the study and provided support lines given the potentially distressing nature of the topic. Participants were then informed they could close the page.

Table 7.

Participant Split by Demographic Group, Including Number and Percentage.

Demographic	**Group**	***N***	**%**
Gender	Male	433	61.9%
	Female	266	38.1%
Age Group	18-25	276	39.5%
	26-40	337	48.2%
	41+	86	12.3%
Ethnicity	White	605	86.6%
	Asian	33	4.7%
	Black	20	2.9%
	Other	41	5.9%
Education past the age of 18	0 years	83	11.9%
	1 year undergraduate	60	8.6%
	2 years undergraduate	82	11.7%
	3 years undergraduate	196	28.0%
	1 year Masters	126	18.0%
	1+ years PhD	69	9.9%
	Other	83	11.9%
Sexual orientation	Heterosexual	484	69.2%
	Homosexual	39	5.6%
	Bisexual	150	21.5%
	Other	26	3.7%
Relationship Status	Single	315	45.1%
	Relationship	207	29.6%
	Married/ Domestic Partnership	158	22.6%
	Other	19	2.7%
Pornography Use	Never	90	12.9%
	Monthly	139	19.9%
	Weekly	184	26.3%
	Every Other Day	152	21.7%
	Daily	104	14.9%
	Other	30	4.3%

Data Preparation

Items were reverse scored on the SD3 and SSIS where appropriate and scores on the MDS, AMMSA, CSAMS, and each SD3 factor were averaged for each participant, as directed by the original papers. Scores

were summed for the SSIS, meaning participants scored between 0-10. Demographic data was recoded as below:

1. *Gender.* Seven participants chose 'other' but wrote an answer identifying with a gender and were therefore recoded. Eighteen 'other' responses remained, consisting of 'agender', 'non-binary', 'queer', 'gender fluid', 'androgynous', and 'non-identifying', and due to the small group size, were removed from analysis.
2. *Age.* Participants were split into three age groups, 18-25, 26-40, and 41+.
3. *Ethnicity.* Several participants responded 'other' for ethnicity but specified a White background and were therefore recoded. Considering the small numbers across several ethnicity groups, all participants were placed in 'White', 'Asian', 'Black', or 'Other'.
4. *Sexual Orientation.* Those who had answered 'asexual' or 'other' were combined into one 'other' group, considering the small numbers in each group.
5. *Relationship Status.* Those in the 'divorced', 'widowed', 'separated' or 'other' categories were all placed in the 'other' group, due to small group numbers.
6. *Future Use.* 251 respondents answered 'unsure' when asked if they would use sex dolls or robots in the future. These respondents were re-classified as having said 'no' to be included in a binary regression.

For each participant, a sex robot acceptance score was totalled. This was achieved by taking a mean score from the uses and forms questions and

summing these with the adult sex robot legality question. This scale was developed using Scheutz and Arnold's (2016, 2017) original survey questions. Since participants were required to answer between 1-5 for each question, when the three factors were summed, participants could achieve a minimum of 3 and a maximum of 15, with 3 representing no acceptance, and 15 complete acceptance. A reliability analysis was conducted to test for internal consistency. The scale consisted of 27 items and the Cronbach's alpha was .96, indicating a high level of internal consistency for the scale for this sample (*Appendix U*).

Results

Analysis

SPSS Version 23.0 (IBM Corp, 2015) was used for all analysis.

Sex Robot Acceptance

A histogram was created to test for normal distribution of sex robot acceptance for all respondents (M=9.71, SD= 2.57) (*Appendix V).* The scores were roughly normally distributed, and parametric tests were considered sufficiently robust. Based on previous research, it was considered important to test for an effect of gender. An independent samples *t*-test was conducted and since the Levene's test for homogeneity was significant, equal variances were not assumed. A significant difference was found (t(445.85)=10.05, $p<.001$), with males (M=11.63, SD=2.17) scoring significantly higher than females (M=9.55, SD= 2.91) on sex robot acceptance. Males and females were therefore analysed separately.

Male Respondents Bivariate Analysis. One-way ANOVAs were conducted to test for effects of all categorical variables on sex robot acceptance, as outlined in *Table 8.* Simple linear regressions were conducted to test for effects of all continuous variables on sex robot acceptance, as outlined in *Table 9*.

Male Respondent Multivariate Analysis. A forced entry linear regression was conducted to analyse the effect of each significant variable identified during bivariate analysis on sex robot acceptance for males. For the regression, all participants who answered 'other' for pornography use were removed, to prevent skew. This left 426 male respondents. Only pornography use added significantly to the model. For every unit increase in pornography use, sex robot acceptance increased by .5.

Model Fit. It was found that these variables statistically significantly predicted sex robot acceptance ($F(5,420)=10.32$, $p<.001$, $R^2=.11$), as outlined in *Table 10. Table 11* details the results of the regression analysis.

Table 8.

The Results of One-Way ANOVAs Conducted to Test for Effects of all Categorical Variables on Sex Robot Acceptance for Male Respondents.

Variable	*N*	M(SD)	*F*	*DF*	Sig
Ethnicity			1.65	3,429	.18
White	370	11.57(2.25)			
Asian	24	11.34(1.72)			
Black	14	12.1(1.56)			
Other	25	12.46(1.44)			
Education			.49	6,426	.82
0 years	57	11.67(2.19)			
1 year undergraduate	39	11.84(1.9)			
2 year undergraduate	60	11.84(2.1)			
3 year undergraduate	121	11.42(2.29)			
1 year master	71	11.46(2.17)			
1+ year PhD	36	11.76(2.48)			
Other	49	11.82(1.96)			
Sexual Orientation			1.67	3,429	.17
Heterosexual	335	11.68(2.17)			
Homosexual	22	10.64(2.36)			
Bisexual	64	11.64(2.16)			
Other	12	11.95(1.65)			
Relationship Status			1.26	3,429	.29
Single	214	11.7(2.16)			
In a relationship	108	11.78(1.95)			
Married/ Domestic Partnership	98	11.27(2.41)			
Other	13	11.98(2.22)			
Pornography Use			**11.45**	**5,427**	**<.001**
Never	**12**	**8.25(3.85)**			
Monthly	**48**	**11.34(1.88)**			
Weekly	**128**	**11.39(2.24)**			
Every other day	**140**	**11.86(1.93)**			
Daily	**98**	**12.34(1.62)**			
Other	**7**	**9.35(3.04)**			

Note. Significant effects at the *p<.05* level are shown in bold.

Table 9.

The Results of Simple Linear Regressions Conducted to Test for Effects of all Continuous Variables on Sex Robot Acceptance for Male Respondents.

		95% confidence				
Variable	*B*	Lower Bound	Upper Bound	Std. Error	*t*	Sig
Age	.02	-.01	.04	.01	1.5	.13
SSIS	**.12**	**.01**	**.24**	**.06**	**2.07**	**.04**
Machiavellianism	**.66**	**.37**	**.95**	**.15**	**4.49**	**<.001**
Narcissism	.17	-.21	.55	.19	.88	.38
Psychopathy	**.58**	**.23**	**.94**	**.18**	**3.2**	**.001**
MD	.37	-.08	.81	.23	1.61	.11
AMMSA	**.28**	**.09**	**.48**	**.1**	**2.84**	**.005**
CSAMS	.38	-.06	.81	.22	1.7	.09

Note. Significant effects at the *p<.05* level are shown in bold.

Table 10.

The Results of the Overall Regression Model Fit for Male Sex Robot Acceptance.

			Overall Model Test			
R	R^2	Adjusted R^2	F	Df1	Df2	Sig
.33	.11	.1	10.32	5	420	<.001

Table 11.

The Results of the Linear Regression Conducted to Test for Effects of all Significant Variables on Sex Robot Acceptance for Male Respondents.

		95% confidence				
Variable	*B*	Lower Bound	Upper Bound	Std. Error	*t*	Sig
Pornography use	**.5**	**.31**	**.69**	**.1**	**5.24**	**<.001**
SSIS	-.01	-.13	.11	.06	-.11	.91
Machiavellianism	.33	-.01	.68	.18	1.91	.06
Psychopathy	.24	-.16	.65	.21	1.17	.24
AMMSA	.17	-.04	.37	.1	1.6	.11

Note. Significant effects at the *p<.05* level are shown in bold.

Female Respondent Bivariate Analysis. One-way ANOVAs were conducted to test for effects of all categorical variables on sex robot acceptance for female respondents, as outlined in *Table 12.* Simple linear regressions were conducted to test for effects of all continuous variables on sex robot acceptance for females, as outlined in *Table 13*.

Female Respondent Multivariate Analysis. A forced entry linear regression was conducted to test for effects of each significant variable identified during bivariate analysis on sex robot acceptance for females. For the regression, sexual orientation was recoded into a binary variable, with participants either falling into a 'single' or 'not single' category. All participants who had answered 'other' for pornography use were again removed from analysis to prevent skew, leaving 243 female respondents. Only pornography use added significantly to the model. For every unit increase in pornography use, sex robot acceptance increased by 1.32.

Model Fit. It was found that these variables statistically significantly predicted sex robot acceptance for female respondents ($F(6,236)=11.42$, $p<.001$, $R^2=.23$), as displayed in *Table 14.* The results of the regression analysis are displayed in *Table 15*.

Table 12.

The Results of One-Way ANOVAs Conducted to Test for Effects of all Categorical Variables on Sex Robot Acceptance for Female Respondents.

Variable	*N*	M(SD)	*F*	*DF*	Sig
Ethnicity			.33	3,262	.81
White	235	9.56(2.96)			
Asian	9	9.94(1.52)			
Black	6	8.56(1.59)			
Other	16	9.31(3.16)			
Education			1.5	6,259	.18
0 years	26	9.75(3.49)			
1 year under	21	10.38(3.08)			
2 year under	22	10.15(2.79)			
3 year under	75	9.07(2.94)			
1 year master	55	9.64(2.83)			
1+ year PhD	33	10.22(2.5)			
Other	34	8.8(2.69)			
Sexual Orientation			**4.95**	**3,262**	**.002**
Heterosexual	**149**	**9.17(2.83)**			
Homosexual	**17**	**8.16(1.94)**			
Bisexual	**86**	**10.31(2.78)**			
Other	**14**	**10.62(3.25)**			
Relationship Status			.14	3,262	.94
Single	101	9.42(3.02)			
In a relationship	99	9.59(2.54)			
Married/ Domestic Partnership	60	9.7(3.23)			
Other	6	9.69(4.03)			
Pornography Use			**13.73**	**5,260**	**<.001**
Never	**78**	**7.97(3.01)**			
Monthly	**91**	**9.74(2.72)**			
Weekly	**56**	**10.76(2.22)**			
Every other day	**12**	**12.32(1.26)**			
Daily	**6**	**13.32(.7)**			
Other	**23**	**8.82(2.36)**			

Note. Significant effects at the *p<.05* level are shown in bold.

Table 13.

The Results of Simple Linear Regressions Conducted to Test for Effects of all Continuous Variables on Sex Robot Acceptance for Female Respondents.

		95% confidence				
Variable	*B*	Lower Bound	Upper Bound	Std. Error	*t*	Sig
Age	-.02	-.06	.03	.02	-.7	.49
SSIS	**.34**	**.1**	**.6**	**.12**	**2.76**	**.006**
Machiavellianism	**.74**	**.25**	**1.23**	**.25**	**2.99**	**.003**
Narcissism	-.03	-.61	.55	.29	-.11	.91
Psychopathy	**.82**	**.23**	**1.4**	**.3**	**2.75**	**.006**
MD	**1.06**	**.27**	**1.84**	**.4**	**2.65**	**.008**
AMMSA	.31	-.16	.77	.24	1.3	.19
CSAMS	-.11	-1.29	1.07	.6	-.19	.85

Note. Significant effects at the *p<.05* level are shown in bold.

Table 14.

The Results of the Overall Model Fit for SR Acceptance for Female Respondents.

			Overall Model Test			
R	R^2	Adjusted R^2	*F*	Df1	Df2	Sig
.47	.23	.21	11.42	6	236	<.001

Table 15.

The Results of a Linear Regression Conducted to Test for Effects of all Significant Variables on Sex Robot Acceptance for Female Respondents.

		95% confidence				
Variable	*B*	Lower Bound	Upper Bound	Std. Error	*t*	Sig
Pornography Use	**1.32**	**.95**	**1.69**	**.19**	**7.11**	**<.001**
Sexual Orientation	-.02	-.72	.7	.36	-.07	.95
SSIS	.13	-.15	.41	.14	.92	.36
Machiavellianism	.32	-.31	.95	.32	.99	.32
Psychopathy	-.03	-.76	.7	.37	-.08	.94
MD	.06	-1.03	.92	.5	-.11	.91

Note. Significant effects at the *p<.05* level are shown in bold.

Child SR Legality

Participants were asked to rate how much they agreed, on a scale from 1 (strongly disagree) to 5 (strongly agree), that child sex robots should be legal. *Table 16* outlines responses from all participants. A histogram was created to test for normal distribution of child sex robot legality for all respondents (*M*=2.0, *SD*=1.31) (*Appendix W).* Although not normally distributed, parametric tests were considered sufficiently robust given the large sample size and since the distribution was not multi-modal. Recent research has further highlighted the many advantages of using parametric methods over non-parametric methods and have argued that the latter are not strictly necessary for data that is not normal (Le Cessie et al., 2020a; Le Cessie et al., 2020b).

In line with previous research, an independent samples *t-test* was conducted to test for an effect of gender. Since the Levene's test for homogeneity was significant, equal variances were not assumed. A significant difference was found, (t(627.56)=5.77, $p<.001$), with males (M=2.21, SD=1.36) scoring significantly higher than females (M=1.66, SD=1.16), indicating higher agreement. Males and females were therefore analysed separately.

Table 16.

Responses to the Statement 'Child Sex Robots Should be Legal', for all Respondents.

Response	*N*	Percentage
Strongly Disagree	383	54.8%
Disagree	97	13.9%
Neither Disagree nor Agree	106	15.2%
Agree	60	8.6%
Strongly Agree	53	7.6%

Male Respondents Bivariate Analysis. One-way ANOVAs were conducted to test for effects of all categorical variables on child sex robot legality, as outlined in *Table 17.* Simple linear regressions were conducted to test for effects of all continuous variables on child sex robot legality, as outlined in *Table 18.*

Table 17.

The Results of One-Way ANOVAs Conducted to Test for Effects of all Categorical Variables on Child Sex Robot Legality, for Male Respondents.

Variable	*N*	M(SD)	*F*	Df	Sig
Ethnicity			1.18	3,429	.32
White	370	2.21(1.35)			
Asian	24	1.88(1.36)			
Black	14	2.14(1.35)			
Other	25	2.6(1.53)			
Education			.89	6,426	.5
0 years	57	2.46(1.51)			
1 year under	39	2.44(1.47)			
2 year under	60	2.02(1.3)			
3 year under	121	2.14(1.32)			
1 year master	71	2.13(1.29)			
1+ year PhD	36	2.39(1.46)			
Other	49	2.18(1.3)			
Sexual Orientation			1.13	3,429	.34
Heterosexual	335	2.2(1.34)			
Homosexual	22	1.82(1.44)			
Bisexual	64	2.42(1.42)			
Other	12	2.17(1.4)			
Relationship Status			**4.39**	**3,429**	**.01**
Single	**214**	**2.36(1.4)**			
In a relationship	**108**	**2.17(1.33)**			
Married/ Domestic Partnership	**98**	**1.86(1.18)**			
Other	**13**	**2.92(1.61)**			
Pornography Use			**2.61**	**5,427**	**.03**
Never	**12**	**1.25(.62)**			
Monthly	**48**	**2.29(1.34)**			
Weekly	**128**	**2.09(1.27)**			
Every other day	**140**	**2.17(1.29)**			
Daily	**98**	**2.53(1.55)**			
Other	**7**	**2.14(1.68)**			

Note. Significant effects at the *p<.05* level are shown in bold.

Table 18.

The Results of Simple Linear Regressions Conducted to Test for Effects of all Continuous Variables on Child Sex Robot Legality, For Male Respondents.

		95% confidence				
Variable	*B*	Lower Bound	Upper Bound	Std. Error	*t*	Sig
Age	.003	-.01	.02	.01	.55	.59
SSIS	.01	-.06	.09	.04	.4	.69
Machiavellianism	**.22**	**.04**	**.41**	**.09**	**2.37**	**.02**
Narcissism	-.11	-.35	.13	.12	-.92	.36
Psychopathy	.22	-.01	.44	.12	1.88	.06
MD	.21	-.07	.49	.14	1.47	.14
AMMSA	**.18**	**.06**	**.3**	**.06**	**2.88**	**.004**
CSAMS	**.43**	**.16**	**.7**	**.14**	**3.14**	**.002**

Note. Significant effects at the *p<.05* level are shown in bold.

Male Respondents Multivariate Analysis. A forced entry linear regression was conducted to test for effects of each significant variable identified during bivariate analysis on child sex robot legality for male respondents. For the regression, all participants who answered 'other' for pornography use were removed from analysis to prevent skew, leaving 426 male respondents. Only pornography use added significantly to the model. For every unit increase in pornography use, agreement that child sex robots should be legal increased by .14.

Model Fit. It was found that these variables statistically significantly predicted child sex robot legality for male respondents ($F(12,420)=2.54$, $p=.003$, $R^2=.07$), as outlined in *Table 19.* The results of the regression analysis are outlined in *Table 20*.

Table 19.

The Results of The Overall Model Fit for Child Sex Robot Legality for Male Respondents.

			Overall Model Test			
R	R^2	Adjusted R^2	*F*	Df1	Df2	Sig
.21	.04	.03	3.2	6	419	.004

Table 20.

The Results of the Linear Regression Conducted to Test for Effects of All Significant Variables on Child Sex Robot Legality for Male Respondents.

		95% confidence				
Variable	*B*	Lower Bound	Upper Bound	Std. Error	*t*	Sig
Relationship Status	-.17	-.43	.09	.13	-1.27	.2
Pornography Use	**.14**	**.02**	**.27**	**.06**	**2.28**	**.02**
SSIS	-.01	-.09	.06	.04	-.34	.73
Machiavellianism	.07	-.14	.29	.11	.67	.51
AMMSA	.08	-.09	.24	.08	.94	.35
CSAMS	.23	-.12	.59	.18	1.31	.19

Note. Significant effects at the *p<.05* level are shown in bold.

Female Respondents Bivariate Analysis. One-way ANOVAs were conducted to test for effects of all categorical variables on child sex robot legality for female respondents, as outlined in *Table 21.* Simple linear regressions were conducted to test for effects of all continuous variables on child sex robot legality for female respondents, as outlined in *Table 22*.

Table 21.

The Results of One-Way ANOVAs Conducted to Test for Effects of all Categorical Variables on Child Sex Robot Legality, for Female Respondents.

Variable	*N*	M(SD)	*F*	Df	Sig
Ethnicity			1.07	3,262	.36
White	235	1.7(1.18)			
Asian	9	1.33(.71)			
Black	6	1(.00)			
Other	16	1.5(1.21)			
Education			.86	6,259	.52
0 years	26	2.08(1.55)			
1 year under	21	1.81(1.29)			
2 year under	22	1.59(1.05)			
3 year under	75	1.57(1.11)			
1 year master	55	1.51(.94)			
1+ year PhD	33	1.7(1.19)			
Other	34	1.68(1.22)			
Sexual Orientation			**3.23**	**3,262**	**.02**
Heterosexual	**149**	**1.52(1.04)**			
Homosexual	**17**	**1.29(.69)**			
Bisexual	**86**	**1.94(1.35)**			
Other	**14**	**1.86(1.23)**			
Relationship Status			1.57	3,262	.2
Single	101	1.57(1.14)			
In a relationship	99	1.57(1.08)			
Married/ Domestic Partnership	60	1.92(1.28)			
Other	6	2(1.27)			
Pornography use			**5.91**	**5,260**	**<.001**
Never	**78**	**1.38(.98)**			
Monthly	**91**	**1.6(1.09)**			
Weekly	**56**	**1.71(1.11)**			
Every other day	**12**	**2.33(1.5)**			
Daily	**6**	**3.67(1.51)**			
Other	**23**	**1.78(1.24)**			

Note. Significant effects at the *p<.05* level are shown in bold.

Table 22.

The Results of Simple Linear Regressions Conducted to Test for Effects of all Continuous Variables on Child Sex Robot Legality, for Female Respondents.

		95% confidence				
Variable	*B*	Lower Bound	Upper Bound	Std. Error	*t*	Sig
Age	-.001	-.02	.02	.01	-.07	.94
SSIS	.06	-.04	.16	.05	1.23	.22
Machiavellianism	**.26**	**.07**	**.46**	**.1**	**2.63**	**.009**
Narcissism	-.01	-.24	.22	.12	-.12	.91
Psychopathy	.17	-.06	.41	.12	1.44	.15
MD	**.43**	**.12**	**.74**	**.16**	**2.71**	**.007**
AMMSA	**.2**	**.02**	**.39**	**.09**	**2.17**	**.03**
CSAMS	**.55**	**.08**	**1.01**	**.24**	**2.31**	**.02**

Note. Significant effects at the *p<.05* level are shown in bold.

Female Respondents Multivariate Analysis. A forced entry linear regression was conducted to test for effects of each significant variable identified during bivariate analysis on child sex robot legality for female respondents. Sexual orientation was recoded into a binary variable, with participants either falling into a 'heterosexual' or 'LGBTQIA+' category. All participants who had answered 'other' for pornography use were removed from analysis to prevent skew, leaving 243 female respondents included in the regression. Only pornography use and sexual orientation added significantly to the model. For every unit increase in pornography use, agreement that child sex robots should be legal increased by .25. Heterosexual participants scored significantly lower (*M*=1.51, *SD*=1.04)

than LGBTQIA+ respondents (*M*=1.84, *SD*=1.27), indicating less agreement that child sex robots should be legal.

Model Fit. It was found that these variables statistically significantly predicted child sex robot legality ($F(6,236)=5.23$, $p<.001$, $R^2=.12$), as outlined in *Table 23.* The results of the regression analysis are displayed in *Table 24.*

Table 23.

The Results of The Overall Model Fit for Child Sex Robot Legality for Female Respondents.

			Overall Model Test			
R	R^2	Adjusted R^2	F	Df1	Df2	P
.34	.12	.1	5.23	6	236	<.001

Table 24.

The Results of the Linear Regression Conducted to Test for Effects of all Significant Variables on Child Sex Robot Legality, for Female Respondents.

		95% confidence				
Variable	*B*	Lower Bound	Upper Bound	Std. Error	*t*	Sig
Machiavellianism	.13	-.11	.38	.12	1.06	.29
Pornography Use	**.25**	**.1**	**.4**	**.08**	**3.23**	**.001**
Sexual Orientation	**.3**	**.002**	**.6**	**.15**	**1.98**	**.048**
MD	-.004	-.4	.4	.2	-.02	.99
AMMSA	.02	-.22	.27	.12	.19	.85
CSAMS	.48	-.12	1.08	.3	1.58	.12

Note. Significant effects at the *p<.05* level are shown in bold.

Previous Sex Doll or Robot Use

3.3% (*N*=23) of participants reported that they had previously used sex dolls or robots, consisting of two females and 21 males. In line with previous research, a Chi-Square test was conducted to test for differences in gender. This indicated a significant difference ($\chi(1)=8.7$, $p=.003$), with males being more likely to have previously used dolls or robots. Males and females were therefore analysed separately.

Male Respondents Bivariate Analysis. Chi-Square tests were conducted to test for effects of all categorical variables on previous sex doll or robot use for males, as outlined in *Table 25.* Independent samples *t*-tests were conducted to test for effects of all continuous variables on previous sex doll or robot use for males, as outlined in *Table 26.* Only AMMSA was found to have a significant effect, with those who had used sex dolls or robots in the past scoring higher in agreement with sexual aggression myths than those who had not.

Table 25.

The Results of Chi-Square Tests Conducted to Test for Effects of all Categorical Variables on Previous Sex Doll or Robot Use, for Male Respondents.

Variable	Chi-Square	Sig
Ethnicity	.36	.55
Education	2.19	.14
Sexual Orientation	2.17	.14
Relationship Status	1.38	.24

Note. Significant effects at the $p<.05$ level are shown in bold.

Male Respondents Multivariate Analysis. Since only one variable was significant following bivariate analysis, no multivariate analysis was conducted.

Female Respondents. Since only two female respondents reported previous sex doll or robot use, no analysis was conducted.

Table 26.

The Results of the Independent Samples t-tests Conducted to Test for Effects of all Continuous Variables on Previous Sex Doll or Robot Use, for Male Respondents.

	Previous Sex Doll or Robot Use				
Variable	Yes (*M*(*SD*))	No (*M*(*SD*))	*t*	*Df*	Sig
Age	32.29(8.15)	31.02(10.51)	.55	431	.59
Pornography Use	3.71(1.15)	3.61(1.04)	3.01	424	.67
MD	2.17(.49)	2.24(.46)	-.65	431	.52
AMMSA	**3.37(1.44)**	**2.91(1.01)**	**1.97**	**431**	**.05**
CSAMS	1.46(.6)	1.5(.47)	-.38	431	.71
SSIS	1.29(2.19)	1.5(1.77)	-.55	431	.59
Machiavellianism (Levene's broken)	2.97(.98)	2.97(.68)	.003	20.98	1.0
Narcissism	2.53(.55)	2.48(.54)	.4	431	.69
Psychopathy	2.21(.51)	2.21(.57)	-.02	431	.98

Note. Significant effects at the *p<.05* level are shown in bold.

Future Sex Doll or Robot Use

When asked if they would use sex dolls or robots in future, 33.9% (*N*=230) of respondents said yes, 31.2% (*N*=218) said no, and 35.9% (*N=251*) were unsure. Unsure participants were recoded as 'no', leaving 469 participants in this category. Of the 230 who said yes, 189 were male

and 41 were female. In line with previous research, a Chi-Square test was conducted to test for an effect of gender. This indicated a significant difference ($\chi(1)=59.5$, $p<.001$), with males being more likely to say yes to future sex doll or robot use. Males and females were therefore analysed separately.

Male Respondents Bivariate Analysis. Chi-Square tests were conducted to test for effects of all categorical variables on future sex doll or robot use for males, as outlined in *Table 27.* Independent samples *t*-tests were conducted to test for effects of all continuous variables on future use for males, as outlined in *Table 28.*

Table 27.

The Results of Chi-Square Tests Conducted to Test for Effects of All Categorical Variables on Future Sex Doll or Robot Use, for Male Respondents.

Variable	Chi-Square	Sig
Ethnicity	.17	.68
Education	2.15	.14
Sexual Orientation	.56	.46
Relationship Status	2.77	.1

Note. Significant effects at the $p<.05$ level are shown in bold.

Male Respondents Multivariate Analysis. A logistic regression was performed to determine the effects of each significant variable identified during bivariate analysis on future sex doll or robot use. The logistic regression model was statistically significant ($\chi^2(6)=47.16$, $p<.001$). The model explained 14% (Nagelkerke R^2) of the variance in

future use and correctly classified 65% of cases. Age, pornography use, and AMMSA scores added significantly to the model. For every unit increase in age, participants were .97 times more likely to say yes to future sex doll or robot use. For every unit increase in pornography use, participants were .62 times more likely to say yes to future sex doll or robot use. For every unit increase in AMMSA scores, participants were .77 times more likely to say yes to future sex doll or robot use. The results of the regression analysis are displayed in *Table 29.*

Table 28.

The Results of the Independent Samples t-tests Conducted to Test for Effects of All Continuous Variables on Future Sex Doll or Robot Use, for Male Respondents.

	Previous Sex Doll or Robot Use				
Variable	Yes *M*(*SD*)	No *M*(*SD*)	*t*	*Df*	Sig
Age (Levene's broken)	**32.25(11.27)**	**30.17(9.61)**	**2.04**	**368.85**	**.04**
Pornography Use (Levene's broken)	**3.89(.96)**	**3.41(1.06)**	**4.86**	**414.65**	**<.001**
MD	2.24(.47)	2.24(46)	.05	431	.96
AMMSA (Levene's broken)	**3.1(1.16)**	**2.8(.92)**	**2.84**	**351.82**	**.005**
CSAMS (Levene's broken)	1.51(.52)	1.49(.43)	.45	364.5	.65
SSIS (Levene's broken)	**1.8(2.01)**	**1.26(1.57)**	**3.05**	**347.44**	**.002**
Machiavellianism	**3.07(.73)**	**2.89(.66)**	**2.74**	**431**	**.006**
Narcissism	2.5(.53)	2.47(.55)	.41	431	.68
Psychopathy	**2.3(.59)**	**2.14(.54)**	**3.0**	**431**	**.003**

Note. Significant effects at the *p<.05* level are shown in bold.

Table 29.

The Results of the Logistic Regression Conducted to Test for Effects of all Significant Variables on Future Sex Doll or Robot Use, for Male Respondents.

			95% Confidence		
Variable	*B*(*SE*)	Odds Ratio	Lower Bound	Upper Bound	Sig
Age	**-.03(.01)**	**.97**	**.95**	**.99**	**.002**
Pornography use	**-.48(.11)**	**.62**	**.5**	**.76**	**<.001**
AMMSA	**-.26(.11)**	**.77**	**.63**	**.96**	**.02**
Machiavellianism	**-**.05(.19)	.95	.66	1.37	.77
Psychopathy	-.24(22)	.79	.51	1.2	.26
SSIS	**-**.1(.07)	.9	.79	1.03	.12

Note. Significant effects at the *p<.05* level are shown in bold.

Female Respondents Bivariate Analysis. Chi-Square tests were conducted to test for effects of all categorical variables on future sex doll or robot use for females, as outlined in *Table 30.* Independent samples *t*-tests were conducted to test for effects of all continuous variables on future sex doll or robot use for females, as outlined in *Table 31.*

Table 30.

The Results of Chi-Square Tests Conducted to Test for Effects of all Categorical Variables on Future Sex Doll or Robot Use, for Female Respondents.

Variable	Chi-Square	Sig
Ethnicity	.89	.35
Education	2.93	.09
Sexual Orientation	1.84	.18
Relationship Status	.72	.4

Note. Significant effects at the *p<.05* level are shown in bold.

Table 31.

The Results of the Independent Samples T-Tests Conducted to Test for Effects of all Continuous Variables on Future Sex Doll or Robot Use, for Female Respondents.

	Previous Sex Doll or Robot Use				
Variable	Yes *M*(*SD*)	No *M*(*SD*)	*t*	*Df*	Sig
Age	28.76(9.97)	27.8(8.24)	.66	264	.51
Pornography Use (Levene's broken)	**2.59(1.22)**	**1.98(.9)**	**3.01**	**49.1**	**.004**
MD (Levene's broken)	2.22(.57)	2.08(.41)	1.43	47.83	.16
AMMSA (Levene's broken)	2.35(.9)	2.06(.72)	1.97	49.75	.06
CSAMS (Levene's broken)	1.33(.47)	1.22(.25)	1.57	44.43	.12
SSIS (Levene's broken)	**1.56(1.9)**	**.88(1.29)**	**2.19**	**46.96**	**.03**
Machiavellianism	**2.93(2.62)**	**2.62(.69)**	**2.6**	**264**	**.01**
Narcissism (Levene's broken)	2.52(.84)	2.33(.55)	1.37	46.49	.18
Psychopathy (Levene's broken)	**2.24(.69)**	**1.86(.56)**	**3.39**	**49.84**	**.001**

Note. Significant effects at the *p<.05* level are shown in bold.

Female Respondents Multivariate Analysis. A logistic regression was then performed to determine the effects of all significant variables identified in bivariate analysis on future sex doll or robot use. The logistic regression model was statistically significant ($\chi^2(4)=20.66$, *p<.001*). The model explained 14% (Nagelkerke R^2) of the variance in future use and correctly classified 84% of cases. Only pornography use added significantly to the model. For every unit increase in pornography use, participants were .63 times more likely to say yes to future sex doll or robot use. *Table 32* displays the results of the regression.

Table 32.

The Results of the Binary Logistic Regression Conducted to Test for Differences Across all Variables on Future Sex Robot Use for Female Respondents.

			95% Confidence Intervals		
Variable	*B*(SE)	Odds Ratio	Lower Bound	Upper Bound	Sig
Pornography use	**-.47(.18)**	**.63**	**.44**	**.89**	**.01**
SSIS	-.08(.13)	.92	.71	1.19	.53
Machiavellianism	-.05(.32)	.95	.51	1.77	.87
Psychopathy	-.66(.34)	.52	.26	1.01	.05

Note. Significant effects at the *p<.05* level are shown in bold.

Summary of Results

Cases where the null hypothesis can be rejected are highlighted in bold.

Sex Robot Acceptance

1. For males and females, participants who were more accepting of sex robots were not more accepting of sexual aggression myths.
2. For males and females, participants who were more accepting of sex robots were not more accepting of child sexual abuse myths.
3. For males and females, there was no effect of MD on acceptance of sex robots.
4. For males and females, there was no effect of the Dark Tetrad on acceptance of sex robots.
5. **Males were more accepting of sex robots than females.**
6. For males and females, there was no effect of age group on acceptance of sex robots.

7. **For males and females, participants were more accepting of sex robots as their pornography consumption increased.**
8. For males and females, there was no effect of ethnicity on acceptance of sex robots.
9. For males and females, there was no effect of relationship status on acceptance of sex robots.
10. For males and females, there was no effect of years of education on acceptance of sex robots.
11. For males and females, there was no effect of sexual orientation on acceptance of sex robots.

Child Sex Robot Legality

1. For males and females, there was no effect of sexual aggression myth acceptance on agreement that child sex robots should be legal.
2. For males and females, there was no effect of child sexual abuse myth acceptance on agreement that child sex robots should be legal.
3. For males and females, there was no effect of MD on agreement that child sex robots should be legal.
4. For males and females, there was no effect of Dark Tetrad scores on agreement that child sex robots should be legal.
5. **Males scored higher on agreement that child sex robots should be legal compared with females.**
6. For males and females, there was no effect of age group on agreement that child sex robots should be legal.

7. **For males and females, agreement that child sex robots should be legal increased as pornography consumption increased.**
8. For males and females, there was no effect of ethnicity on agreement that child sex robots should be legal.
9. For males and females, there was no effect of relationship status on agreement that child sex robots should be legal.
10. For males and females, there was no effect of years of education on agreement that child sex robots should be legal.
11. For males, there was no effect of sexual orientation on agreement that child sex robots should be legal. **For females, LGBTQIA+ participants were higher on agreement that child sex robots should be legal compared with heterosexual females.**

Previous Use of Sex Dolls or Robots

Due to a small sample of females, no analysis was conducted for this group. Therefore, the following statements include only male respondents:

1. **Previous use of sex dolls or robots was associated with higher acceptance of sexual aggression myths.**
2. There was no relationship between previous use of sex dolls or robots and child sexual abuse myths.
3. There was no relationship between previous use of sex dolls or robots and MD scores.

4. There was no relationship between previous use of sex dolls or robots and Dark Tetrad scores.
5. There was no relationship between previous use of sex dolls or robots and age group.
6. There was no relationship between previous use of sex dolls or robots and pornography consumption.
7. There was no relationship between previous use of sex dolls or robots and ethnicity.
8. There was no relationship between previous use of sex dolls or robots and relationship status.
9. There was no relationship between previous use of sex dolls or robots and years of education.
10. There was no relationship between previous use of sex dolls or robots and sexual orientation.

Future Use of Sex Dolls or Robots

1. **For males, future sex doll or robot use was associated with higher acceptance of sexual aggression myths.** For females, there was no relationship.
2. For males and females, there was no relationship between future sex doll or robot use and child sexual abuse myth acceptance.
3. For males and females, there was no relationship between future sex doll or robot use and MD scores.
4. For males and females, there was no relationship between future sex doll or robot use and Dark Tetrad scores.

5. **For males, as age increased participants were more likely to express a wish to use sex dolls or robots in the future.** For females, there was no relationship between age and future sex doll or robot use.
6. **For males and females, as pornography consumption increased, participants were more likely to express a wish to use sex dolls or robots in the future**.
7. For males and females, there was no relationship between future sex doll or robot use and ethnicity.
8. For males and females, there was no relationship between future sex doll or robot use and relationship status.
9. For males and females, there was no relationship between future sex doll or robot use and years of education.
10. For males and females, there was no relationship between future sex doll or robot use and sexual orientation.

Discussion

This study represents one of the earliest empirical investigations into the beliefs, attitudes, personality, and demographic characteristics of those who are accepting of or who have previously used or wish to in future use sex dolls or robots. Although few significant effects were found, this study identified several important factors that appear to influence both acceptance and use. Although the following discussion explores only significant relationships which remained at multivariate analysis, it is recommended that attention be paid to the scores displayed in the results

section, since large differences in the direction of the hypotheses were often found, although not significantly.

Key Findings

The most consistent finding across all outcome variables was an effect of gender, with males scoring significantly higher on sex robot acceptance and agreement that child sex robots should be legal, as well as being more likely to have previously used and to want to use sex dolls or robots in the future. These results corroborate earlier research demonstrating that males held more positive attitudes towards sex dolls and robots compared with females (Scheutz & Arnold, 2016). Another common finding across most outcome variables was an effect of pornography use on sex robot acceptance, agreement that child sex robots should be legal, and an interest in using them in the future. This supports previous research demonstrating a relationship between pornography use and more exploratory sexual preferences such as use of sex toys (Morgan, 2011). However, this finding was not significant for previous use of sex dolls or robots, opposing this hypothesis. It is possible that this group may be less inclined to use pornography as this need is fulfilled by use of dolls or robots. This may be in contrast with those who wish to use them in the future, who could be experimenting with pornography prior to expanding their interests.

Another prominent finding was an effect of AMMSA, with male respondents who were more accepting of sexual aggression myths being more likely to have used sex dolls or robots previously or to wish to in the

future. This is an important outcome, particularly when combined with Harper et al.'s (2021) finding that doll owners scored higher on measured of sexual entitlement and seeing women as sexual objects, compared with non-owners. Since sexual entitlement and sexual objectification are examples of sexual aggression myths, the two studies do appear to support each other, although not in a straightforward way, with Harper et al. (2021) concluding that doll owners demonstrated lower sexual aggression proclivity overall. An important distinction between the two studies is that the current study investigated both robots and dolls, whilst Harper et al. (2021) only studied doll ownership. It is therefore possible that the direct effect of sexual aggression myth acceptance is isolated to robots, meaning that those who have used or wish to use sex robots in the future are more likely to hold beliefs supportive of sexual aggression. This may be explained by increased risk surrounding robot use compared with dolls, since they are more interactive and humanlike, and users may be more inclined to advance sexually violent behaviours to humans. With regards to child sexual abuse myths, no main effects remained at multivariate analysis, opposing these hypotheses and suggesting that relationships between agreement with child sexual abuse myths and sex robot acceptance or use are unlikely.

With regards to demographics, an effect of sexual orientation was found for agreement that child sex robots should be legal, with individuals who identified as heterosexual scoring lower on this compared with respondents who identified as LGBTQIA+. This effect was only significant for female respondents. This is perhaps explained by research demonstrating that homosexual and bisexual females hold more liberal

views of sexual experimentation compared with heterosexual females (Træen & Daneback, 2012). An effect of age was also found, with older male respondents being more likely to express a desire to use sex dolls or robots in the future, compared with younger males. This opposes the hypothesis that younger individuals would be more interested in sex robots; however may be explained by an increase in sexual health disorders such as erectile dysfunction or a decline in sexual activity as men age (Blanker et al., 2001). One study found that as age increased for men, all studied variables related to sexual function, such as sexual intercourse, significantly declined, excepting only ejaculation with masturbation (Araujo et al., 2004). Therefore, it is possible that although sexual opportunities decline with age, masturbation remains, which may explain a desire to use sex dolls or robots.

No main effects of ethnicity, years of education, or relationship status were found, opposing the hypotheses that there would be differences across these demographic groups. To the researcher's knowledge, this is the first study to conduct statistical analysis on demographics, with previous research only reporting group sizes. The results therefore cannot be directly compared with previous research. However, Harper et al. (2021) found that doll owners and controls tended to have completed a similar amount of education. It is surprising that there were no significant effects of relationship status, particularly considering that Harper et al.'s (2021) doll owner group consisted of 20% more single participants compared with the control group. However, unlike Harper et al. (2021), the current study did not specifically recruit doll owners, which resulted in far fewer participants

who had previously used dolls or robots compared to those who had not, meaning that most participants were speculating rather than basing their answers on experience. It is also possible that different results were found between these studies due to the differences in overall sample size, with the current study recruiting over 400 more participants than Harper et al. (2021).

The current study further found no significant effects of dark personality traits. Although sadism, Machiavellianism, and psychopathy scores were higher for those who were more accepting of sex robots and for those who wished to use sex dolls or robots in the future, these effects were not significant after multivariate analysis. These findings corroborate Harper et al. (2021), who found that doll owners were not significantly different from the control group with regards to dark personality traits. Furthermore, no main effects of MD remained at multivariate analysis, opposing these hypotheses, and suggesting that those who are accepting of or use sex dolls or robots are no more likely to psychologically distance themselves from their morals than those who are not accepting of this technology.

Limitations

The null hypothesis was accepted for many of the hypotheses, including for the effect of MD scores, Dark Tetrad scores, and several demographic groups on sex robot acceptance, child sex robot legality, and previous and future use of sex dolls and robots, There are several potential explanations for why many of the hypotheses were not met, which are

explored below. A key limitation of this research was the use of self-report measures. Anonymity was guaranteed but given the controversial nature of the topic, this may have been insufficient in reassuring participants, given the level of risk related to exposing offence-supportive thoughts. This may have been particularly damaging to the myth acceptance variables, since participants may have been aware of the insinuations that sexual crime and sex dolls or robots were linked and therefore responded in a more socially desirable way. Furthermore, it is noteworthy that some of the subreddits accessed on the website Reddit were specific to sex doll or robot use, including those both fervently for and against them. Given the contentious nature of the topic, it is likely that participants already had an interest and therefore opinions on sex dolls or robots. This was partly rectified by the large sample size since this is likely to have averaged out extreme responses; however, it is recommended that future research attempt to elicit a more balanced sample. It is also important that future research attempt to elicit a larger sample who have previously used sex dolls or robots, since only 3.3% of the current sample had.

There may also have been confusion between adult and child sex dolls or robots. Since child sex robots were referred to early in the questionnaire, this may have biased responses later on. For example, when answering whether they would use sex dolls or robots in the future, participants may have assumed that they were answering about child versions also, and therefore may have altered their responses. Future research should ensure that type of sex doll or robot is clarified throughout. It is also important that dolls and robots are more explicitly differentiated

as responses may have been directed more at one than the other. This is significant since it is currently unclear whether one is more harmful than the other, considering that dolls may be more suggestive of women and children being passive sex objects, whilst robots may appear more humanlike and therefore behaviours towards them may be more readily transferred to humans. It is recommended that future research explicitly investigate this. Furthermore, although gender of the dolls or robots was not clarified in this study, female gender may have been implied since the AMMSA spoke only of sexual aggression towards females and given that the media portrayal of dolls and robots is overwhelmingly female. Although male dolls and robots are much less common than female versions, it may have been an important distinction given that a significant proportion of the sample were female and a percentage of the males identified as homosexual or bisexual, and responses may therefore have been different should male forms have been included.

A further limitation of the project is that it is not possible to prove causality using this data. The data was cross-sectional and correlational, meaning it is unclear whether the data is moving in a certain direction. For example, it is uncertain whether acceptance of sexual aggression myths drove future sex doll or robot use, or whether a willingness to use these in the future encouraged higher acceptance of sexual aggression myths. However, since the creation of, and therefore the investigation into, sex robots is in its infancy, there is currently no real-world data which could be analysed. Although more empirically sound, it would be unethical to design studies researching behaviour on this topic using randomised controlled

trials. If participants were asked to use sex robots and offence-supportive attitudes were developed or offending behaviour ensued, this would have been caused by the study design. It is therefore currently only possible to study attitudes using a correlational design. In the future it might also be possible to recruit more individuals who already use this technology; however, this is both logistically challenging and carries the ethical issues outlined earlier regarding this group feeling targeted. As outlined by Harper et al. (2021), future research may instead benefit from direct observations of behaviour, or implicit association tests.

Implications

This research has several far-reaching implications. The practical implications lie within the legal frameworks related to the manufacture, distribution, and use of sex dolls or robots, and the debate of whether they should be regulated at any of these stages. The results suggest that developers need to consider whether certain features should be restricted, given that the significant effect of sexual aggression myth acceptance is suggestive of more concerning motivations for doll or robot use. Although Harper et al. (2021) concluded that doll owners are less likely to express a behavioural willingness to sexually aggress compared with non-owners, further research is necessary to fully discount the possibility of increased aggression. When combined with these findings, the implication remains that there may be a relationship between doll or robot use and beliefs supportive of sexual violence. Features such as those assigned to 'Frigid Farrah' therefore continue to be problematic, although this raises questions

as to whether a robot that continuously agrees to sex is even more concerning. It may be safer to develop robots that are more representative of real relationships, therefore sometimes consenting to sex and at other times declining. This debate requires ongoing discussion and research.

However, the results do suggest that the relationship between sex doll or robot use and beliefs supportive of child sexual abuse can so far be discounted, although further research supporting or opposing this finding is recommended. It would be beneficial for future research to specify whether participants have or would use child sex dolls or robots in the future. Doing so would ensure a more direct link between child sex doll or robot use and child sexual abuse myths, as in the current study child sexual abuse myth acceptance was only investigated in relation to use of adult sex dolls or robots and with child robot legality rather than use. Further research could specifically investigate those who have used or wish to use child sex dolls or robots and compare their results with adult users.

Debate also continues surrounding whether restrictions of who can access dolls or robots should be introduced. This could potentially involve a professional referral for a psychological overview for someone suffering from mental health problems such as social anxiety. The current study does not illuminate a particular group of individuals who may be more likely to engage with sex doll or robot use, with the exception of males and more regular pornography use. Therefore, should it become important in the future to identify a group more likely to use sex dolls or robots, pornography consumption would be a good indicator. However, it remains unclear

whether the combination of pornography use and sex doll or robot use would make for a more dangerous individual. Future research would benefit from investigating the interaction between pornography use, sexual aggression proclivity or myth acceptance, and sex doll or robot use.

Conclusions

In conclusion, the results of this research indicate that there are few demographic differences between those who are accepting of sex robots, believe that child sex robots should be legal, and those who have previously used or would use sex dolls or robots in the future, compared with those who do not hold these beliefs or attitudes. Only gender, frequency of pornography use, sexual orientation, age, and AMMSA scores appeared to impact upon these factors. The relationship between sexual aggression myth acceptance and both previous and future sex doll or robot use has serious implications for the CJS regarding victim protection, since previous research has demonstrated a relationship between sexual aggression myth acceptance and proclivity, suggesting that beliefs may influence behaviour. The critical question is therefore whether legal frameworks need to respond to findings such as this. Researchers suggest that instead of prohibiting all sex robots, the law should introduce specific design regulations which ban programming such as that of 'Frigid Farrah' (Danaher et al., 2017), and other problematic symbolism, for example those made to look like children (Danaher, 2017b). Future research is advised to investigate this matter with a more detailed focus on specific types of dolls or robots and how each of these nuances influences outcomes. Although few significant effects were

found, this research represents part of the initial stages of this evidence base, and as a result, hypotheses were exploratory, based on research from other areas, or based on only one other empirical study. It is therefore unsurprising that so many of the hypotheses were unproven. It is hoped that this study can provide a basis for future research into this topic, which will in turn shape the evidence base.

Chapter Four: Secondary Research Project

The Rise of the Sexbots: Investigating Linguistic Patterns in Association with Attitudes towards Advanced Sexual Technology

Overview of Chapter

The secondary research project aimed to expand upon the primary project's original aims through the investigation of linguistic patterns in

relation to several examples of advanced sexual technology. These products include sex robots, computer and video games, Virtual Reality pornography and games, and holographic pornography. All are currently available to buy on easily accessible websites, excepting holographic pornography, which is in the early stages of development. The aim of the project was therefore to explore how personality and psychological traits, including MD, relate to attitudes towards advanced sexual technology that are representative of sexual offending, including those programmed to simulate rape and child sexual abuse. This was considered important since researchers have described how thoughts, feelings, personality, and motivations of participants can be identified through the analysis of word patterns (Wang et al., 2020). This project therefore aimed to shed light upon the interaction between factors such as MD and sexually violent attitudes in relation to advanced sexual technology. This was facilitated using Linguistic Inquiry and Wordcount (LIWC) software, an advantageous method compared with observational studies given its non-invasive nature (McHaney et al., 2018). Further ethical considerations in addition to those explored in Chapter Three include the potential for psychological harm to have been caused during the collection of this data, given the sensitive nature of the topic. This was explored in detail in both the information and debrief forms and participants were encouraged to utilise support channels including local charities, should they have felt distressed by the content of the study.

It was decided that qualitative data would be analysed using a quantitative approach for this project, using LIWC software. This approach was taken in order to increase the amount of data collected, rather than

completing full interviews and transcription through qualitative methods. Considering the recency of this as a research area and the wide-ranging opinions related to this technology, it was thought important to gather a large sample of opinions to provide a solid foundation for the emerging evidence base. It was considered important to gather these opinions from large groups of both those who have used and those who have not used advanced sexual technology. In contrast, a qualitative study may have focused in more detail on one of these groups. Finally, as outlined in the overview for the primary research project, social desirability bias is likely to be a particular problem for research in this area. It was therefore hoped that more subconscious attitudes and beliefs could be gathered through analysis of word patterns. Now that a large amount of data on attitudes has been collected and certain patterns have emerged, future research may benefit from completing more in-depth qualitative interviews using these themes for guidance.

Abstract

The sex technology industry is rapidly evolving, encompassing the invention of advanced technology such as robots, holograms, virtual reality,

and video and computer games. However, empirical research has not kept pace with these advances, and the current study therefore aimed to investigate attitudes towards this technology by analysing linguistic patterns. Participants were presented with an online questionnaire, as outlined in Chapter Three, which included answering multiple choice questions regarding their demographics and several psychometric assessments measuring their personality traits. They were further presented with four questions for which they were at liberty to write up to 1,000 characters outlining their opinions on sex robots, child sex robots, robots programmed to imitate rape, and other advanced technology including holograms and virtual reality simulative of rape and child sexual abuse. Text was analysed using Linguistic Inquiry and Word Count (LIWC) software, which calculates the presence of over 80 validated language dimensions in text samples. The use of positive and negative emotional words, as well as words related to risk and reward, were investigated. Five hundred and fifty participants were analysed across the four questions, resulting in 2,099 responses for analysis. These responses were split into categories to investigate the influence of several variables on word patterns. Results included an effect of gender on word choice when discussing child sex robots, effects of pornography use and future sex doll or robot use on word patterns when discussing sex robots, and effects of relationship status and the Dark Triad on word choice related to virtual reality and holograms. Implications of the research are discussed, including links with sexual offending and the application of legal frameworks regarding advanced technology. Limitations include social desirability bias.

Key Words: Sex Robots, Sexual Aggression Myths, Child Sexual Abuse Myths, Moral Disengagement, Dark Tetrad, Linguistic Patterns

The Rise of the Sexbots: Investigating Linguistic Patterns in Association with Attitudes towards Advanced Sexual Technology

Despite a huge range of sexual products being marketed and sold worldwide, research into their use and outcomes is lacking. Many advanced

technologies have already been appropriated for pornographic or sexual purposes (Wood et al., 2017) and modern products include virtual reality (VR) pornography, teledildonic (controlled using the internet) sex toys, and sex robots (Döring & Pöschl, 2018). Many argue that these products present a severe risk since they have the potential to be used for the rehearsal of sexually violent fantasies. There is a long history of research surrounding the relationship between representations of behaviour and real behaviour, including between actual violence and violence portrayed in video games, television, and films (Mitrofan et al., 2014). The same reasoning has been applied to the use of sexual technology and the perpetration of sexual aggression or child sexual abuse. This is particularly pertinent considering a long-standing controversy regarding the potential relationship between pornography use and violent sexual behaviour. This argument has been built upon some of the problematic features of pornography, including the representation of women as ever-available sex objects, or the insinuation that they enjoy sex after refusing it (Sparrow, 2017), features which are even more pronounced in advanced technology. However, others claim that technology such as sex robots may instead provide individuals with the means to express their fantasies without harming real people (Sparrow, 2017), or could even be of use for lonely, disabled, or elderly people. There have further been suggestions that they could be used in therapy to help prevent sexual crimes, in line with the catharsis theory of behaviour, which suggests that individuals can rid themselves of unwanted emotions by releasing them in a harmless context, to prevent the behaviour occurring in a harmful situation (Danaher, 2019). However, this is a controversial

suggestion, and many believe that they instead would be a dangerous tool and encouraging, or catalytic, of sexual offending (Torjesen, 2017). The potential risks of robots, video games, VR pornography, and holograms are explored in turn below.

Over recent years, technology has advanced to include robots designed to replicate speech and sexual functions, and to adapt to the needs and even the moods of the user, using sensors and facial recognition technology (Torjesen, 2017). However, not all features appear so harmless, with robots designed to decline sex, thereby potentially facilitating rape fantasies, having been developed. Researchers have argued that these are unethical as they represent real-life rape, with the debate around their use centring upon whether sexually violent behaviour towards robots would increase the risk for real women (Sparrow, 2017). The Campaign Against Sex Robots (CASR) argues against their introduction, with Richardson (2016) claiming that they encourage the sexual objectification of women. Child versions are also being developed, as an advancement to the child sex dolls that are already available online (Chatterjee, 2020). It has been suggested that these could be used to treat individuals with paedophilic preferences; however, most argue against this, and both UK and US legal frameworks have been adapted to prohibit the importation of these devices. The pushback against child sex robots relates to both uncertainty about the morality of this behaviour, as well as the social learning theory perspective that their use could result in an increase in abuse of real children (Danaher, 2019).

Meanwhile, video games such as Second Life (Rosedale, 2003) have been introduced, allowing players to join populated virtual environments in which they can have sex with other avatars (Ashton et al., 2019), whilst Brophy (2010) describes one player games with the aim to choose the correct behaviours to advance between sexual scenarios. However, virtual depictions of sexual crime have also been made available, for example the game 'RapeLay', which although now banned, allowed players to rape virtual women. Some victims were represented as enjoying this, which is likely to have normalised sexual violence (Galbraith, 2017) and inspired cognitive distortions, such as the overestimation of rape or the view of rape as a game, as well as the belief that it is easy to commit without consequences. This is not an isolated incident, with other games such as 'Drug Rape Girl' developed with the objective to rape a virtual female (Ashton et al., 2019), or 'Rape Day', with the aim to rape and murder as many women as possible (Guggisberg, 2019). A more notorious example is that of Grand Theft Auto, where players can pay virtual sex workers (Ashton et al., 2019), and as Rodenberg (2013) points out, are then at liberty to hit these women with their car and retrieve the money, likely normalising sexual violence and views of women as sex objects. Researchers suggest that this kind of graphically animated sexual violence is likely to have a much more severe impact than traditional pornography, since the virtual victims become something for the user to play with (Nakasatomi, 2009). Guggisberg (2019) describes how the objectification and sexualisation of women in video games inevitably paves the way for sexual violence and

calls for more research into understanding the portrayal of females and rape in violent video games and the impact upon society.

Sexual computer/ video games encompassing VR have also been developed. VR is defined as the construction of a three-dimensional representation of an imaginary or real-life environment, which can be interacted with using special equipment (Emmelkamp & Meyerbröker, 2021). Games include 'SinVR' (SinVR, 2017), which allows players to engage in sexual experiences, and 'Amoreon' (Citor3, 2019), which allows the user to embody a male character who interacts sexually with passive non-player characters. Another game still, 'Nympho Trainer VR' (VReleased 2019), accommodates sadomasochistic practices such as bondage and dominance (Orel, 2020) and research suggests that VR games may also be encouraging of sexually violent fantasies and behaviour, with the first recorded account of sexual assault using VR being reported in 2016, when an avatar began rubbing another avatar's virtual chest and crotch (Belamire, 2016). A study that followed found that nearly 50% of women who used VR tools had experienced some form of sexual harassment (Outlaw & Duckles, 2017), and researchers have questioned whether the virtual rape of an avatar should be criminalised (Strikwerda, 2015). Some VR games have further been designed to simulate child sexual abuse, with one game, 'VR Kanojo' (Illusion, 2017), designed around the player tutoring and having sex with a young girl, often depicted in a school uniform. Meanwhile, in the game 'Kanolojo', the player can engage in what is referred to as "virtual ageplay", allowing them to experience what it would look and feel like to have sex with a child (Esposito, 2018, pp.1914). Legal

frameworks surrounding VR remain unclear. In 1996, the United States (US) Congress updated Child Exploitation Material (CEM) laws to prohibit possession of virtual CEM, outlining that images which are indistinguishable from real children will be charged as CEM. This related to the argument that virtual images could be used for grooming and could facilitate abuse and have the same effect on arousal as watching actual CEM, increasing the risk of future abuse of children (Esposito, 2018). However, others argue that there is no evidence that someone who wished to engage in virtual ageplay would also want to abuse a child (Singal, 2016).

The sex industry has further commandeered this technology with the introduction of VR pornography, which the investment firm Piper Jaffray has predicted to become the third-biggest VR entertainment sector in the US (Krueger, 2016) and to grow to be worth over $1 billion by 2025 (Market Research Engine, 2018). Its use has increased over recent years (Dekker et al., 2021), with PornHub (2017) documenting a rise from 200,000 to 500,000 searches a day between 2016 and 2017. Furthermore, 'VR porn' has been reported as the top searched item associated with the keyword 'VR' (Ratner, 2018), suggesting that this is a surging branch of the sex industry (Orel, 2020). The increase in popularity is likely due to some of the interactive features, for example the user being able to dictate factors such as the timings and angles, and when combined with other technology such as teledildonic sex toys and robots, the user is able to engage sensations such as touch (Esposito, 2018). Few studies on the effects of VR pornography exist thus far (Simon & Grietemeyer, 2019), although the evidence base is expanding, and recent research suggests that its use may

also be encouraging of sexually violent fantasies. In one study participants were asked to complete a story about a character's first experience of VR pornography, and a proportion of both male and female participants wrote stories which included men forcing themselves onto women, including some examples where the woman appeared to enjoy this, whilst in others, women were described as being at the sexual "beck and call" (pp. 5447) of the male character. They found two overall conflicting narratives, one of an idealised sexual experience, and the second of dangerous consequences of VR pornography. The authors concluded that those who use VR environments may demonstrate a tendency to cross societal boundaries and engage in situations they would avoid in real life (Wood et al., 2017), meaning it is possible that those who would not otherwise display violent sexual fantasies would use digital environments to express these (Orel, 2020). Therefore, it seems plausible that the same risks that sex robots and games carry, associated with the objectification of women and children and the catalytic effect of expressing fantasies, may also be applicable to the use of VR pornography.

VR pornography represents only the first step in creating an immersive sexual experience. Thirty years ago, Rheingold (1992) predicted that in twenty years' time, people would be able to touch virtual depictions of other people, otherwise known as holograms. The function of holograms in our society is beginning to take shape, with deceased celebrities such as Michael Jackson now being virtually represented on tour (Young, 2020). Meanwhile, the University of Sussex has recently come close to another technological breakthrough, having developed holograms that can be seen

by the naked eye, heard, and felt (Hirayama et al., 2019). Suggestions have been made that technology such as this could eventually be used within the sex industry, with holograms predicted to become objects of desire alongside dolls and robots (Bendel, 2019). Pornography has historically driven advances in technology, and observers of the hologram movement suggest that this will be no different, proposing that individuals will eventually be able to have sex with a hologram version of a pornographic actor (Sollee, 2015). According to website author Christian (2020), holograms programmed in the image of a person have the potential to eclipse the popularity of pornographic films, given their engagement of touch as well as sight and hearing. The user would also be able to design their sexual partner in any way they wished, and unlike with sex robots, the flexibility to regularly alter this (Christian, 2020). Several companies have begun to advertise this technology, with one company, HoloFilm Productions, launching a campaign named '#GivePornAHand' to raise money for future holographic porn, whilst Vinclu Inc have reportedly created a hologram 'wife' (Fairbairn, 2017). To the author's knowledge, there is currently no empirical research into the use of hologram technology within the sex industry, which comes as no surprise given the recency of these developments. However, the same risks as existing advanced sexual technology are likely to be apparent, including the potential for holograms to be used to facilitate sexually violent fantasies.

However, despite the potential risks highlighted above, it is also important to consider the potential benefits of technology such as this. Pornography use has been found to have predominately positive effects,

including an improved sex life and feeling less repressed (Hald & Malamuth, 2008; McKee, 2007), whilst researchers have suggested that VR pornography may facilitate more empathic reactions from the viewer towards the actors (Evans, 2021). Furthermore, Harper et al. (2021) recently conducted the first empirical research into the personality traits of sex doll owners and found an emerging profile of owners with higher coercive sexual fantasies but lower sexual aggression proclivity. They concluded that dolls may be having a cathartic effect on fantasies related to sexual force (Harper et al., 2021), and it is therefore possible that use of other advanced sexual technology would have the same impact.

Current Study

As described earlier, research into this technology is in its infancy, given that advances are recent and still evolving. Even less attention has been paid to the potential forensic implications of these inventions, an important consideration given the devastating consequences these could have for victims. It is therefore crucial that the evidence base is expanded upon regarding the manufacture and distribution of sex robots, sexual video and computer games, and both VR and holographic pornography. However, given the ethical implications of conducting empirical research into such a topic, until more real-world data becomes available, early evidence such as the current study will need to focus on self-reported attitudes, as well as relationships with demographics and personality traits. Some of the earliest and only studies have been conducted by Scheutz and Arnold (2016; 2017), who investigated public attitudes towards sex robots, which they believed

to be crucial in informing the debate. Strongest agreements aligned with the risk of abuse to other human beings, and they described how public opinion can help to predict how society will respond to this technology, as well as highlight ethical or moral arguments regarding their use (Scheutz & Arnold, 2017).

The rationale of the current study was to extend the limited existing research regarding attitudes towards sex robots, and to begin exploring attitudes towards other recent advances in technology, of sexualised video games, VR, and holograms. Researchers have called for further exploration of the use and perception of technology such as VR pornography in order to better understand the risks associated (Dekker et al., 2021). To do so, Linguistic Inquiry and Wordcount (LIWC) software was utilised in the current study; a system which rests on the concept that language use is influenced by underlying emotional or cognitive states, supporting the idea that deeper, often subconscious, meanings in a person's communications will surface within their word choices. LIWC quantifies language use, by counting the frequency of words in a given category, such as emotional tone, meaning quantitative data can be gathered through analysis of writing (Pennebaker et al., 2007). It is used to reveal thoughts, feelings, personality, and motivations of participants (Wang et al., 2020). The programme provides 86-word categories and an internal dictionary of 4,500 words. It then produces output containing variables that reflect each LIWC category as a percentage of total word count, for example if a transcript received a score of 6.4 on the positive emotions category, this would indicate that 6.4% of the total number of words reflected positive emotions.

Word use patterns can inform knowledge of underlying psychological states and potential future behaviour can be inferred. LIWC has been shown as valid across hundreds of studies and numerous psychological domains (Pennebaker et al., 2015). In the current study, LIWC was used to measure deviations in linguistic patterns across a variety of demographics, personality traits, and beliefs, in relation to attitudes towards sex robots and other advanced sexual technology. The relevance of each predictor variable is explored in turn below.

It has been hypothesised by several researchers that the objectification of women and children within sexual technology is likely to have a negative impact on beliefs about each, including with the acceptance of denigrating sexual myths. Rape myth acceptance refers to the approval of beliefs that place blame on the victim rather than the perpetrator (Burt, 1980) and research suggests that exposure to sexualised media is a predictor of this (Mundorf et al., 2007). In one study, it was found that the interaction with stereotypical representations of virtual women promoted rape myth acceptance in both men and women (Fox & Bailenson, 2009). The use of sexually violent video games has been found to reinforce these beliefs, with Fox and Potocki (2016) identifying a relationship with rape myth acceptance, and Beck et al. (2012) finding a relationship between game play and rape-supportive attitudes for male, but not female, participants. Research has further shown that the use of sexualised avatars by men can result in higher tolerance of sexual harassment (Dill et al., 2008) and increase their likelihood to sexually harass (Yao et al., 2010). Furthermore, one study found that female participants who were exposed

to sexualised avatars, whilst playing the game Second Life, reported higher levels of self-objectification, compared with those who were exposed to non-sexualised avatars. Self-objectification was then found to mediate the relationship between use of sexualised avatars and ensuing rape myth acceptance (Fox et al., 2015). It is also noteworthy that in Chapter Three a relationship between sexual aggression myth acceptance and past and future use of sex dolls/ robots was identified for males, indicating that motivations for use of this technology could be somewhat concerning. Although there appears no previous research into a similar debate regarding child sexual abuse myths, it is reasonable to assume that similar relationships could exist. This was considered important given the potential for children to be simulated in all advanced sexual technology. The relationship between attitudes towards advanced sexual technology and both sexual aggression and child sexual abuse myth acceptance was therefore investigated.

Sparrow (2017) further draws attention to the importance of considering the morality of the individual utilising advanced sexual technology, concluding that relationships with robots designed for the purpose of rape may harm a person's morals by making them more aggressive. Danaher (2017b) also concluded that their use would have negative consequences for an individual's moral character, and that to use them displays an insensitivity to important moral issues. Researchers have also questioned the moral implications of sexual technology representing children. This is a complicated question, considering that there is no legal victim. However, computer generated CEM is banned in many countries

based on the concept of legal moralism, which allows prohibition based on this being morally objectionable, and other technology representative of children would likely be banned for the same reasons (Strikwerda, 2017). Given that research suggests that those more willing to use technology representative of rape or child abuse may have questionable morals, it was considered important to measure the influence of Moral Disengagement (MD) on attitudes. MD is a concept consisting of eight cognitive mechanisms that separate internal moral standards from actions (Bandura, 1986), as outlined in previous chapters. All eight factors contribute to a person's distortion that their behaviour is ethical (Moore, 2015).

Certain 'dark' personality traits may also be of relevance to this discussion. The Dark Triad consists of psychopathy, Machiavellianism, and narcissism (Paulhus & Williams, 2002) and later research highlighted sadism as a fourth trait, resulting in the expansion of the concept to the 'Dark Tetrad' (Paulhus, 2014). Psychopathy has been linked with the use of violent video games (Williams et al., 2001), whilst individuals with high sadism have been demonstrated as more likely than others to play violent video games. Furthermore, repeated exposure to these has been shown to predict the increase of sadism over time (Greitemeyer & Sagioglou, 2017). Tang et al. (2019) further identified that Machiavellianism and psychopathy predicted higher sexual harassment perpetration during online game play, although there was no relationship with narcissism. This finding appears consistent across the literature, with narcissism being the least related concept to antisocial online behaviours, including non-consensual distribution of sexual text messages and technology facilitated sexual

violence (Moor & Anderson, 2019). However, Appel (2019) predict that since people with narcissistic traits tend to hold vulnerable self-esteem, they may be more easily threatened by other people, meaning technology programmed to flatter them may be attractive. It was therefore considered important to investigate the influence of the Dark Tetrad on attitudes towards advanced sexual technology.

Previous research suggests that various demographics and behaviours may also influence attitudes towards pornography and sexual technology. Nearly twice as many men report viewing pornography compared with women (Hald et al., 2013), whilst women report pressures from pornography to participate in sexual acts (Shaw, 1999). Young women have also expressed more critical views of pornography, using words such as 'degrading', and 'abused', and discussion about pornography appeared to arouse anger amongst some participants (Ciclitira, 2004). Research has also found that men, but not women, reported a stronger sexual arousal to VR compared with traditional pornography (Simon & Greitemeyer, 2019; Elsey et al., 2019). Furthermore, it was found during interviews of sex therapists and physicians that female and older therapists held more critical attitudes towards the therapeutic use of sex robots (Eichenberg et al., 2019). Finally, a significant difference between males and females was found for every research question in Chapter Three, with men being more accepting of sex robots, more likely to say that child sex robots should be legal, and more likely to have previously used or to express a desire to use sex dolls or robots in the future. These findings indicate that women may hold more negative attitudes towards sexual technology and concerns with

the way women are represented, as well as that age may be a pertinent factor.

Sexual orientation is also of importance when investigating sexual behaviour, with one study finding that homosexual/ bisexual males more frequently masturbated and used pornography when masturbating and having sex, compared with heterosexual males. Furthermore, heterosexual women scored lower on all studied variables compared with lesbian/ bisexual women, including pornography use and masturbation (Træen & Daneback, 2012), suggesting sexual orientation could also influence attitudes towards sex robots. Research has also shown a relationship between pornography use and other sexual activities, including use of sex toys and sexual role playing (Martyniuk et al., 2016), suggesting that pornography use is of relevance to attitudes towards this technology. Finally, relationship status also appears of relevance, with Harper et al. (2021) identifying 88% of sex doll owners as being single, compared to 45% of the control group. Differences in word choice have also been found across demographics. For example, older individuals have been shown to use more positive and fewer negative emotions when writing Facebook statuses compared with younger people (Schwartz et al., 2013), whilst women tend to use more words related to emotions (Newman et al., 2008). Furthermore, Harper et al. (2021) found that sex doll owners were more likely to display lower affect and more negative emotions.

Research Aims

The current study aimed to expand upon Scheutz and Arnold's (2017) research by gathering more diverse opinions through the collection of less restrictive qualitative data. The study further aimed to build upon Harper et al.'s (2021) research into sex doll ownership, by providing rich information about personality traits and demographics in relation to sex robots and other advanced sexual technology. The current study therefore evaluated whether those with certain demographics, personality traits, or attitudes, used particular linguistic patterns when discussing sex robots, child sex robots, robots designed to facilitate rape fantasies, and finally holograms, VR, and video/ computer games portraying rape or child abuse. Based on previous findings and the debate surrounding the risks of this technology, it was decided that word choice related to positive and negative emotions, risk, and reward were relevant and therefore investigated.

Research questions

Are differences in word patterns (positive and negative emotions, risk, and reward) displayed when discussing advanced sexual technology, across the following categories:

1. Gender
2. Age group
3. Sexual orientation
4. Relationship status
5. Pornography use
6. Those who score high and low on acceptance of sexual aggression myths

7. Those who score high and low on acceptance of child sexual abuse myths
8. Those who have and have not previously used sex dolls or robots
9. Those who would and would not use sex dolls or robots in the future
10. Those who score high and low on MD
11. Those who score high and low on the Dark Triad
12. Those who score high and those who score low on sadism

Hypotheses

Based on previous research and the results of the primary research project (Chapter Three), several hypotheses were made regarding word patterns in relation to views of advanced sexual technology.

1. Males will use more positive emotion and reward-based language, and less negative emotion and risk related language, for all questions compared with females.
2. Older participants will use more positive emotion and reward-based language, and less negative emotion and risk related language, for all questions compared with younger participants.
3. Participants who identify as LGBTQIA+ will use more positive emotion and reward-based language, and less negative emotion and risk related language, for all questions compared with heterosexual participants.
4. Participants who are not in a relationship will use more positive emotion and reward-based language, and less negative emotion and

risk related language, for all questions compared with those in a relationship.

5. Participants who use pornography more frequently will use more positive emotion and reward-based language, and less negative emotion and risk related language, for all questions compared with those who use pornography less frequently.
6. Participants who score higher on agreement with sexual aggression myths will use more positive emotion and reward-based language, and less negative emotion and risk related language, for all questions compared with those who score lower on myth acceptance.
7. Participants who score higher on agreement with child sexual abuse myths will use more positive emotion and reward-based language, and less negative emotion and risk related language, for all questions compared with those who score lower on myth acceptance.
8. Participants who have previously used sex dolls or robots will use more positive emotion and reward-based language, and less negative emotion and risk related language, for all questions compared with those who have not used them.
9. Participants who would use sex dolls or robots in the future will use more positive emotion and reward-based language, and less negative emotion and risk related language, for all questions compared with those who would not use them in the future.
10. Participants who score higher on MD will use more positive emotion and reward-based language, and less negative emotion and risk

related language, for all questions compared with those who score lower on MD.

11. Participants who score higher on the Dark Triad will use more positive emotion and reward-based language, and less negative emotion and risk related language, for all questions compared with those who score lower on the Dark Triad.
12. Participants who score higher on sadism will use more positive emotion and reward-based language, and less negative emotion and risk related language, for all questions compared with those who score lower on sadism.

Method

Ethics

Ethics was approved on 22/05/20 by the Faculty of Medicine and Health Sciences Research Ethics Committee, The University of Nottingham.

Design

This experiment investigated whether there were significant differences of gender (IV1), age (IV2), sexual orientation (IV3), relationship status, (IV4), pornography use (IV5), sexual aggression myth acceptance (IV6), child sexual abuse myth acceptance (IV7), previous sex doll or robot use (IV8), future sex doll or robot use (IV9), MD (IV10), Dark Triad (IV11), and sadism (IV12) on attitudes towards sex robots (DV1), child sex robots (DV3), sex robots programmed to simulate rape (DV3), and holograms, VR and computer/ video games depicting rape of child sexual abuse (DV4), as

measured by LIWC software. This was a within-subjects design, since all participants completed all questions.

Participants

A G*Power analysis (Faul et al., 2009) indicated that 166 participants were required for a medium effect size at a power level of .8 when using a .01 criterion for statistical significance of $p<.01$. Participants were recruited online via an advert (*Appendix I*) on social media sites including Facebook, Instagram, LinkedIn, Twitter, and Reddit, in a convenience sample (See *Appendix J* for a full list of Subreddit forums accessed). The study was also advertised on websites designed for collecting participants, including 'SurveyCircle' and 'Psychological Research on the Net'. Seven hundred and eighteen participants took part in the study; however, only 550 participants provided qualitative data. *Table 33* outlines the breakdown of each demographic group. Age ranged from 18-80 (M=30.09, SD=10.06).

Materials

Laptops, computers, and smart phones were used to complete the questionnaire, which was created using Online Surveys (Jisc, 2020). The following psychometric assessments were included:

1. Short Dark Triad 3 (SD3); 27 statements (1[strongly disagree]-5[strongly agree]) (Jones & Paulhus, 2014).
2. Short Sadistic Impulse Scale (SSIS); 10 statements (like me or unlike me) (O'Meara et al., 2011).

3. Moral Disengagement Scale (MDS); 32 statements (1[strongly disagree]-5[strongly agree]) (Detert et al., 2008).
4. Acceptance of Modern Myths about Sexual Aggression Myth Scale (AMMSA; 30 statements (1[completely disagree]-7[completely agree]) (Gerger et al., 2013).
5. Child Sexual Abuse Myth Scale (CSAMS); 15 statements (1[strongly disagree]-5[strongly agree]) (Collings, 1997).

Table 33.

Participant Split by Demographic Group, Including Number and Percentage.

Demographic Variable	Group	*N*	%
Gender	Male	333	60.5%
	Female	202	36.7%
	Other	15	2.7%
Ethnicity	White	467	84.9%
	Asian	27	4.9%
	Black	18	3.3%
	Other	38	6.9%
Education past the age of 18	0 years	66	12%
	1 year undergraduate	39	7.1%
	2 years undergraduate	65	11.8%
	3 years undergraduate	155	28.2%
	1 year Masters	99	18.0%
	1+ years PhD	52	9.5%
	Other	74	13.5%
Sexual orientation	Heterosexual	377	68.5%
	Homosexual	30	5.5%
	Bisexual	122	22.2%
	Other	21	3.8%
Relationship Status	Single	248	45%
	Relationship	154	28%
	Married/ Domestic Partnership	132	24%
	Other	16	2.9%
Pornography Use	Never	69	12.5%
	Monthly	114	20.7%
	Weekly	144	26.2%
	Every Other Day	112	20.4%
	Daily	82	14.9%
	Other	29	5.3%

Procedure

Since data for the primary and secondary projects was collected simultaneously, the procedure is outlined in detail in Chapter Three and described in brief here. Following the distribution of a pilot study, a website was developed through which participants could access the finalised study. The study was advertised on social media, and it was specified that content

focused on sexual behaviour, meaning it may be distressing and that only individuals over the age of 18 should take part. If participants elected to take part, they were presented with an information sheet (*Appendix L*), which described the study as a survey of public opinions of sex robots. It was considered necessary to provide minimal information about the research aims to reduce social desirability bias. They were then shown a consent form (*Appendix M*) and if participants did not consent they were redirected to the 'thank you' page, followed by the debrief form. If they consented, they continued onto seven demographic questions (*Appendix N*). They were then presented with a definition of sex robots and several questions about their opinions towards them *(Appendix O*), and whether they had previously or would use sex dolls or robots in the future. They then viewed the psychometric assessments outlined under *Materials* (*Appendices B, Q, R & S).* Results of quantitative analysis are presented in Chapter Three. Finally, participants were presented with the questions:

Please explain your opinions on:

1. Sex robots.
2. Child sex robots.
3. Sex robots programmed to reject sexual advances and simulate rape.
4. Holograms, virtual reality, or computer/ video games depicting rape or child abuse.

These final questions were optional, and participants were at liberty to write up to 1,000 characters. They finally viewed a 'thank you' page, informing them that they had finished the questionnaire and to click 'submit' to view

the debrief form (*Appendix T*). The debrief form detailed the true aims of the study and provided several organisations to go to for support, given that the study topic may have been distressing. Participants were then informed that they could close the page.

Data Preparation

One hundred and sixty-eight participants were removed from analysis, since only 550 out of a possible 718 provided qualitative data, although not for all four questions. For Question 1, 505 participants responded, for Question 2, 543, for Question 3, 524, and for Question 4, 527. Text was analysed using LIWC (2015) software, and as advised in the operator's manual, transcripts were checked and corrected for misspellings or errors prior to analysis. Four LIWC categories were examined directly, of 'positive emotion', 'negative emotion', 'risk', and 'reward'.

Results

Due to the large number of tests carried out on the same data and therefore to control for the false discovery rate, the Benjamini-Hochberg procedure was carried out for each test. This method was chosen rather than a Bonferroni correction, since it is reported to be less stringent and to increase power (Haynes, 2013). Four different data sets were used, and 48 tests were carried out on each. A false discovery rate of 25% was chosen and new critical values were determined for each test, as presented in *Table 34*. Please note that the table only includes variables up until the critical value was met.

Table 34.

The Results of the Benjamini-Hochberg Procedure Completed to Control for the False Discovery Rate.

	Variable	Sig	Rank	Q value
Question 1	**Previous Reward**	**.001**	**1**	**.005**
	Future Reward	**.003**	**2**	**.01**
	Pornography Reward	**.01**	**3**	**.02**
	Pornography Positive	**.01**	**4**	**.02**
	Future Negative	**.02**	**5**	**.03**
	Relationship Risk	**.02**	**6**	**.03**
	Sexual orientation Negative	**.02**	**7**	**.03**
	SD3 Positive	.04	8	.04
Question 2	**Gender Risk**	**.001**	**1**	**.005**
	Relationship Positive	.02	2	.01
Question 3	**Pornography Risk**	**.001**	**1**	**.005**
	Age Risk	.02	2	.01
Question 4	**Future Reward**	**.002**	**1**	**.005**
	Future Negative	**.01**	**2**	**.01**
	Gender Reward	**.01**	**3**	**.02**
	Pornography Reward	.03	4	.02

Note. Variables that remained significant are shown in bold.

All variables that produced a significant result at bivariate analysis in Chapter Three were included in analysis. This resulted in the exclusion of ethnicity and years of education for the current study. Responses were split into three or two groups for each variable for the purposes of analysis. These categories are listed below:

1. *Gender:* Male, Female, and Other

2. *Age:* 16-25, 26-40, and 41+
3. *AMMSA:* High (scoring over 3.5) and Low (scoring 3.5 or below)
4. *CSAMS:* High (scoring over 2.5) and Low (scoring 2.5 or below)
5. *Future Use of Sex Dolls or Robots:* Yes and No
6. *MD:* High (scoring over 2.5) and Low (scoring 2.5 or below)
7. *Pornography Use*: Never and Other
8. *Previous Use of Sex Dolls or Robots*: Yes and No
9. *Relationship Status:* Single and Other
10. *SD3:* High (scoring over 2.5) and Low (scoring 2.5 or below)
11. *Sexual orientation:* Heterosexual and LGBTQIA+
12. *SSIS:* High (scoring over 5) and Low (scoring 5 or below)

Gender

Four one-way ANOVAs were conducted to test for effects of gender on the results of each question, resulting in 16 ANOVAs overall. These results are displayed in *Table 35.* Please note that for all data where homogeneity of variance was not met, Welch's adjusted *F* ratio was obtained, as detailed below.

Question 1- Attitudes Towards Sex Robots

Welch's adjusted *F* ratio was obtained, and no significant effect was found for gender on positive emotions ($F(2,30.89)=1.22$, $p=.31$). There was further no significant effect of gender on negative emotions ($F(2,502)=.94$, $p=.39$). Welch's adjusted *F* ratio was obtained and no significant differences were found for gender on risk ($F(2,32.38)=1.04$, $p=.37$) or reward ($F(2,28.74)=1.85$, $p=.18$).

Question 2- Attitudes Towards Child Sex Robots

There was no significant difference for gender on positive ($F(2,540)=.66$, $p=.52$) or negative emotions ($F(2,540)=.24$, $p=.79$). Welch's adjusted F ratio was obtained and males were found to use significantly more risk related words compared with females ($F(2,252.05)=15.58$, $p<.001$). Finally, Welch's adjusted F ratio was obtained and there was no significant effect of gender on reward ($F(2,36.7)=1.74$, $p=.19$).

Question 3- Attitudes Towards Sex Robots Simulating Rape

There was no significant effect of gender on positive ($F(2,521)=.04$, $p=.96$) or negative emotions ($F(2,521)=.99$, $p=.37$). Welch's adjusted F ratio was obtained and no significant effect was found for gender on risk ($F(2,48.51)=2.84$, $p=.07$). Finally, there was no significant effect of gender on reward ($F(2,521)=.19$, $p=.82$).

Question 4- Attitudes Towards Holograms, VR, and Computer/ Video Games Depicting Rape or Child Sexual Abuse

There was no significant effect of gender on positive ($F(2,524)=.03$, $p=.97$) or negative emotions ($F(2,524)=.91$, $p=.41$) or risk ($F(2,524)=.99$, $p=.37$). Males were found to use significantly more reward based words compared with females ($F(2,31.6)=5.13$, $p=.01$).

Table 35.

The Results of One-Way ANOVAs Conducted to Test for Effects of Gender on Attitudes towards Advanced Sexual Technology.

Question	**Gender**	**LIWC Category**	**Males *M*(*SD*)**	**Female *M*(*SD*)**	**Other *M*(*SD*)**
Q1	Males (*N*=308)	Positive emotion	7.16(14.94)	5.35(10.83)	7.0(10.07)
	Female (*N*=185)	Negative emotion	2.75(5.56)	3.41(7.84)	1.43(4.13)
	Other (*N*=12)	Risk	1.16(3.32)	.94(1.72)	.54(1.42)
		Reward	2.27(8.14)	1.4(2.48)	3.71(9.62)
Q2	Males (*N*=330)	Positive emotion	3.62(5.69)	3.15(3.57)	4.06(4.56)
	Female (*N*=198)	Negative emotion	7.14(15.41)	6.4(13.43)	5.38(4.67)
	Other (*N*=15)	**Risk**	**2.67(9.05)**	**1.61(4.83)**	**.22(.63)**
		Reward	1.12(2.34)	.87(1.73)	2.48(4.69)
Q3	Males (*N*=317)	Positive emotion	5.17(8.99)	4.94(8.76)	5.01(6.4)
	Female (*N*=193)	Negative emotion	6.93(15.32)	8.79(16.72)	5.34(6.31)
	Other (*N*=14)	Risk	2.23(10.18)	.98(3.1)	.52(1.67)
		Reward	1.3(6.61)	1.67(7.49)	1.82(5.37)
Q4	Males (*N*=325)	Positive emotion	4.05(7.61)	4.17(7.9)	3.67(4.85)
	Female (*N*=189)	Negative emotion	7.83(14.65)	9.4(18.44)	4.8(4.73)
	Other (*N*=13)	Risk	3.09(11.63)	1.83(8.38)	1.21(2.55)

	Reward	**1.22(4.1)**	**.47(1.3)**	**1.57(3.52)**

Note. Findings significant following the Benjamini-Hochberg procedure are shown in bold.

Age

Four one-way ANOVAs were conducted to test for effects of age on the results of each question, resulting in 16 ANOVAs overall. These results are displayed in *Table 36.* Please note that for all data where homogeneity of variance was not met, Welch's adjusted *F* ratio was obtained, as detailed below.

Question 1- Attitudes Towards Sex Robots

Welch's adjusted *F* ratio was obtained and there was no significant effect of age on positive emotions ($F(2,253.32)=2.64$, $p=.07$). There was further no significant effect of age on negative emotions ($F(2,502)=.82$, $p=.44$) or risk ($F(2,502)=1.17$, $p=.31$). Finally, Welch's adjusted *F* ratio was obtained and there was no significant effect of age on reward ($F(2,239.88)=2.12$, $p=.12$).

Question 2- Attitudes Towards Child Sex Robots

Welch's adjusted *F* ratio was obtained and there was no significant effect of age on positive emotions ($F(2,187.18)=1.06$, $p=.35$). There were further no significant effect of age on negative emotions ($F(2,540)=.05$, $p=.95$) or risk ($F(2,540)=.04$, $p=96$). Finally, Welch's adjusted *F* ratio was obtained and there was no significant difference for age on reward ($F(2,246.31)=3.75$, $p=.03$).

Question 3- Attitudes Towards Sex Robots Simulating Rape

Welch's adjusted *F* ratio was obtained and there was no significant effect of age on positive emotions ($F(2,203.85)=1.87$, $p=.16$). There was

further no significant effect of age on negative emotions ($F(2,521)=1.68$, $p=.19$). Welch's adjusted F ratios were obtained and there were no significant effects of age on risk ($F(2,339.92)=4.05$, $p=.02$) or reward ($F(2,248.93)=2.64$, $p=.07$).

Question 4- Attitudes Towards Holograms, VR, and Computer/ Video Games Depicting Rape or Child Sexual Abuse

There were no significant effects for age on positive ($F(2,524)=.37$, $p=.69$) or negative emotions ($F(2,524)=1.7$, $p=.18$), risk ($F(2,524)=.91$, $p=.41$) or reward ($F(2,524)=.73$, $p=.48$).

Table 36.

The Results of One-Way ANOVAs Conducted to Test for Effects of Age on Attitudes Towards Advanced Sexual Technology.

Question	**Age**	**LIWC Category**	**16-25 *M*(*SD*)**	**26-40 *M*(*SD*)**	**41+ *M*(*SD*)**
Q1	16-25 (*N*=200)	Positive emotion	6.13(10.71)	7.39(16.58)	4.38(6.82)
	26-40 (*N*=238)	Negative emotion	3.41(8.7)	2.69(4.38)	2.55(4.6)
	41+ (*N*=67)	Risk	1.3(3.46)	.91(2.3)	.9(2.1)
		Reward	1.42(3.89)	2.65(8.92)	1.31(2.92)
Q2	16-25 (*N*=211)	Positive emotion	3.11(4.73)	3.57(4.8)	4.14(6.21)
	26-40 (*N*=259)	Negative emotion	6.9(14.41)	6.9(15.01)	6.33(13.06)
	41+ (*N*=73)	Risk	2.2(8.38)	2.3(7.62)	2.0(5.3)
		Reward	1.08(2.3)	1.19(2.37)	.59(1.49)
Q3	16-25 (*N*=204)	Positive emotion	4.25(5.85)	5.77(11.07)	5.05(6.82)
	26-40 (*N*=248)	Negative emotion	7.72(14.61)	8.34(17.99)	4.51(8.12)
	41+ (*N*=72)	Risk	1.47(4.0)	2.24(11.14)	.7(1.68)
		Reward	.93(2.16)	2.11(9.77)	.65(1.77)
Q4	16-25 (*N*=208)	Positive emotion	3.73(6.99)	4.31(7.67)	4.33(9.35)
	26-40 (*N*=248)	Negative emotion	9.79(19.31)	7.68(13.24)	6.22(13.49)
	41+ (*N*=71)	Risk	3.35(13.1)	2.12(8.62)	2.04(6.74)

	Reward	.93(2.95)	1.1(3.89)	.56(2.5)

Note. Findings significant following the Benjamini-Hochberg procedure are shown in bold.

Sexual Orientation

Four Independent *t*-tests were conducted to test for effects of sexual orientation on the results of each question, resulting in 16 *t*-tests overall. These results are displayed in *Table 37.* Please note that for all data where homogeneity of variance was not met, equal variances were not assumed, as detailed below.

Question 1- Attitudes Towards Sex Robots

There was no significant effect of sexual orientation on positive emotions ($t(503)=-.14$, $p=.89$). Equal variances were not assumed and there was no significant effect of sexual orientation on negative emotions. ($t(496.03)=2.36$, $p=.02$). There was a significant effect of sexual orientation on risk ($t(503)=-.66$, $p=.51$). Finally, equal variances were not assumed and there was no significant effect of sexual orientation on reward ($t(462.26)=1.78$, $p=.08$).

Question 2- Attitudes Towards Child Sex Robots

There were no significant effects of sexual orientation on positive ($t(541)=-.43$, $p=.67$) or negative emotions ($t(541)=.46$, $p=.65$), risk ($t(541)=.85$, $p=.4$), or reward ($t(541)=.11$, $p=.91$).

Question 3- Attitudes Towards Sex Robots Simulating Rape

Equal variances were not assumed and there was no significant effects of sexual orientation on positive emotions ($t(490.86)=1.73$, $p=.08$). There was no significant effect of sexual orientation on negative emotions

(t(522)=.68, p=.5), risk (t(522)=-.61, p=.54), or reward (t(522)=.97, p=.34).

Question 4- Attitudes Towards Holograms, VR, and Computer/ Video Games Depicting Rape or Child Sexual Abuse

There was no significant effect of sexual orientation on positive (t(525)=-.13, p=.9) or negative emotions (t(525)=-.63, p=.53), or risk (t(525)=-.72, p=.47). Finally, equal variances were not assumed and there was no significant effect of sexual orientation on reward (t(192.84)=-1.1, p=.27).

Table 37.

The Results of Independent t-tests Conducted to Test for Effects of Sexual Orientation on Attitudes Towards Advanced Sexual Technology.

Question	Sexual orientation	LIWC Category	Heterosexual *M*(*SD*)	LGBTQIA+ *M*(*SD*)
Q1	Heterosexual (*N*=374) LGBTQIA+ (*N*=131)	Positive emotion	6.44(13.48)	6.63(13.51)
		Negative emotion	**3.23(7.3)**	**2.16(2.9)**
		Risk	1.02(3.01)	1.2(2.1)
		Reward	2.21(7.49)	1.33(3.53)
Q2	Heterosexual (*N*=370) LGTBQIA+ (*N*=173)	Positive emotion	3.4(4.8)	3.6(5.4)
		Negative emotion	7.02(14.86)	6.4(13.75)
		Risk	2.41(8.66)	1.81(4.86)
		Reward	1.07(2.27)	1.05(2.19)
Q3	Heterosexual (*N*=355) LGTBQIA+ (*N*=169)	Positive emotion	5.54(9.97)	4.31(6.09)
		Negative emotion	7.89(16.15)	6.89(14.72)
		Risk	1.58(7.98)	2.04(8.54)
		Reward	1.65(8.16)	1.03(2.82)
Q4	Heterosexual (*N*=361) LGTBQIA+ (*N*=166)	Positive emotion	4.06(7.54)	4.15(7.9)
		Negative emotion	8.02(15.27)	8.96(17.43)
		Risk	2.37(9.42)	3.08(12.38)
		Reward	.82(2.16)	1.27(5.1)

Note. Findings significant following the Benjamini-Hochberg procedure are shown in bold.

Relationship Status

Four Independent *t*-tests were conducted to test for effects of relationship status on the results of each question, resulting in 16 t-tests overall. These results are displayed in *Table 38.* Please note that for all data

where homogeneity of variance was not met, equal variances were not assumed, as detailed below.

Question 1- Attitudes Towards Sex Robots

There was no significant effect of relationship status on positive (t(503)=-.82, p=.41) or negative emotions (t(503)=1.46, p=.15). Equal variances were not assumed and a significant effect of relationship status on risk was found (t(379.68)=2.26, p=.02). There was no significant effect of relationship status on reward (t(503)=1.19, p=.23).

Question 2- Attitudes Towards Child Sex Robots

Equal variances were not assumed and there was a significant effect relationship status on positive emotions (t(496.27)=-2.32, p=.02). There was no significant effect of relationship status on negative emotions (t(541)=-.48, p=.63) or risk (t(541)=-.32, p=.75). Finally, equal variances were not assumed and a significant effect of relationship status on reward was found (t(461.13)=2.11, p=.04).

Question 3- Attitudes Towards Sex Robots Simulating Rape

There were no significant effects of relationship status on positive (t(522)=.59, p=.56) or negative emotions (t(522)=.24, p=.81). There was no significant effect of relationship status on risk (t(522)=.25, p=.8). Equal variances were not assumed and there was no effect of relationship status on reward (t(292.08)=1.06, p=.29).

Question 4- Attitudes Towards Holograms, VR, and Computer/ Video Games Depicting Rape or Child Sexual Abuse

Equal variances were not assumed and there was no significant effect of relationship status on positive emotions (t(520.68)=-1.3, p=.2). There was no significant effect of relationship status on negative emotions (t(525)=.31, p=.76), risk (t(525)=-.2, p=.84), or reward (t(525)=1.14, p=.25).

Table 38.

The Results of Independent t-tests Conducted to Test for Effects of Relationship Status on Attitudes Towards Advanced Sexual Technology.

Question	**Relationship Status**	**LIWC Category**	**Single** ***M*(*SD*)**	**Other** ***M*(*SD*)**
Q1	Single	Positive emotion	5.95(12.17)	6.94(14.48)
	(*N*=229)	Negative emotion	3.42(8.3)	2.57(4.39)
	Other	**Risk**	**1.38(3.36)**	**.8(2.2)**
	(*N*=276)	Reward	2.37(6.95)	1.66(6.48)
Q2	Single	Positive emotion	2.94(3.52)	3.89(5.9)
	(*N*=245)	Negative emotion	6.49(13.69)	7.09(15.16)
	Other	Risk	2.21(7.36)	2.31(7.9)
	(*N*=298)	Reward	1.29(2.51)	.88(1.99)
Q3	Single	Positive emotion	5.33(10.5)	4.87(7.21)
	(*N*=235)	Negative emotion	7.75(16.02)	7.43(15.45)
	Other	Risk	1.82(9.58)	1.65(6.8)
	(*N*=289)	Reward	1.83(9.46)	1.14(3.7)
Q4	Single	Positive emotion	3.62(6.37)	4.46(8.55)
	(*N*=237)	Negative emotion	8.56(16.43)	8.12(15.61)
	Other	Risk	2.49(10.55)	2.68(10.36)
	(*N*=290)	Reward	1.15(3.95)	.81(2.81)

Note. Findings significant following the Benjamini-Hochberg procedure are shown in bold.

Pornography Use

Four Independent *t*-tests were conducted to test for effects of pornography use on the results of each question, resulting in 16 ANOVAs overall. These results are displayed in *Table 39.* Please note that for all data where homogeneity of variance was not met, equal variances were not assumed, as detailed below.

Question 1- Attitudes Towards Sex Robots

Equal variances were not assumed and a significant effect of pornography use was found for positive emotions ($t(276.05)=-2.72$, $p=.01$). There were no significant effects of pornography use on negative emotions ($t(503)=1.78$, $p=.08$) or risk ($t(503)=-.12$, $p=.91$). Finally, equal variances were not assumed and a significant effect of pornography use for reward was found ($t(333.2)=-2.65$, $p=.01$).

Question 2- Attitudes Towards Child Sex Robots

There was no significant effect of pornography use on positive ($t(541)=-.67$, $p=.51$) or negative emotions ($t(541)=.83$, $p=.41$), risk ($t(541)=-1.07$, $p=.29$) or reward ($t(541)=.67$, $p=.5$).

Question 3- Attitudes Towards Sex Robots Simulating Rape

There was no significant effect of pornography use on positive ($t(522)=-.88$, $p=.38$) or negative emotions ($t(522)=1.52$, $p=.13$). Equal variances were not assumed and a significant effect of pornography use on risk was found ($t(520.45)=-3.38$, $p=.001$). Finally, there was no significant effect of pornography use on reward ($t(522)=.06$, $p=.95$).

Question 4- Attitudes Towards Holograms, VR, and Computer/ Video Games Depicting Rape or Child Sexual Abuse

There was no significant effect of pornography use on positive emotions ($t(525)=-.61$, $p=.54$). Equal variances were not assumed and there was no significant effect of pornography use on negative emotions ($t(75.43)=1.92$, $p=.06$). There was further no significant effect of pornography use on risk ($t(525)=-.42$, $p=.68$). Finally, equal variances were not assumed and there was no significant effect of pornography use on reward ($t(537.99)=-2.26$, $p=.03$).

Table 39.

The Results of Independent t-tests Conducted to Test for Effects of Pornography Use on Attitudes Towards Advanced Sexual Technology.

Question	Pornography Use	LIWC Category	Yes *M*(*SD*)	No *M*(*SD*)
Q1	Yes	**Positive emotion**	**6.82(14.31)**	**4.35(4.85)**
	(*N*=439)	Negative emotion	2.76(5.02)	4.28(12.35)
	No	Risk	1.07(2.94)	1.03(1.63)
	(*N*= 66)	**Reward**	**2.13(7.13)**	**1.0(2.11)**
Q2	Yes	Positive emotion	3.01(3.38)	3.52(5.18)
	(*N*=474)	Negative emotion	6.63(14.1)	8.17(17.11)
	No	Risk	2.35(8.12)	1.3(2.63)
	(*N*=69)	Reward	1.04(2.19)	1.24(2.59)
Q3	Yes	Positive emotion	5.21(9.27)	4.21(5.05)
	(*N*=455)	Negative emotion	7.17(14.74)	10.24(20.87)
	No	**Risk**	**1.92(8.73)**	**.45(1.21)**
	(*N*=69)	Reward	1.44(7.33)	1.5(2.85)
Q4	Yes	Positive emotion	4.16(7.65)	3.55(7.67)
	(*N*=459)	Negative emotion	7.61(14.62)	13.07(22.71)
	No	Risk	2.67(10.16)	2.1(12.19)
	(*N*=68)	Reward	1.03(3.57)	.5(1.36)

Note. Findings significant following the Benjamini-Hochberg procedure are shown in bold.

AMMSA

Four Independent *t*-tests were conducted to test for effects of AMMSA on the results of each question, resulting in 16 t-tests overall. These results are displayed in *Table 40.* Please note that for all data where homogeneity

of variance was not met, equal variances were not assumed, as detailed below.

Question 1- Attitudes Towards Sex Robots

There were no significant effects of AMMSA on positive (t(522)=.44, p=.66) or negative emotions, (t(522)=-1.05, p=.3), risk (t(522)=-.31, p=.76), or reward (t(522)=.72, p=.47).

Question 2- Attitudes Towards Child Sex Robots

There were no significant effects of AMMSA on positive (t(541)=-.46, p=.65) or negative emotions (t(541)=-1.45, p=.54), risk (t(541)=1.02, p=.31), or reward (t(541)=-1.39, p=.17).

Question 3- Attitudes Towards Sex Robots Simulating Rape

There were no significant effects of AMMSA on positive (t(522)=-.44, p=.66) or negative emotions (t(522)=-1.05, p=.3), risk (t(522)=-.31, p=.76), or reward (t(522)=.72, p=.47).

Question 4. Attitudes Towards Holograms, VR, and Computer/ Video Games Depicting Rape or Child Sexual Abuse

There were no significant effects of AMMSA on positive (t(525)=.23, p=.82) or negative emotions (t(525)=.54, p=.59), risk (t(525)=-.76, p=.45), or reward (t(525)=-1.66, p=.1).

Table 40.

The Results of Independent t-tests Conducted to Test for Effects of AMMSA on Attitudes Towards Advanced Sexual Technology.

Question	AMMSA Score	LIWC Category	Low AMMSA ***M*(*SD*)**	High AMMSA ***M*(*SD*)**
Q1	Low	Positive emotion	5.16(9.39)	4.74(6.08)
	(*N*=421)	Negative emotion	7.22(14.94)	9.02(18.47)
	High	Risk	1.67(7.6)	1.95(10.17)
	(*N*=103)	Reward	1.56(7.62)	1.01(2.39)
Q2	Low	Positive emotion	3.42(5.07)	3.67(4.66)
	(*N*=438)	Negative emotion	6.38(13.05)	8.66(19.42)
	High	Risk	2.38(8.35)	1.53(3.42)
	(*N*=105)	Reward	1.0(2.19)	1.34(2.47)
Q3	Low	Positive emotion	5.16(9.4)	4.74(6.08)
	(*N*=421)	Negative emotion	7.22(14.94)	9.02(18.47)
	High	Risk	1.67(7.6)	1.95(10.17)
	(*N*=103)	Reward	1.56(7.62)	1.01(2.39)
Q4	Low	Positive emotion	4.12(7.79)	3.93(7.11)
	(*N*=421)	Negative emotion	8.51(16.65)	7.57(12.98)
	High	Risk	2.42(9.94)	3.28(12.23)
	(*N*=106)	Reward	.84(2.73)	1.45(5.19)

Note. Findings significant following the Benjamini-Hochberg procedure are shown in bold.

CSAMS

Four Independent *t*-tests were conducted to test for effects of CSAMS on the results of each question, resulting in 16 t-tests overall. These results are displayed in *Table 41.*

Question 1- Attitudes Towards Sex Robots

There was no significant effect of CSAMS on positive emotions (t(503)=1.02, p=.31). Equal variances were not assumed and there was no significant effect of CSAMS on negative emotions (t(10.08)=-56, p=.59). There were further no significant effects of CSAMS on risk (t(503)=.9, p=.37) or reward (t(503)=.69, p=.49).

Question 2- Attitudes Towards Child Sex Robots

No significant effects of CSAMS on positive (t(541)=-.91, p=.36) or negative emotions (t(541)=.95, p=.34) were found. Equal variances were not assumed and no significant effect of CSAMS on risk was found (t(11.14)=-.57, t=.58). Finally, no significant effect of CSAMS on reward was found (t(541)=-1.39, p=.17).

Question 3- Attitudes Towards Sex Robots Simulating Rape

No significant effects of CSAMS were found for positive (t(522)=-.04, p=.97) or negative emotions (t(522)=-.12, p=.91), risk (t(522)=-.45, p=.66), or reward (t(522)=.03, p=.98).

Question 4- Attitudes Towards Holograms, VR, and Computer/ Video Games Depicting Rape or Child Sexual Abuse

There were no significant effects of CSAMS on positive (t(525)=.84, p=.4) or negative emotions (t(525)=.22, p=.83), risk (t(525)=-.02, p=.99), or reward (t(525)=.19, p=.85).

Table 41.

The Results of Independent t-tests Conducted to Test for Effects of CSAMS on Attitudes Towards Advanced Sexual Technology.

Question	CSAMS Score	LIWC Category	Low CSAMS *M*(*SD*)	High CSAMS *M*(*SD*)
Q1	Low	Positive emotion	6.58(13.61)	2.41(2.96)
	(*N*=494)	Negative emotion	2.9(6.18)	5.4(14.86)
	High	Risk	1.08(2.82)	.31(1.04)
	(*N*=11)	Reward	2.02(6.77)	.6(1.33)
Q2	Low	Positive emotion	3.44(4.97)	4.77(5.71)
	(*N*=531)	Negative emotion	6.91(14.62)	2.88(7.13)
	High	Risk	2.18(7.65)	3.8(7.85)
	(*N*=12)	Reward	1.05(2.19)	1.74(4.2)
Q3	Low	Positive emotion	5.08(8.9)	5.18(5.82)
	(*N*=512)	Negative emotion	7.56(15.85)	8.1(6.92)
	High	Risk	1.7(8.18)	2.76(7.24)
	(*N*=12)	Reward	1.45(7.0)	1.39(3.7)
Q4	Low	Positive emotion	4.13(7.71)	2.26(4.1)
	(*N*=515)	Negative emotion	8.34(16.09)	7.32(9.71)
	High	Risk	2.59(10.5)	2.64(7.3)
	(*N*=12)	Reward	.96(3.4)	.78(2.0)

Note. Findings significant following the Benjamini-Hochberg procedure are shown in bold.

Previous Use

Four Independent *t*-tests were conducted to test for effects of previous use on the results of each question, resulting in 16 t-tests overall. These results are displayed in *Table 42.* Please note that for all data where

homogeneity of variance was not met, equal variances were not assumed, as detailed below.

Question 1- Attitudes Towards Sex Robots

Equal variances were not assumed and there was no significant effect of previous use on positive emotions (t(12.07)=1.19, p=.26). There was further no significant effect of previous use on negative emotions (t(503)=-.81, p=.42). Equal variances were not assumed and there was a significant difference for previous use on risk (t(35.4)=-4.54, p<.001), but not for reward (t(12.14)=.84, p=.42).

Question 2- Attitudes Towards Child Sex Robots

There was no significant effect of previous use on positive emotions (t(541)=-.69, p=.49). Equal variances were not assumed and there was no significant effect of previous use on negative emotions (t(14.19)=1.26, p=.23). There were further no significant effect of previous use on risk (t(541)=.97, p=.33) or reward (t(541)=-.22, p=.82).

Question 3- Attitudes Towards Sex Robots Simulating Rape

Equal variances were not assumed and there was no significant effect of previous use on positive emotions (t(13.07)=1.01, p=.33). There was no significant effect of previous use on negative emotions (t(522)=-.41, p=.69) or risk (t(522)=-.58, p=.56). Equal variances were not assumed and there was no significant effect of previous use on reward (t(13.03)=.88, p=.4).

Question 4- Attitudes Towards Holograms, VR, and Computer/ Video Games Depicting Rape or Child Sexual Abuse

There were no significant effect of previous use on positive (t(525)=-.56, p=.58) or negative emotions (t(525)=-.77, p=.44), risk (t(525)=-.61, p=.54), or reward (t(525)=-.86, p=.4).

Table 42.

The Results of Independent t-tests Conducted to Test for Effects of Previous Use on Attitudes Towards Advanced Sexual Technology.

Question	Previous Use	LIWC Category	Yes *M*(*SD*)	No *M*(*SD*)
Q1	Yes	Positive emotion	18.17(36.4)	6.18(12.26)
	(*N*=13)	Negative emotion	1.53(2.09)	2.99(6.54)
	No	**Risk**	**.19(.54)**	**1.09(2.83)**
	(*N*=492)	Reward	5.08(13.66)	1.9(6.42)
Q2	Yes	Positive emotion	2.59(3.23)	3.49(5.03)
	(*N*=15)	Negative emotion	15.93(28.62)	6.56(13.86)
	No	Risk	4.11(12.8)	2.17(7.47)
	(*N*=528)	Reward	.94(1.28)	1.07(2.27)
Q3	Yes	Positive emotion	11.93(26.09)	4.89(7.84)
	(*N*=14)	Negative emotion	5.9(13.04)	7.62(15.77)
	No	Risk	.48(.95)	1.76(8.27)
	(*N*=510)	Reward	7.53(26.64)	1.28(5.47)
Q4	Yes	Positive emotion	2.96(4.56)	4.11(7.72)
	(*N*=14)	Negative emotion	5.08(4.31)	8.41(16.16)
	No	Risk	.91(1.84)	2.64(10.57)
	(*N*=513)	Reward	1.19(.56)	.98(3.42)

Note. Findings significant following the Benjamini-Hochberg procedure are shown in bold.

Future Use

One-Way ANOVAs were conducted to test for effects of future use on the results of each question, resulting in 16 ANOVAs overall. These results are displayed in *Table 43.* Please note that for all data where homogeneity of variance was not met, Welch's adjusted *F* ratio was obtained, as detailed below.

Question 1- Attitudes Towards Sex Robots

Welch's adjusted *F* ratios were obtained and there were no significant effect of future use on positive emotions ($F(2,324.69)=2.4$, $p=.09$); however, a significant effect of negative emotions was found ($F(2,306.32)=3.85$, $p=.02$). There was further no significant effect of future use on risk ($F(2,502)=.2$, $p=.82$). Finally, Welch's adjusted *F* ratio was obtained and there was a significant effect of future use on reward ($F(2, 301.53)=5.77$, $p=.003$).

Question 2- Attitudes Towards Child Sex Robots

There was no significant effect of future use on positive emotions ($F(2,540)=.27$, $p=.76$). Welch's adjusted *F* ratio was obtained and there was no significant effect of future use on negative emotions ($F(2,540)=2.17$, $p=.12$). There were further no significant effects of future use on risk ($F(2,540)=.17$, $p=.85$) or reward ($F(2,540)=.96$, $p=.38$).

Question 3- Attitudes Towards Sex Robots Simulating Rape

There were no significant effects of future use on positive ($F(2,521)=.78$, $p=.46$) or negative emotions ($F(2,521)=.01$, $p=.99$), risk ($F(2,521)=.47$, $p=.63$), or reward ($F(2,521)=.76$, $p=.47$).

Question 4- Attitudes Towards Holograms, VR, and Computer/ Video Games Depicting Rape or Child Sexual Abuse

There was no significant effect of future use on positive emotions, ($F(2,523)=.46$, $p=.63$). Welch's adjusted F ratios were obtained and a significant effect of future use on negative emotions was found ($F(2,317.45)=4.32$, $p=.01$). There was no significant effect on risk ($F(2,335.73)=1.72$, $p=.18$); however, a significant effect of future use on reward was found ($F(2,276.31)=6.2$, $p=.002$).

Table 43.

The Results of One-Way ANOVAs Conducted to Test for Effects of Future Use of Sex Dolls or Robots on Attitudes Towards Advanced Sexual Technology.

Question	Future Use	LIWC Category	Yes *M*(*SD*)	No *M*(*SD*)	Unsure *M*(*SD*)
Q1	Yes (*N*=174)	Positive emotion	8.02(16.25)	4.81(9.77)	6.54(13.3)
	No (*N*=163)	**Negative emotion**	**2.4(5.33)**	**4.11(9.06)**	**2.41(3.91)**
	Unsure (*N*=168)	Risk	1.1(3.11)	.95(2.93)	1.13(2.31)
		Reward	**3.49(10.78)**	**.95(2.06)**	**1.43(2.68)**
Q2	Yes	Positive emotion	3.63(5.71)	3.25(4.88)	3.5(4.29)
	(*N*=184)	Negative emotion	7.63(17.01)	7.57(15.94)	5.29(9.37)
	No (*N*=176)	Risk	2.35(8.42)	2.22(8.84)	1.99(5.28)
	Unsure (*N*=183)	Reward	1.17(2.45)	.87(1.92)	1.15(2.32)
Q3	Yes (*N*=179)	Positive emotion	5.37(10.37)	4.38(6.18)	5.46(9.3)
	No (*N*=169)	Negative emotion	7.52(16.54)	7.71(15.22)	7.49(15.34)
	Unsure (*N*=176)	Risk	2.2(10.86)	1.4(7.9)	1.56(4.32)
		Reward	1.77(8.52)	.92(2.14)	1.64(8.0)
Q4	Yes (*N*=178)	Positive emotion	3.91(7.24)	3.78(7.83)	4.51(7.91)
	No (*N*=169)	**Negative emotion**	**9.84(18.63)**	**9.25(17.65)**	**5.91(10.28)**

Unsure (*N*=179)	Risk	3.94(13.48)	2.0(8.98)	1.83(7.88)
	Reward	**1.27(3.73)**	**.42(1.21)**	**1.16(4.25)**

Note. Results significant following the Benjamini-Hochberg procedure are shown in bold.

Moral Disengagement

Four Independent *t*-tests were conducted to test for effects of MD on the results of each question, resulting in 16 t-tests overall. These results are displayed in *Table 44.* Please note that for all data where homogeneity of variance was not met, equal variances were not assumed, as detailed below.

Question 1- Attitudes Towards Sex Robots

There was no significant effect of MD on positive ($t(503)=.44$, $p=.66$) or negative emotions ($t(503)=-9.1$, $p=.36$). Equal variances were not assumed and there was no significant effect of MD on risk ($t(119.66)=-1.66$, $p=.1$). Finally, there was no significant effect of MD on reward ($t(503)=.71$, $p=.48$).

Question 2- Attitudes Towards Child Sex Robots

There was no significant effect of MD on positive ($t(541)=.59$, $p=.56$) or negative emotions ($t(541)=.75$, $p=.45$). Equal variances were not assumed and there was no significant effect of MD on risk ($t(133.67)=-.87$, $p=.39$). Finally, there was no significant effect of MD on reward ($t(541)=.29$, $p=.77$).

Question 3- Attitudes Towards Sex Robots Simulating Rape

There was no significant effect of MD on positive ($t(522)=.38$, $p=.71$) or negative emotions ($t(522)=-.09$, $p=.93$), risk ($t(522)=-.4$, $p=.69$) or reward ($t(522)=.38$, $p=.6$).

Question 4- Attitudes Towards Holograms, VR, and Computer/ Video Games Depicting Rape or Child Sexual Abuse

There was no significant effect of MD on positive ($t(525)=-.66$, $p=.51$) or negative emotions ($t(525)=.02$, $p=.99$) or risk ($t(525)=22$, $p=.83$). Equal variances were not assumed and there was no significant effect of MD on reward ($t(125.87)=-1.32$, $p=.36$).

Table 44.

The Results of Independent t-tests Conducted to Test for Effects of MD on Attitudes Towards Advanced Sexual Technology.

Question	MD Score	LIWC Category	Low MD *M*(*SD*)	High MD *M*(*SD*)
Q1	Low	Positive emotion	6.63(13.92)	5.98(11.67)
	(*N*=401),	Negative emotion	2.82(6.36)	3.47(6.86)
	High	Risk	.92(2.3)	1.63(4.17)
	(*N*=104)	Reward	2.09(7.38)	1.57(2.83)
Q2	Low	Positive emotion	3.53(5.22)	3.22(3.99)
	(*N*=429)	Negative emotion	7.06(15.25)	5.92(11.26)
	High	Risk	2.02(6.43)	2.96(11.12)
	(*N*=114)	Reward	1.08(2.21)	1.01(2.41)
Q3	Low	Positive emotion	5.15(9.41)	4.79(6.11)
	(*N*=417)	Negative emotion	7.54(15.4)	7.7(16.88)
	High	Risk	1.65(7.57)	2.01(10.16)
	(*N*=107)	Reward	1.53(7.63)	1.14(2.6)
Q4	Low	Positive emotion	3.97(7.72)	4.51(7.43)
	(*N*=416)	Negative emotion	8.33(16.07)	8.29(15.68)
	High	Risk	2.65(11.11)	2.4(7.42)
	(*N*=111)	Reward	.86(2.68)	1.33(5.22)

Note. Findings significant following the Benjamini-Hochberg procedure are shown in bold.

SD3

Four Independent *t*-tests were conducted to test for effects of age on the results of each question, resulting in 16 t-tests overall. These results are displayed in *Table 45.* Please note that for all data where homogeneity of variance was not met, equal variances were not assumed, as detailed below.

Question 1- Attitudes Towards Sex Robots

Equal variances were not assumed and there was no significant effect of SD3 on positive (t(472.71)=2.05, p=.04) or negative emotions (t(298.75)=-1.43, p=.15). There was no significant effect of SD3 on risk (t(503)=-.54, p=.59) or reward (t(503)=1.25, p=.21).

Question 2- Attitudes Towards Child Sex Robots

Equal variances were not assumed and there was no significant effect of SD3 on positive emotions (t(530.94)=1.81, p=.07). There was no significant effect of SD3 on negative emotions (t(541)=-.23, p=.82), risk (t(541)=-1.01, p=.31), or reward (t(541)=.35, p=.73).

Question 3- Attitudes Towards Sex Robots Simulating Rape

There was a significant effect of SD3 on positive (t(522)=-.10, p=.32) or negative emotions (t(522)=-.71, p=.48), risk (t(522)=.27, p=.79), or reward (t(522)=-.67, p=.51).

Question 4- Attitudes Towards Holograms, VR, and Computer/ Video Games Depicting Rape or Child Sexual Abuse

There was no significant effect of SD3 on positive (t(525)=-.96, p=.34) or negative emotions (t(525)=-1.07, p=.29) or risk (t(525)=-.3, p=.76). Equal variances were not assumed and there was no significant effect of SD3 on reward (t(525)=-2.03, p=.04).

Table 45.

The Results of Independent t-tests Conducted to Test for Effects of SD3 on Attitudes Towards Advanced Sexual Technology.

Question	SD3 Score	LIWC Category	Low SD3 *M*(*SD*)	High SD3 *M*(*SD*)
Q1	Low	Positive emotion	7.55(15.77)	5.2(9.85)
	(*N*=278)	Negative emotion	2.56(3.85)	3.44(8.64)
	High	Risk	1.0(2.45)	1.14(3.18)
	(*N*=227)	Reward	2.32(8.12)	1.57(4.36)
Q2	Low	Positive emotion	3.79(5.7)	3.05(3.88)
	(*N*=304)	Negative emotion	6.7(14.77)	6.98(14.19)
	High	Risk	1.93(6.83)	2.59(8.59)
	(*N*=239)	Reward	1.1(2.13)	1.03(2.39)
Q3	Low	Positive emotion	4.73(8.54)	5.51(9.18)
	(*N*=290)	Negative emotion	8.01(17.02)	7.03(13.9)
	High	Risk	1.81(8.72)	1.62(7.42)
	(*N*=234)	Reward	1.27(6.21)	1.67(7.7)
Q4	Low	Positive emotion	3.8(7.72)	4.44(7.56)
	(*N*=294)	Negative emotion	7.66(14.38)	9.15(17.77)
	High	Risk	2.47(10.08)	2.75(10.89)
	(*N*=233)	Reward	.67(1.91)	1.32(4.58)

Note. Findings significant following the Benjamini-Hochberg procedure are shown in bold.

SSIS

Four Independent *t*-tests were conducted to test for effects of sadism on the results of each question, resulting in 16 t-tests overall. These results are displayed in *Table 46.* Please note that for all data where homogeneity

of variance was not met, equal variances were not assumed, as detailed below.

Question 1- Attitudes Towards Sex Robots

There was no significant effect of sexual orientation on positive emotions ($t(503)=.77$, $p=.45$). Equal variances were not assumed and there was no significant effect of sexual orientation on negative emotions ($t(13.17)=-.96$, $p=.36$). There were no significant effect of sexual orientation on risk ($t(503)=.17$, $p=.86$) or reward ($t(503)=.21$, $p=.83$).

Question 2- Attitudes Towards Child Sex Robots

There were no significant effects of sadism on positive ($t(541)=-.1$, $p=.92$) or negative emotions ($t(541)=.81$, $p=.42$), or risk ($t(541)=.33$, $p=.74$). Equal variances were not assumed and there was no significant effect of sadism on reward ($t(12.18)=-.86$, $p=.4$).

Question 3- Attitudes Towards Sex Robots Simulating Rape

There were no significant effects of sadism on positive ($t(522)=.38$, $p=.7$) or negative emotions ($t(522)=.7$, $p=.49$), risk ($t(522)=.33$, $p=.74$), or reward ($t(522)=-.52$, $p=.6$).

Question 4- Attitudes Towards Holograms, VR, and Computer/ Video Games Depicting Rape or Child Sexual Abuse

There were no significant effects of sadism on positive ($t(525)=-.82$, $p=.41$) or negative emotions ($t(525)=1.08$, $p=.28$), risk ($t(525)=.57$, $p=.57$), or reward ($t(525)=-.09$, $p=.93$).

Table 46.

The Results of Independent t-tests Conducted to Test for Effects of Sadism on Attitudes towards Advanced Sexual Technology.

Question	SSIS Score	LIWC Category	Low SSIS *M*(*SD*)	High SSIS *M*(*SD*)
Q1	Low	Positive emotion	6.57(13.65)	3.78(3.9)
	(*N*=491)	Negative emotion	2.86(6.19)	6.17(12.9)
	High	Risk	1.07(2.83)	.94(1.66)
	(*N*=14)	Reward	1.99(6.77)	1.61(3.27)
Q2	Low	Positive emotion	3.46(5.01)	3.61(4.23)
	(*N*=530)	Negative emotion	6.9(14.66)	3.6(3.93)
	High (*N*=13)	Risk	2.24(7.74)	1.53(1.8)
		Reward	1.04(2.22)	2.0(3.97)
Q3	Low	Positive emotion	5.1(8.91)	4.11(4.08)
	(*N*=512)	Negative emotion	7.64(15.86)	4.46(4.77)
	High	Risk	1.74(8.25)	.96(1.92)
	(*N*=12)	Reward	1.43(6.97)	2.47(3.83)
Q4	Low	Positive emotion	4.04(7.63)	5.87(8.58)
	(*N*=515)	Negative emotion	8.43(16.11)	3.42(6.12)
	High	Risk	2.63(10.55)	.89(2.08)
	(*N*=12)	Reward	.96(3.4)	1.04(1.97)

Note. Findings significant following the Benjamini-Hochberg procedure are shown in bold.

Summary of Results

Cases where the null hypothesis can be rejected are highlighted in bold.

Sex Robots

1. There was no effect of gender on linguistic style when discussing sex robots.
2. There was no effect of age on linguistic style when discussing sex robots.
3. **Heterosexual participants used significantly more negative emotion words when discussing sex robots compared with LGBTQIA+ participants.**
4. **Single participants used significantly more risk related language compared with participants who were not single.**
5. **Participants who used pornography used significantly more words related to positive emotions and reward when discussing sex robots, compared with those who never used pornography.**
6. There was no effect of AMMSA score on linguistic style when discussing sex robots.
7. There was no effect of CSAMS on linguistic style when discussing sex robots.
8. **Participants who had previously used sex dolls or robots used significantly fewer words related to risk when discussing sex robots compared with those who had not used dolls or robots.**
9. **Participants who would use or were unsure about using sex dolls or robots in the future used significantly fewer words related to negative emotions compared with those who would not, whilst those who said yes to using them in the future used significantly more words related to reward compared**

with both those who were unsure and those who would not use them.

10. There was no effect of MD on linguistic style when discussing sex robots.
11. There was no effect of SD3 on linguistic style when discussing sex robots.
12. There was no effect of SSIS on linguistic style when discussing sex robots.

Child Sex Robots

1. Males used significantly more risk related language compared with females and people who identified as 'other' gender when discussing child sex robots.

2. There was no effect of age on linguistic style when discussing child sex robots.
3. There was no effect of sexual orientation on linguistic style when discussing child sex robots.
4. There was no effect of relationship status on linguistic style when discussing child sex robots.
5. There was no effect of pornography use on linguistic style when discussing child sex robots.
6. There was no effect of AMMSA score on linguistic style when discussing child sex robots.
7. There was no effect of CSAMS on linguistic style when discussing child sex robots.

8. There was no effect of previous sex doll or robot use on linguistic style when discussing child sex robots.
9. There was no effect of future sex doll or robots use on linguistic style when discussing child sex robots.
10. There was no effect of MD score on linguistic style when discussing child sex robots.
11. There was no effect of SD3 on linguistic style when discussing child sex robots.
12. There was no effect of SSIS score on linguistic style when discussing child sex robots.

Sex Robots Programmed to Simulate Rape

1. There was no effect of gender on linguistic style when discussing sex robots programmed to simulate rape.
2. There was no effect of age on linguistic style when discussing sex robots programmed to simulate rape.
3. There was no effect of sexual orientation on linguistic style when discussing sex robots programmed to simulate rape.
4. There was no effect of relationship status on linguistic style when discussing sex robots programmed to simulate rape.
5. **Participants who used pornography used significantly more words related to risk compared to participants who never used pornography, when discussing sex robots programmed to simulate rape.**

6. There was no effect of AMMSA score on linguistic style when discussing sex robots programmed to simulate rape.
7. There was no effect of CSAMS on linguistic style when discussing sex robots programmed to simulate rape.
8. There was no effect of previous sex doll or robot use on linguistic style when discussing sex robots programmed to simulate rape.
9. There was no effect of future sex doll or robots use on linguistic style when discussing sex robots programmed to simulate rape.
10. There was no effect of MD score on linguistic style when discussing sex robots programmed to simulate rape.
11. There was no effect of SD3 on linguistic style when discussing sex robots programmed to simulate rape.
12. There was no effect of SSIS score on linguistic style when discussing sex robots programmed to simulate rape.

Holograms, VR, and Computer/ Video Games Depicting Rape/ Child Abuse

1. **Participants who identified as 'other' gender used significantly more reward-based language when discussing holograms, VR, and computer/ video games depicting rape/ child abuse, followed by males, then females.**
2. There was no effect of age on linguistic style when discussing holograms, VR, and computer/ video games programmed to simulate rape/ child abuse There was no effect of AMMSA score on linguistic

style when discussing holograms, VR, and computer/ video games depicting of rape/ child abuse.

3. There was no effect of sexual orientation on linguistic style when discussing holograms, VR, and computer/ video games depicting of rape/ child abuse.
4. There was no effect of relationship status on linguistic style when discussing holograms, VR, and computer/ video games depicting of rape/ child abuse.
5. There was no effect of pornography use on linguistic style when discussing holograms, VR, and computer/ video games depicting of rape/ child abuse.
6. There was no effect of AMMSA on linguistic style when discussing holograms, VR, and computer/ video games depicting of rape/ child abuse.
7. There was no effect of CSAMS on linguistic style when discussing holograms, VR, and computer/ video games depicting of rape/ child abuse.
8. There was no effect of previous sex doll or robot use on linguistic style when discussing holograms, VR, and computer/ video games depicting of rape/ child abuse.
9. **Participants who would use sex dolls or robots in the future used significantly more negative emotion words, followed by those who would not use them, then those who were unsure. They also used more reward-based words, followed by those who were unsure, and then by those who would not use dolls**

or robots, when discussing holograms, VR, and computer/ video games depicting of simulate rape/ child abuse.

10. There was no effect of MD score on linguistic style when discussing holograms, VR, and computer/ video games depicting of rape/ child abuse.
11. There was no effect of SD3 on linguistic style when discussing holograms, VR, and computer/ video games depicting of rape/ child abuse
12. No effect of SSIS score on linguistic style was found when discussing holograms, VR, and computer/ video games programmed to simulate rape/ child abuse.

Discussion

To the authors knowledge, this study represents the earliest empirical investigation into how beliefs, attitudes, personality traits, and demographic characteristics influence attitudes towards advanced sexual technology, as measured by linguistic patterns. Although findings were mixed, the data provides rich insight into the beliefs of individuals when tasked with outlining their views of controversial sexual technology.

Key Findings

Attitudes Towards Sex Robots

Several influences on attitudes towards sex robots were identified. Firstly, it was found that heterosexual participants used more words related to negative emotions compared with LGBTQIA+ participants when

discussing sex robots. This supports the hypothesis and previous research which suggests that members of the LGBTQIA+ community may maintain more liberal sexual values and in turn display more liberal sexual behaviour (Træen & Daneback, 2012). Furthermore, single participants used more risk related language. Although this opposes the hypothesis, this can potentially be explained by single participants being more likely to access sex robots compared with those in a relationship, and therefore considering the risks more carefully. Furthermore, individuals in a relationship may feel safer using sex robots because their partner may also be involved in the decision. It was further found that those who used pornography used more words related to positive emotions and reward when discussing sex robots compared with those who never used pornography, supporting this hypothesis. This further supports previous research showing a relationship between pornography use and engagement in other sexual activities such as use of sex toys (Martyniuk et al., 2016). Furthermore, participants who reported previous use of sex dolls or robots utilised fewer words related to risk, compared to those who had not, when discussing sex robots, supporting this hypothesis. This suggests that those who have not used sex dolls or robots view them as potentially risky, supporting Scheutz and Arnold's (2016; 2017) findings. Finally, those who wished to use or who were unsure about using sex dolls or robots in the future used fewer words related to negative emotions and more reward-based language compared to those who would not use them, supporting these hypotheses.

Attitudes Towards Child Sex Robots & Robots Programmed to Simulate Rape

Regarding linguistic patterns when discussing child sex robots, only gender was found to have a significant effect, with males using more risk related language than females. Although this opposes the hypothesis, this is perhaps explained by a closeness to the possibility of risk, as males are considered more likely to use this technology, given that they represent an overwhelming majority within child sexual abuse perpetration (Freel, 2003). Regarding word choice when discussing sex robots programmed to simulate rape, only pornography use was found to have an effect, with those who used pornography using more words related to risk compared to those who never used pornography. This opposes the hypothesis but is perhaps explained by an awareness of the risks related to use of this technology, considering that this group are more likely to have encountered media depicting sexual violence, compared with the group who never use pornography.

Attitudes Towards Holograms, VR, and Computer/ Video Games Depicting Rape/ Child Abuse

Finally, regarding holograms, VR, and computer/ video games depicting rape or child abuse, both gender and future use of sex dolls or robots were found to influence language patterns. Those who identified as 'other' gender used more reward-based language, followed by males, and then females. This partly supports the hypothesis, since males were higher than females; however, the fact that the 'other' gender group scored higher is surprising. To the authors knowledge, there is currently no evidence base identifying a relationship between gender dysphoria or fluidity and

engagement in sexually violent behaviour, and this therefore requires further investigation before any conclusions can be drawn.

Furthermore, those who wished to use sex dolls or robots in the future used more words related to negative emotions when discussing this advanced technology, followed by those who would not use them, and finally by those who were unsure. This again opposes the hypothesis; however, may be explained by a desire to use sex dolls or robots that they consider safe, and to maintain distance between these and other technology depicting sexually violent behaviour. As outlined above, those who wished to use sex dolls or robots in the future used fewer negative emotion words when discussing sex robots, but more negative emotion words for technology programmed to simulate rape/ child abuse, suggesting that they may wish to distinguish between these. Curiously however, those who would use dolls or robots in the future also used more reward-based language, supporting this hypothesis and suggesting that they may observe rewards in the use of technology depicting rape or child abuse. This may therefore highlight some concerning motives behind the use of sex dolls or robots.

Non-Significant Data

No relationships between linguistic patterns and MD, CSAMS, AMMSA, or the Dark Tetrad were identified, for any of the questions. Although this opposes several hypotheses, this offers tentative support to Harper et al. (2021), who reported no effect of dark personality traits, and no effect of sexual aggression proclivity, on sex doll ownership. Harper et

al. (2021) concluded that doll ownership, rather than being indicative of a deviant personality, is instead related to low self-esteem, poor attachment, and difficulties within relationships. However, the variables discussed here are of a more concerning nature than doll ownership, with questions relating to rape and child sexual abuse. The lack of relationships between these variables and attitudes towards advanced sexual technology representative of sexual violence is therefore questionable. These relationships therefore warrant further investigation before any conclusions can be drawn regarding the personality traits of individuals, and attention should be paid to the limitations of this research.

Limitations

There are several potential explanations for why many of the hypotheses were not met. Firstly, a key limitation of this research was the fact that only a small number of participants had previously used sex dolls or robots. This means that most opinions regarding the use of sexual technology were based on estimations rather than real experience. This is particularly problematic since knowledge about sex robots and other advanced sexual technology remains relatively low within the general population, meaning it is possible that opinions were based on extreme portrayals of their use, for example within the television show 'Humans' (Wax et al., 2015-2018), or within the film 'Her' (Jonze, 2013), both of which depict troubling consequences of robot/ AI technology. It is therefore possible that all responses remained quite extreme, meaning differences were not observed across groups. This represents a further limitation of the

study, since it is unclear whether use of certain language was particularly high or low, with scores instead only being interpreted in comparison with the other group. In addition to this, it is unclear whether language choice was a reflection of the questions being asked or instead whether this reflected the personality of these groups of individuals. For example, Harper et al. (2021) identified more negative emotions as a feature that distinguished doll owners from non-owners and suggested that lower affect may in fact motivate a person to purchase a doll. It is therefore possible that individuals who fell into certain groups were more likely to display certain language patterns naturally, regardless of the questions that they were asked. Future research should therefore look to identify baseline data of language patterns, for example how often risk focused words are used in general conversation. This would provide a better indication as to whether both or all groups were scoring particularly low or high.

It is also important to note that all the findings reported here are correlational and therefore no causation can be interpreted. For example, it is unclear whether using fewer words related to risk reflects a more risk-averse person who would be more likely to use sex robots, or instead whether use of robots reduced any concerns about risk. This is of particular concern since no information regarding participant's use of child sex robots, or sex robots, games, or VR depicting rape or child sexual abuse, was collected, meaning it is unclear whether these were impacting upon the predictor variables. Future research is advised to recruit a larger sample of individuals who have previously used all types of technology included in the study, and to extract this information from participants.

It is also noteworthy that this was a lengthy study, and it is likely that participants experienced the boredom effect. Since the qualitative questions were placed at the end, it is likely that participants put less effort into these questions compared with when they first started the questionnaire. Future research could look to separate a questionnaire such as this into multiple studies, or perhaps to conduct more in-depth qualitative interviews of participants, to elicit common themes. Furthermore, all questions were self-report, and given the controversial nature of the topic, it is likely that participants responded in a socially desirable manner. Despite the true aims not being outlined before participation, a clear insinuation was made regarding a potential relationship between sexually violent beliefs or behaviour and advanced sexual technology use. Responses to all questions were further likely to be influenced by earlier questions related to sexual crime, despite the first qualitative question not intending to imply that sex robots were deviant. Future research could elicit attitudes using LIWC or a similar software; however, it may be of benefit to analyse this data in relation to more objective measures, such as by observing behaviour.

Implications & Future Directions

This research contributes to an evidence base with several far-reaching implications, with the debate centring upon whether use of this technology is likely to be cathartic or catalytic for violent sexual fantasies. This debate has implications for legal frameworks regarding the prohibition of technology that allows the perpetration of or depicts sexually violent

behaviour. Researchers have suggested that sexual violence should be forbidden in video games, and social norms that promote this should be challenged, as well as stereotypes and rape myths (Guggisberg, 2019), whilst Richardson (2016) has argued for the ban of sex robots due to their representation of women and children as sex objects. However, some argue that prohibiting sexual VR, amongst other technology, would push individuals with violent sexual fantasies into isolation, making the situation worse (Esposito, 2018). This is particularly concerning when combined with Harper et al.'s (2021) identification of dolls owners as socially isolated individuals with relationship difficulties. It is hoped that this study represents only the beginning of the development of a large evidence base into the effects that advanced sexual technology could have on society, as well as in identifying important attitudes towards these. This study further contributes to the emerging literature which aims to identify a group of individuals who hold more positive or negative attitudes towards this technology. The results suggest that individuals who use pornography may hold fewer negative attitudes towards sex robots and may in turn be more likely to use them. This supports the findings outlined in Chapter Three, of a consistent relationship between pornography use and outcome variables. Therefore, should it be helpful in future to identify a group more likely to use sex robots, pornography use may be a good indicator.

The current study is suggestive of a concerning relationship between future sex doll or robot use and perceived rewards related to using sexual technology depicting child sexual abuse or rape. Since the theory behind LIWC software is that deeper meanings surface within word choices

(Pennebaker et al., 2007), it is likely that the word patterns identified here reflect motivations and intentions of participants, as suggested by Tausczik and Pennebaker (2010). This suggests that the use of dolls or robots could have catalytic effects on sexually violent behaviour as users may perceive there to be rewards from sexual offending. It is noteworthy that males utilised more risk focused words compared with females when discussing child sex robots. Although not a study of child sexual offenders, this does indicate tenuous relationships. Rational choice theory assumes that individuals consider both the benefits and risks of an act before committing it. This has been applied to deterrence of sexual offending, with the theory that individuals will be less likely to commit an offence if they perceive higher risks (Meloy, 2005). Therefore, it is possible that the risks associated with child sex robots may deter males from using them and rather than banning their use entirely, it may instead be of greater value to advertise the associated risks of using sexual technology representative of sexual violence.

Given that this research represents the very start of the evidence base into the use of this technology, it cannot be utilised to fully inform on the debate of whether their use should be banned. The results showed that those who were interested in using sex robots spoke more negatively about technology depicting rape or child abuse, suggesting that there may be variations in the motivation behind use of each technology type. This suggests that adult sex robots alone are likely to be of less risk compared with other technology depicting child sexual abuse or rape. The research therefore suggests that it would be unfair to apply blanket rules related to

the use of such varying technology. This finding is supportive of Harper et al. (2021) who concluded that those who use sex dolls are no more dangerous than those who do not. Although the results suggest that there was no effect of sexual aggression or child sexual abuse myth acceptance with regards to attitudes towards technology simulating this behaviour, considering the high likelihood that social desirability bias would have influenced responses, it is important that further research is completed, preferably without or with reduced self-report. Although no significant effects were found regarding MD, the moral risks regarding the design of advanced technology that allows people to rape them or represent children remain a significant problem (Sparrow, 2017) and this should be carefully considered by designers and manufacturers.

Conclusions

In conclusion, the results of this research indicate that there were several factors that influenced attitudes towards advanced sexual technology, as measured through linguistic patterns. These factors were sexual orientation, gender, relationship status, pornography use, and previous and future use of sex dolls or robots. Although most of the hypotheses were not met, this is unsurprising given the exploratory nature of the research and the lack of previous evidence to base hypotheses on. This resulted in tentative predictions being based on similar research areas, such as pornography use and sex doll ownership. The results of this research provide an initial understanding of the profile of an individual who is more accepting of technology such as this, which many have found fault

with due to the potential risks. Building up an understanding of this profile will help to guide regulation in the future, with a particular importance appearing to be on the concept of risk, since individuals who would generally be considered more likely to use technology such as this, of male, single individuals who use pornography, tended to utilise more words related to risk than other groups. This indicates that risk may be a pertinent factor to be targeted by legal frameworks. Overall, the findings appear to compliment elements of Harper et al.'s (2021) conclusions; that sex doll owners are more likely to endorse violent sexual fantasies but are less likely to express a behavioural willingness to engage in sexual aggression. It remains questionable whether it is of benefit to prohibit technology such as this; however, it is hoped that this study has provided a basis for future research to continue investigating attitudes and personality traits of those who are more likely to use advanced sexual technology, as well as the potential risks in a more direct manner.

Chapter Five: Psychometric Critique

A Critique of the Moral Disengagement Scale and Its Adaptations for Application to Sexual Offenders

Overview of Chapter

This critique was completed to shed light on the applicability of the MD Scale (MDS) to sexual offending populations. This was considered important since the original scale (Bandura et al., 1996) was developed using children and adolescents as a normative sample, meaning no adult or forensic norms were collected. The information provided in this chapter can be used to determine whether the scale can be utilised in measuring MD in individuals who have committed sexual offences or if instead adaptations need to be made. Since the systematic review illuminated a relationship between sexual offending and MD, MD is a potential assessment and treatment target for this population, and an appropriate scale is therefore necessary. Furthermore, an adaptation of the MDS was utilised in both the primary and secondary research projects and it was considered important to identify whether this was an appropriate scale for a research project investigating sexual attitudes.

Abstract

The Moral Disengagement Scale (MDS) is a psychometric assessment designed to measure the use of Moral Disengagement (MD). MD is a concept consisting of eight cognitive mechanisms, which an individual may utilise to bypass their moral standards (Bandura, 2002). Within the literature, MD has been demonstrated as relevant to forensic populations, including sexual and violent offenders. However, although the MDS has been extensively utilised across several populations, to the author's knowledge no psychometric critique has yet assessed its utility with any forensic population, including sexual offenders. The aim of this review was therefore to explore the validity and reliability of the MDS when used with this population. Since very little evidence is currently available regarding the original scale, adaptations of the measure, including the Italian and Sexual Harassment versions, were included in the review. It was found that evidence of the psychometric properties of the MDS and its adaptations, when used with sexual offender populations, is lacking. Evidence from various adaptations of the scale for community samples indicated consistently good reliability, although measures of validity were not consistent across all versions. Gaps in research and issues that need addressing in practice are highlighted. Although the MDS provides a comprehensive measure of MD, its application to forensic populations is lacking and requires further research. Reliable forensic normative samples are required before the tool can be utilised for populations such as this and consideration must be paid to the modification of items for sexual offending. Practical implications, limitations, and future research are discussed.

Keywords: Moral Disengagement Scale, Moral Disengagement, Sexual Offenders, Critique, Forensic.

A Critique of the Moral Disengagement Scale and Its Adaptations for Application to Sexual Offenders

Moral Disengagement

According to Social Cognitive Theory, moral agency is controlled by a self-regulatory system which prevents people from violating their morals, since to do so would result in self-criticism. Anticipating self-disapproval therefore keeps behaviour in line with internal standards and controls behaviour, meaning individuals refrain from unacceptable behaviour unless they have justified the actions to themselves. Justification can take place using several methods of cognitive reappraisal known as Moral Disengagement (MD). This concept consists of eight cognitive mechanisms of moral justification, euphemistic language, advantageous comparison, displacement of responsibility, diffusion of responsibility, distortion of consequences, dehumanisation, and attribution of blame. A description of each is provided in *Table 47* (Bandura et al., 1996). All are theorised to contribute to a person's distorted view that their behaviour is ethical (Moore, 2015), since through these mechanisms, self-regulation can be deactivated, meaning individuals are released from self-sanctions and feelings of guilt that would usually prevent them from violating their moral standards (Bandura, 1999). The person therefore enters a version of reality in which the immoral behaviour becomes socially and morally acceptable (Page & Pina, 2015). MD is theorised to take place over time, meaning that a person may perform milder acts which can be initially tolerated, with the severity gradually increasing. This means that acts thought initially abhorrent become acceptable to the individual (Bandura, 1999) and Bandura (1986) asserts that this explains why

otherwise social norm and law-abiding individuals may engage in unethical behaviour.

MD has been applied to several contexts, ranging from milder behaviours such as cheating in academia (Farnese et al., 2011) to more severe, criminal behaviour, in some cases as extreme as genocide (Shulman et al., 2011). Shulman et al. (2011) investigated 1,169 male offenders between the ages of 14 and 17 using the original MDS (Bandura et al., 1996), and found that as MD levels increased, so did both self-reported and official records of offending. Furthermore, in a longitudinal study, adolescents who had been found guilty of a serious offence in the United States completed several surveys across a period of seven years. Results were compared with number of re-arrests at the seven year follow up, and it was found that those who utilised MD mechanisms more were likely to offend more regularly (Cardwell et al., 2015). Researchers suggest that criminal activity occurs when the individual consistently repeats justifications in their mind, which eventually become stable, firm beliefs. These provide the individual with permission to commit the offence and potentially repeat it (Petruccelli et al., 2017a). It has been proposed that sexual offenders may utilise mechanisms of MD to make their behaviour appear more acceptable (Page & Pina, 2015), with research demonstrating that sexual offenders use self-statements to deny, minimise, rationalise, and justify their behaviour (Murphy & Carich, 2001). For example, a sexual offender may consider the sexual act as a useful means of achieving happiness, whilst deeming the victim as provocative and therefore at fault (Hanson, 2010). Bandura (1986) suggested that this could apply to the acceptance of rape myths, which serve to blame the victim and vindicate the perpetrator. This is supported by research finding that higher levels of MD in male

students were predictive of rape-supportive attitudes (Carroll, 2009). Furthermore, in one study, sexual offenders utilised higher levels of MD than non-sexual offenders, who in turn utilised more MD than non-offenders (Petruccelli et al., 2017a). Researchers suggest that MD may explain why some harmful sexual behaviours increase in severity over time, escalating from sexual harassment through to sexual assault, since the continued use of MD mechanisms neutralises and justifies the behaviour over time (Page & Pina, 2015). This indicates that MD could be an important target for assessment and treatment of sexual offenders.

Overview of the MDS

The MDS was originally constructed by Bandura et al. (1996), following the delivery of extensive sets of psychometric assessments to Italian children. For each of the items, children rated on a 3-point Likert-type scale their degree of acceptance on an agree to disagree continuum. Data was also collected from parents, teachers, and peers to add to the significance of the obtained relationships. The pilot found that MD was positively related to aggressive behaviour, and negatively related to prosocial behaviour, and the researchers therefore suggested that MD influenced delinquent behaviour both directly and indirectly by reducing pro-socialness and anticipatory guilt, and by fostering aggression proneness. In the final form of the scale, each of the eight mechanisms of MD was measured by a subset of four items, resulting in 32 items overall. Each subscale is totalled to create an overall score to gather a general understanding of MD for an individual; however, subscale scores can also be utilised to identify problem areas (Bandura et al., 1996). Each item is designed to equally tap the sub-components of the overarching MD construct (Lee et al., 2014), and the items

were split by Bandura into four main categories, of cognitive reconstruing of harmful behaviour, obscuring or minimising one's role in causing harm, disregarding or distorting the impact of harmful behaviour, and blaming and dehumanising the victim (Bandura et al., 1996), as detailed in *Table 47.*

Table 47.

Descriptions of the Moral Disengagement Subscales, including Number of Items for each Mechanism.

Psychological Mechanism Category	**Subscale**	**Description**	***N***
Cognitive reconstruing of harmful behaviour	Moral Justification	Cognitively reconstructing reprehensible behaviour by portraying the behaviour in a socially or morally acceptable way.	4
	Euphemistic Language	Altering the language used to describe certain actions, which can impact thought patterns and make the behaviour seem more acceptable.	4
	Advantageous Comparison	If behaviour is contrasted with something of more harmful consequences, immoral behaviour may be considered of little consequence.	4
Obscuring or minimising one's role in causing harm	Displacement of Responsibility	The interpretation of behaviour as less problematic when viewed as being a result of social pressure or other people.	4
	Diffusion of Responsibility	Attributing group responsibility, meaning that no one individual feels responsible and the behaviour can be attributed to the behaviour of others.	4
Disregarding or distorting the impact of harmful behaviour	Distortion of Consequences	The individual may recall information about the potential benefits of an action and struggle to recall the harmful implications or may actively discredit or ignore the consequences.	4
Blaming and dehumanising the victim	Dehumanisation of Victim	Removing human qualities from the victim, meaning they are then no longer viewed as an individual with feelings.	4
	Attribution of Blame	The individual may view themselves as a victim who was driven to harmful behaviour in defence.	4

Although Bandura et al.'s (1996) original scale was created for use with children and young adolescents, there have been many adaptations since its original conception. These consist, although may not be limited to, the following:

1. The Italian MDS (Caprara et al., 1996).
2. The Spanish MDS (Rubio-Garay et al., 2017).
3. The Chinese MDS (Wang & Yang, 2010).
4. The Mexican MDS for Children (García-Vazquez et al., 2019).
5. The Australian MDS (Newton et al., 2016).
6. The MD in Sexual Harassment Scale (MDiSH) (Page et al., 2016).
7. The Civic MDS (Caprara et al., 2009).
8. The Collective MDS for Adolescents (Gini et al., 2014).
9. The Collective MDS for Czech Adolescents (Kollerova et al., 2018).
10. The Collective MDS for Turkish Adolescents (Çapan & Bakioglu, 2016).
11. MDS in Peace and Conflict (Ekstein & Sparr, 2005).
12. The MD in Sport Scale (Boardley & Kavussanu, 2007).
13. MD in Sport Short Scale (Corrion et al., 2010).
14. The MD in Doping Scale (Kavussanu et al., 2016).
15. The Adult MDS (Detert et al., 2008).
16. The MDS for Military Action (McAlister, 2001).
17. The General Legal MDS (Kirshenbaum et al., 2021).
18. The Driving MDS (Swann et al., 2017)
19. MDS for Adults in Urdu (Saif & Riaz, 2021).
20. MDS for Adolescents (Indigenous tool) (Riaz & Bano, 2018).
21. The MD Instrument (Lee et al., 2014).
22. MD in the Execution Process (Osofsky et al., 2005).

Aims

To the authors knowledge, there are no existing reviews exploring the reliability and validity of the MDS in relation to sexual offenders. This critique aims to address the gap in the literature by examining the psychometric properties of the tool and considering its applicability to individuals who have committed a sexual offence. Forensic application of this tool is important, given the evidence demonstrating a relationship between MD and unethical or unlawful behaviour, meaning it is possible that the use of MD mechanisms contributes towards risk of offending. In clinical settings, practitioners working with sexual offenders could compare scores on the MDS in order to interpret whether an individual is utilising concerning levels of MD compared to others, or in comparison to the individual's own baseline. The aim of this article is therefore to critically examine the properties of the MDS and to explore practical implications, limitations, and further research.

MDS Normative Data

In developing the MDS, psychometric assessments were administered to 251 Italian elementary school children, 249 junior high students, and 315 high school students, over a period of several days. Using the final version of the scale, normative data was then collected from a non-clinical population of Italian children, consisting of 124 children in elementary school and 675 high school students. Their age ranged from 10-15 years (M=11.8) and were made up of 438 males and 361 females. The children were administered the MDS over several days and data was also collected from parents, teachers, and peers. The children further completed scales measuring prosocial behaviour (helpfulness, sharing,

kindness, and cooperativeness) and interpersonal aggression (fighting with others, hurting others, and being verbally aggressive), with a 3-point response being used throughout. It was found that males, in comparison to females, were more likely to utilise moral justification, euphemistic language, dehumanisation, and attribution of blame. They reported no relationships between MD and familial socioeconomic status, age, or educational level. However, they reported that those who were highly prone to MD tended to be more irritable, to ruminate more about perceived grievances, to be less troubled by guilt or to feel that they needed to make amends for harmful behaviour, and to engage in more interpersonal aggression and delinquent behaviour. MD was further negatively related to prosocial behaviour and positively related to peer rejection (Bandura et al., 1996). Meanwhile, the adapted MDS for adults involved testing items on 307 business and education undergraduate students, consisting of 54% females and 46% males. This study corroborated the original norms, with male participants being more likely to use MD mechanisms than females (Detert et al., 2008). Normative data has been collected for several other groups in the context of the development of scale adaptations; however, a large proportion of the research has focused on general adolescent samples (Shulman et al., 2001).

Use of the MDS with Forensic Populations

Most research on MD has been conducted using community samples (Cardwell et al., 2015), and although it appears to have been extensively researched in many different contexts, no norms exist for forensic populations. However, research into official records has shown that a decline in MD is associated with risk of offending (Shulman et al., 2011), and further research has

demonstrated higher levels of MD in youthful male offenders (Kiriakidis, 2008), compared with Bandura et al.'s (1996) original sample. Several studies have investigated the use of the MDS with sexual offenders, pertinent since a link between MD and rape myths was originally proposed by Bandura as early as 1986. A study by Petruccelli et al. (2017a) compared MD across 42 male sexual offenders, 52 male non-sexual offenders, and a control group of 268 male university students. The offending population had a mean age of 41.6 years, whilst the non-offenders ranged from 23-48 years, with a mean of 34.8 years. They demonstrated that imprisoned sexual (M=2.8) and non-sexual offenders (M=2.54) utilised higher levels of MD than control participants (M=2.1), and that sexual offenders appeared to utilise more MD than non-sexual offenders. However, this research used the Italian version of the MDS, without a normative sample for sexual offenders. It is therefore important that normative data is collected for sexual offenders in future research.

Psychometric Properties of the Moral Disengagement Scale

Method

A systematic search of PubMED, Embase, Medline, PsycINFO, Web of Science, and hand searching identified 124 published articles reporting data relating to the psychometric properties of the MDS or it's adaptations to sexual offending populations. The dates included ranged from 1996, the year that the original MDS was published, to the date of the search, of the 20th of November 2021.

The following search strategy and selection method was used:

1. "moral disengagement scale"

2. "psychometric propert*" OR "reliab*" OR "valid*"
3. "forensic" OR "crime" OR "criminal" OR "offen*" OR "sex*" "sex* offen*" OR "rape*" OR "rapist*" OR "sexual behavio?r", "pe?dophilia", "child* sex* offen*"
4. 1 AND 2 AND 3

Duplicates were then removed, and the titles and abstracts were assessed for relevance. No papers explicitly addressing the psychometric properties of the MDS for sexual offenders or a broader forensic population were identified. In light of this, it was considered important to remove the reference to psychometric properties, in order to identify any papers that referenced sexual offending and the MDS. Therefore, using an updated version of the systematic search completed in Chapter Two, for papers that used the MDS with sexual offenders, nine studies were identified. This search was carried out on the 21st of November 2021. Of these studies, seven reported psychometric properties of the MDS related to use with a sexual offending population or on a related subject with a community sample. Information extracted from each study regarding psychometric properties is presented in *Table 48.* Evidence of psychometric properties was further drawn from articles related to other adaptations of the MDS, all of which utilised community samples. These articles were identified during the initial search completed on the 20th of November 2021.

Table 48.

Extracted Information Pertaining to Psychometric Properties of a Version of the MDS, Following a Systematic Search of the MDS in Relation to Sexual Offending.

Study	Scale	Country	*N*	Internal Consistency	Convergent Validity	Discriminant Validity	Predictive Validity
Page et al. (2015)	MDiSH	UK	338	**α=**.95	R=.8 with The Illinois Sexual Harassment Myth Acceptance Scale (ISHMA)	ISHMA: Factor 1 loadings .41-.74 Factor 2 loadings .41-.76 Factor 3 loadings .48-.74 Factor 4 loadings .41-.61	N/A
			332	**α=**.97	R=.77 with ISHMA	ISHMA: Factor 1 loadings .49-.88 Factor 2 loadings .41-.75 Factor 3 loading .56	
			195	**α=**.98	R=.58- Attribution of blame to female complainant R=-.55- Perception of male soldiers as morally wrong	Uncorrelated: R=.14, non-significant Benevolent Sexism R=-.10, non-significant Negative Affect	

				R=.20- Self-investment (male gender identification) R=.28- Self-definition (male gender identification) R=.63- Hostile Sexism R=.42- Happiness R=-.45- Restitution R=.79- Greater avoidance	R=.05, non-significant Sympathy
Page & Pina (2018)	MDiSH	UK	120	N/A	N/A	Harassment proclivity R=.39
			119	**α=**.87	N/A	Harassment proclivity R=.57
			123	**α=**.86	N/A	Harassment proclivity R=.37

Petruccelli et al. (2017a)	Italian version	Italy	362	Overall: α=.92 Subscales: α=.69 (MJ), α=.71 (DisoR), α= .74 (AoB), α=.68 (DifoR), α=.56 (EL), α=.48 (DoC), α=.74 (AC), α=.69 (DoV)	N/A
Petruccelli et al. (2017b)	Italian version	Italy	79	α=.81	N/A
D'Urso et al. (2018)	Italian version	Italy	120	Subscales α=.76-.91	N/A
D'Urso et al. (2019)				α=.93	
Vance et al. (2015)	Original MDS	USA	484 (380 analysed)	α=.9	N/A

Reliability

Internal Consistency. For a psychometric tool to be reliable, it must be consistent, meaning the variables must be highly correlated (Kline, 2015). Cronbach's Alpha is a model of internal consistency, based on the average inter-item correlation, and according to Kline (2000), good internal consistency is demonstrated by an alpha coefficient of above .7. Throughout the development of the original MDS, items were removed if they were found to not be internally consistent within each mechanism, and the alpha reliability coefficient of the final scale was reported at .82 (Bandura et al., 1996), indicating good internal consistency. Further evidence comes from Hyde et al.'s (2010) use of the original MDS with their sample of 187 low-income male children, who reported high internal consistency of .85. An extension of the MDS with African American children was also completed by Pelton et al. (2004). They reported similar internal consistency to Bandura et al.'s (1996) original report, with an alpha coefficient of .82, and concluded that this suggests the MDS had utility across children varying in sociodemographic dimensions. It is noteworthy that in this study they removed the four items that made up the euphemistic language subscale, reporting that this required a high degree of cognitive skill and the children had difficulty understanding these (Pelton et al., 2004). High internal consistency has also been reported for adaptations, including for the adult version of the scale, with an alpha coefficient of .87 (Detert et al. 2008). Further evidence of good internal reliability comes from the MD in Doping Scale, with a Cronbach's alpha of .79 at the initial assessment and .82 at the follow-up assessment one week later, indicating that this was relatively stable across time (Kavussanu et al., 2016). Meanwhile, the MDS for Adults in Urdu language scale yielded a Cronbach's alpha of .9 (Saif &

Riaz, 2021), the indigenous tool of MD for adolescents an alpha of .8 (Riaz & Bano, 2018), the Chinese version .87 (Wang & Yang, 2010), and the Collective MDS .84 (Gini et al., 2014). When it comes to forensic populations, Shulman et al. (2011) investigated male offenders using the original MDS (Bandura et al., 1996), and reported acceptable internal consistency of .88. Furthermore, alpha coefficients for the Italian version have been reported at .92 (Petruccelli et al., 2017a) and between .76 and .91 (D'Urso et al., 2019) when used with sexual offender populations. These results suggest that conclusions can be drawn that the MDS and its adaptations have adequate internal reliability across a range of community samples; however, little evidence exists for forensic populations.

Test-Retest Reliability. A scale should further yield the same score of a participant more than once, usually tested by correlational analysis (Kline, 2015), and it has been reported that a satisfactory test-retest coefficient needs to be a minimum of .7 (Nunnally, 1978). Little evidence has been provided regarding this concept for the MDS, excluding on the Turkish Collective MDS, when the scale was carried out twice with the same adolescents, with 15 days in between, and test-retest reliability was reported at .84 (Çapan & Bakioglu, 2016). The MD in Doping Scale also provides a test-retest reliability of .78, finding that the scores were highly correlated across time and did not significantly change across a one-week interval (Kavussanu et al., 2016). Furthermore, correlations between test and retest, 8 days apart, were found to be high for the MDS for Adults in Urdu (Saif & Riaz, 2021). There do not appear to have been any further studies assessing test-retest reliability for the original MDS or any adapted versions, and no coefficients have been reported for any forensic samples. The test-retest reliability therefore

appears acceptable for a range of adaptations; however, further information is required before conclusions can be drawn regarding reliability for sexual offenders.

Validity

Face Validity. The MDS reports to assess eight stable psychological constructs that are used to disengage a person from their morals (Page & Pina, 2018). This was tested for the MD in Sport scale using consultation with sport psychology professionals, who confirmed acceptable face validity (Boardley & Kavussanu, 2007), whilst for the MD Instrument, 30 pharmacists were consulted and areas that were unclear were noted (Lee et al., 2013). For the general legal MDS, two published experts on MD reviewed the items, and if the expert rated an item incorrectly the authors rewrote or removed the item (Kirshenbaum et al., 2021). When it comes to sexual behaviour, Page et al. (2015) reported that the final MDiSH scale had acceptable face validity. However, Petruccelli et al. (2017a) pointed out that the eight subscales of the Italian MDS address face-validity requirements but are unsupported by evidence regarding the factorial structure of the scale. They therefore report that the scores of the eight MD mechanisms have a chiefly descriptive value (Petruccelli et al., 2017a). There appears to be no evidence of the face validity of the original MDS.

However, despite face validity being considered desirable for psychometric assessments (Schamborg et al., 2016), some researchers argue that it can be problematic, since it may result in social desirability bias (Bornstein et al., 1994). This appears relevant to the MDS, since research has found that those who reported high social desirability reported significantly lower MD than those who scored medium and low levels of social desirability, indicating that those who

answer in a socially desirable manner are significantly less likely to report MD (Zelidman, 2014). This may be particularly problematic when researching sexual offenders, since research suggests that sexual offenders exhibit more social desirability bias than violent offenders, which may be explained by the associated social stigma (Tan & Grace, 2008). As in Zelidman's (2014) study, it may be advisable to distribute a social desirability tool in conjunction with the MDS. Overall, this evidence indicates that the MDS is likely to achieve face validity requirements for most groups; however, this may be problematic regarding social desirability bias, and face validity may not be sufficient considering the factorial limitations of the scale.

Concurrent Validity. As mentioned previously, several adaptations of the MDS have been published, and concurrent validity can therefore be commented on based on whether the results of the adaptations correspond with each other in measuring the same construct. Kline (2015) states that this can be useful since new tests often attempt to improve upon poor tests of the same variable. The general legal MDS demonstrated good validity with all four included MD scales (McDermott & Miller, 2016; Osofksy et al., 2005; Detert et al., 2008; Moore et al., 2012), indicating that they measured the same construct (Kirshenbaum et al., 2021). Concurrent validity has further been demonstrated through correlations between MD and physical and verbal aggression, prosocial behaviour, and delinquency (Bandura et al., 1996), as well as through the administering of the MDiSH at the same time as the Illinois Sexual Harassment Myth Acceptance Scale (ISHMA), an established measure of sexual harassment myth acceptance (Lonsway et al., 2008), with high positive correlations being identified. Overall however, little evidence appears to exist in support of concurrent validity, and

since no scales have been developed in relation to offending behaviour, it is unclear whether findings regarding concurrent validity can be generalised to use with sexual offenders.

Predictive Validity. Predictive validity refers to whether scores on an assessment are related to the later display of a variable (Schamborg et al., 2016), with many researchers considering predictive validity as the most important evidence for the efficacy of a test (Kline, 2015). When applied to MD, the question becomes whether the MDS could predict future, immoral behaviour. Research has found predictive validity for the Civic MDS over time using cross-lagged models, focused on delinquency and violence. This scale was found to significantly contribute to both outcome variables, indicating good predictive validity (Caprara et al., 2009). The general legal MDS was also shown to be consistent in predicting attitudes towards controversial police procedures and various legal issues, and therefore has a wide range of predictive ability (Kirshenbaum et al., 2021). Furthermore, the predictive validity of the MDiSH scale has involved testing the links between MDiSH and men's behavioural tendencies to sexually harass. As predicted, those who scored higher on the MDiSH self-reported stronger behavioural inclinations to harass using vignettes (Page & Pina, 2018). However, Page and Pina (2018) draw attention to the importance of future research assessing whether the MDiSH is predictive of sexual harassment via the study of behaviour rather than reported tendencies, for example by using computers to elicit behaviour. Although no predictive validity has been established with a sexual offender sample, research has demonstrated that sexual offenders score higher on the Italian MDS (Petruccelli et al., 2017a; D'Urso et al., 2018; D'Urso et al., 2019). Tentative conclusions could therefore be drawn that there is a relationship

between MD and sexual offending; however, since this is correlational it remains unclear whether MD scores would have been higher prior to the offence, or whether disengagement took place following the offence.

Construct Validity. Construct validity is established to demonstrate that an assessment distinguishes between those with and without a certain characteristic and is therefore indicative of the underlying theoretical construct (Fink, 2010). The MDS would therefore need to demonstrate that those with high MD behave differently from those with low MD on the scale, and since it is a unidimensional scale, that it measures one underlying construct of MD. Bandura et al. (1996) claimed that MD should be measured as a single higher order concept, therefore supporting the converging of MD mechanisms. In the original paper, a principal-components factor analysis was conducted and revealed a single factor structure, accounting for 16.2% of the variance (Bandura et al., 1996). Construct validity was also tested for the Collective MDS and it was found that the collective score was much more reliable than the individual score (Gini et al., 2014). On the Turkish version of the Collective MDS, exploratory factor analysis was carried out to determine construct validity, with the factor loadings being reported as between .41 and .76. Since they report that factor loadings of above .4 are acceptable, construct validity was therefore considered satisfactory (Çapan & Bakioglu, 2016). Exploratory factor analyses were further conducted to test the construct validity of the MDiSH. This consistently resulted in one factor, accounting for 40.5%, 52%, and 56% for studies one, two, and three, respectively. All 32 items of the MDiSH were indicators of a single factor of MD, with no items correlating. They then analysed the fit of the observed data to the unidimensional model and found this to be acceptable. Further evidence of construct validity has been shown by a

positive correlation between male gender identification and the MDiSH, corroborating previous research that constructs related to masculinity and sexist ideology are positively associated with attitudes and beliefs that facilitate sexual harassment (Page et al., 2015). Finally, a single factor solution explaining 35.1% of variance was reported for the Italian version when measured on sexual offenders (Petruccelli et al., 2017a). Research therefore supports the construct validity and factor structure of several adaptations of the MDS; however, little evidence exists examining this in relation to sexual offending populations.

Convergent and Discriminant Validity. Construct validity can further be divided into subcategories of convergent and discriminant validity (Haynes et al., 1995). Convergent validity refers to the degree to which two measures of constructs that theoretically should be related, are related. Discriminant validity refers to the degree to which measures of constructs that theoretically should be unrelated, are in fact unrelated. The eight factors of the MDS represent different dimensions of the same overriding construct of MD. Therefore, the factors were hypothesised to be related to each other. It is noteworthy that Egan et al. (2015) investigated Detert et al.'s (2008) adult version of the MDS and reported that the subscales did not load onto their factors as claimed. They therefore reported that the subscales were unreliable, but that the overall reliability of the scale was acceptable (Egan et al., 2015). However, support has been provided for both convergent and discriminant validity of the MD Instrument by confirmatory factor analysis. They also provided support for the proposal that these constructs are part of a higher order construct of MD, although they still reflected individual characteristics that were unique to each factor (Lee et al., 2013). The general legal MDS has also demonstrated good convergence with individual differences

that should theoretically relate to MD, and good discriminant validity as the scale did not relate to an individual difference that it should not theoretically relate to (Kirshenbaum et al., 2021). Furthermore, Page et al. (2015) hypothesised that the MDiSH would show a strong positive correlation with sexual harassment myth acceptance, but that it would be empirically separate from this due to distinct content domains that structure these theoretical constructs. They further predicted that the MDiSH would be positively correlated with male gender identification. As expected, the MDiSH was highly positively correlated with sexual harassment myth acceptance, as measured by the ISHMA. This relationship was maintained after possible effects of impression management had been controlled, indicating that social desirability was not having a significant effect. However, parallel analysis consistently showed discriminant validity of the MDiSH in respect to myth acceptance, indicating that the constructs may complement each other (Page et al., 2015). Discriminant validity was also identified for the Civic MDS with respect to the original MDS (Caprara et al., 2009). This evidence suggests that several of the adaptations demonstrate acceptable convergent and discriminant validity; however, further research is recommended before this can be generalised to sexual offending populations.

Content Validity. Content validity refers to the extent that a measure assesses all aspects of the construct it aims to (Schamborg et al., 2016). Therefore, the MDS would demonstrate good content validity if the items fairly represented the entire domain of MD. MD appears to have a consistent definition across the literature, since all scales utilise Bandura's (1986) original conceptualisation. Page et al. (2015) reported that the final set of 32 items of the MDiSH scale had acceptable content validity. However, for the MD Instrument,

content validity was evaluated using a Delphi panel, including experts from relevant fields, and three of the eight mechanisms were removed since they were ranked as the least important. These were advantageous comparison, euphemistic language, and distortion of consequences (Lee et al., 2013). It is therefore possible that not all mechanisms are as important as the others for representing the concept of MD. Overall however, little evidence of content validity exists for any adaptation of the MDS, and no studies have investigated whether the construct would be fully represented should an adaptation for sexual offending populations be introduced.

Discussion

According to Kline (2015), for a psychometric tool to be considered a good measure, it must be at least an interval scale, be internally and externally reliable and valid, discriminating, and have appropriate norms. The MDS and its adaptations appear to measure what they claim to measure, are of interval scale, and appear psychometrically sound across a range of measures of validity and reliability. However, all adaptations lack appropriate evidence to support use with sexual offenders, and more widely, any forensic population. Therefore, despite this critique providing support for the validity and reliability of the MDS and its adaptations for a large range of populations, it does not provide satisfactory support for the MDS within sexual offending populations. Since the original scale was developed for use with a community sample of children, the scale needs to be adapted and updated for use with adult sexual offenders, and normative data needs to be gathered. The closest adaptation to date is the MDiSH (Page et al., 2015), which measures MD in relation to workplace sexual harassment; however,

no norms were produced using sexual offender populations. The Italian MDS has been facilitated with sexual offenders; however, this scale was developed with children and researchers who have used it, including Petruccelli et al. (2017a) and D'Urso et al. (2019) do not report whether any alterations were made, meaning it is unclear how this was applied to adult forensic populations.

The main limitation of the MDS and its adaptations is that they are self-report and since they have good face validity, they may elicit social desirability bias. Therefore, it is recommended that measures of impression management or social desirability bias are employed at the same time as the MDS. Furthermore, as Petruccelli et al. (2017a) point out, the MD mechanisms have a mostly descriptive value since, although they are supported by an adequate reliability index, they do not have the support of the internal validity of the factorial structure. They suggest that future studies should involve larger samples and utilise instruments that can investigate how cognitive distortions link to the mechanisms (Petruccelli et al., 2017a). Considering some of the issues brought to light throughout this critique, it is questionable whether other methods could be employed to measure MD. However, since MD is a relatively niche concept, all measures of MD appear to be forms of adaptations of the original MDS, and therefore entirely alternative methods or assessments for the measurement of MD do not exist. Therefore, rather than having the option to utilise other assessments, the evidence base requires collection of forensic norms and the development of an adapted version for sexual behaviour. Adapted versions may not be considerably different from Detert et al.'s (2008) adult version, given that sexual harassment and sexual offending are generally considered a form of aggressive behaviour, which the original scale and since adapted versions were developed for. It is considered that

the MDS could be used in the future within practice to establish whether MD has been a contributing factor towards sexual offending, and in turn may become a treatment target. The general use of the MDS is supported as it is straightforward to deliver and complete and provides an indication of an individual's current attitudes related to their morals. Therefore, the structure of the MDS could remain in future adaptations. The targeting of morality for offending is supported by research demonstrating a relationship between MD and offending behaviour, including sexual offending, as detailed earlier in the chapter.

Conclusion

The aim of this report was to critically examine the MDS and its adaptations with regards to their psychometric properties and applicability to sexual offending populations. Since very little research into the properties of the original MDS exists, and no studies have evaluated its applicability to sexual offenders, it was necessary to assess adaptations of the scale, including the Italian and the Sexual Harassment versions. Largely, the various adaptations demonstrated good reliability and validity; however, it is unclear as to whether these findings can be generalised across other versions, including to the original scale. The most consistently identified property was that of internal consistency, as measured by Cronbach's alpha, which was reported as high across several adaptations. However, to establish other measures of reliability and validity, further research is necessary. Future research is required to assess whether questions/ mechanisms need to be adapted for sexual offending populations, as well as to collect forensic normative data and to identify whether the MDS can be used in practice to support assessment and treatment of sexual offenders. It is

recommended that an adaptation of the MDS is developed which is specific to sexual behaviour. The closest existing scale to this is the MDiSH (*Appendix Y)*, and inspiration may therefore be taken from the adaptations made to statements within this version. Overall, since there is very little research into the applicability of the MDS to non-community samples, this critique has demonstrated to the author that the MDS is not currently appropriate for use with sexual offenders but is valid and reliable for use with community samples. The adult version (Detert et al., 2008) was therefore appropriate for use within the current thesis, since the primary and secondary research projects collected data from a community adult sample. However, the implications drawn from the projects regarding potential sexual offending may not have been appropriate and an adapted version questioning moral standards regarding sexual attitudes may have been more useful in this context.

Chapter Six: Discussion

The final chapter describes key findings from the thesis, explores limitations and ethical considerations of the methods employed, considers the implications of the findings, and provides future directions and an overall conclusion.

Discussion

Key Findings

The aim of this thesis was to investigate the relationship between MD and sexually violent attitudes or behaviour. This was investigated through various forms of research, discussed across several chapters. Firstly, a systematic review (Chapter Two) of the literature investigating the relationship between MD and sexual offending was conducted. The key findings of the systematic review were that all studies confirmed a relationship between MD and sexually violent attitudes or behaviour, with several studies finding that sexual offenders could be distinguished from non-sexual offenders and non-offenders in utilising more MD mechanisms. However, several factors were found to mediate this relationship, including childhood trauma and psychopathy. The review further found that amongst non-offending males, the use of MD was linked to sexually violent attitudes such as rape myth acceptance. Again, other factors were identified as mediating or influencing this relationship, including fraternity membership and attitudes such as hostile sexism. Overall, although the identified association was not as straightforward as initially hypothesised, the evidence supported Bandura's (1986) original proposal that MD could be used to justify sexually violent behaviour.

Through the primary and secondary research projects, it was investigated whether there were certain psychological traits or attitudes prevalent in those who were more or less accepting of advanced sexual technology, of sex dolls, robots, virtual reality, holograms, and computer and video games. Attitudes were explored with a focus on the use of this

technology to simulate sexual offending, i.e., rape and child sexual abuse. The theoretical background of this research focused on whether use of technology such as this could be cathartic of sexually violent attitudes or behaviour, or whether instead, from a social learning perspective, use would be catalytic and would increase the likelihood that an individual would go on to sexually offend. Attitudes towards this technology were measured both through multiple choice questionnaires (Chapter Three) and through analysis of language use (Chapter Four) and were compared with psychological constructs such as MD or dark personality traits, as well as demographic factors such as gender and age. Key findings included a relationship between sexual aggression myth acceptance and previous or future use of sex dolls or robots, as well as a consistent influence of gender and pornography use. No relationship was found between MD and sexually violent attitudes, or linguistic patterns, which is explored below. The primary project was presented at the British Psychological Society Division of Forensic Psychology Annual Conference in November 2021, and was well received, indicating that other researchers are interested in this topic and see the value in the research.

Finally, a critique of the MD Scale (MDS) (Bandura et al., 1996) and its adaptations when used with sexual offenders was completed (Chapter Five). It was found that no current adaptation of the scale is appropriate for use with sexual offenders, despite Caprara et al.'s (1996) Italian version being used in several studies identified during the systematic review. The closest adaptation to sexually violent behaviour was the MD in Sexual Harassment Scale (Page et al., 2015), which was also identified during the

review; however, since this was adapted for workplace harassment, it was again not considered appropriate for use with sexual offenders. It was concluded that no version of the MDS is wholly appropriate for sexual offending populations and recommended that an adaptation be developed, and forensic norms collected. The appropriateness of utilising Detert et al.'s (2008) adult adaptation of the MDS in both Chapter Three and Four of this thesis must therefore be questioned. Since a community sample was collected for these projects, the adult scale was likely appropriate for use, although should one have existed, it would have been more suitable to utilise a scale focused on MD in relation to sexual behaviour. It would therefore be beneficial for future research to adapt a scale both for use with sexual offenders and for use with community samples when researching sexual attitudes. This adaptation could take inspiration from the MDiSH scale, which included statements specific to sexual harassment behaviour within a workplace.

It is noteworthy that no relationship was identified between MD and sexually violent attitudes within both Chapters Three and Four. This evidence therefore opposes the conclusions drawn in the systematic review. This may be partly explained by a difference in research focus, since the questions explored within the research projects were based on sexually violent attitudes, rather than sexual offending, in contrast with several studies from the systematic review literature. Therefore, MD may only be related to offending behaviour, rather than sexually violent attitudes, or instead this could mean that MD takes place after offending, in order to justify the behaviour. It is unclear across all studies of MD whether the MD

occurred before or after the associated behaviour, and therefore whether cognitive distortions enable the offending or instead whether the offending facilitates the distortions. However, this would be difficult to empirically research, since researchers would need to gather MD data prior to a sexual offence, indicating that they may be aware of a risk of offending from a particular individual. This would raise ethical concerns regarding self-fulfilling prophecy since the individual would be informed of why they are completing the research. This would also raise concerns regarding the discharge or release of individuals that are considered to be of high risk. However, should measures of MD become more commonplace, for example with data being collected from a large number of those who come into contact with mental health services or the Criminal Justice System, studies comparing MD scores before and after offending may be possible.

However, it is important to note that several studies within the systematic review investigated community, non-offending samples and reported a relationship between MD and sexually violent attitudes. The results from the research projects therefore directly oppose these findings. This may be explained by several factors. Firstly, the relationships identified in previous research were often mediated by other factors, such as fraternity membership or hostile attitudes towards women. It is therefore possible that no direct link between MD and sexually violent attitudes amongst non-offending samples exists. Secondly, it is possible that since the advanced sexual technology included remains relatively unfamiliar to the general public, participants may not yet have formed opinions towards their use. It is therefore possible that the results are not reflective of an

individual's fully formed view of this technology. Finally, in several of these studies the MD in Sexual Harassment scale was utilised rather than the original MDS, which may explain why relationships were found between MD and sexually violent attitudes. This further reinforces the need for an adapted scale focused on more general sexual attitudes.

Limitations

There are several limitations of the methods employed throughout this thesis. Firstly, self-report measures were used throughout Chapters Three and Four, as well as within the studies investigated in Chapters Two and Five, given the nature of the MDS. Since the topics being investigated are incredibly sensitive, it is likely that participants attempted to avoid supporting beliefs that many would consider socially unacceptable. According to Tourangeau & Yan (2007), surveys exploring topics such as sexual activity are particularly prone to social desirability bias, with there being three important factors relevant to sensitivity in research, of 'intrusiveness', 'threat of disclosure', and 'socially undesirable'. They describe how questions including sexual preferences, as explored in the current thesis, are considered too intrusive (Tourangeau & Yan, 2007), whilst questions about sexual deviance and offending explored in this thesis are likely to have fallen under the category of threat of disclosure. Finally, sexual deviance is, by nature, a violation of social norms, whilst the use of advanced sexual technology such as robots is yet to be widely accepted within society. This suggests that all three factors could have influenced responses across both the research projects and across the research included in the systematic review and psychometric critique. It was also

uncovered in the critique that since the MDS has good face validity, it is likely that this will result in social desirability bias, as participants will be aware of what the scale is trying to measure, further contributing to this issue.

A further limitation of this thesis is that the research questions employed and the overarching concepts investigated are relatively niche and exploratory, and therefore little direct relevant background research was identified. It was therefore necessary to explore similar evidence bases, for example the use of illegal pornography within the research projects, and the use of scale adaptations and community samples within the psychometric critique. A lack of research also resulted in a small sample of studies for the systematic review, which could not be directly compared due to utilising diverse methods of data collection. This means that within the systematic review, it was difficult to draw conclusions using direct comparisons, within the research projects, hypotheses are likely to have been less accurate than desired, and within the psychometric critique, little data regarding the applicability of the scale to sexual offenders was available, again limiting conclusions. It is hoped that this thesis will inspire further research to directly investigate the influence of MD on sexually violent attitudes or behaviour, to develop an appropriate scale for this population, and finally to continue producing empirical evidence into the potential risks of advanced sexual technology. Should a larger evidence base be developed in the future, this will support further research in hypothesising and developing appropriate research aims.

Finally, it is important to note that the generalisability of this thesis is questionable. Although within the systematic review and the psychometric critique, studies from several countries were included, it is likely that the data collected for the primary and secondary research projects was primarily from a British sample. The study was advertised over social media and may therefore have been completed by participants from several countries; however, since this was not included in the demographic questions, this is unclear. Since countries, most notably Japan, have been reported as advancing subcultures such as Otakuism (characterised by a particular interest in fictional worlds and future technologies) (Appel et al., 2019), it is likely that extreme differences will be seen across cultures regarding attitudes towards the advanced sexual technology investigated in this thesis. This limits the generalisability of the research and findings can only be interpreted in relation to the culture that data was collected in. It is therefore important that this is incorporated into future research, to improve the applicability of findings to multiple subcultures, cultures, and countries.

Implications and Future Directions

There are several important implications of this thesis. Firstly, it is possible that MD could be an assessment and treatment target for sexual offenders. The evidence from the systematic review supports this proposal, since it was demonstrated that sexual offenders utilised higher levels of MD than other offenders and non-offenders. It is possible that a form of psychoeducation or a therapeutic intervention based on MD could be

developed for treatment, following an initial assessment of MD. Furthermore, since MD was identified as a potential contributing factor to sexually violent attitudes within non-offending populations, psychoeducation could be used as an early intervention, for example within university settings, to prevent future offending. However, the evidence from the research projects suggests that MD is not related to sexually violent attitudes in relation to advanced sexual technology. Several reasons for this have been explored; however, regardless of the cause, it is important that research investigating attitudes towards this technology is conducted in years to come, since understanding of this technology will continue to grow and evolve as its use becomes more common. It is important to note that these findings do not discount the relationship between MD and sexually violent attitudes or behaviour, but rather suggest that the relationship becomes more complicated when other factors, such as advanced sexual technology, are included in the investigation.

There are also several implications related to the development, use, and legal frameworks of advanced sexual technology. For several years, the risks associated with their use have been queried across philosophical literature and calls for empirical research have been made (Harper & Livesley, 2020). Within the primary project (Chapter Three), a relationship was identified between acceptance of sexual aggression myths and previous and future use of sex dolls or robots. Within the secondary project (Chapter Four), a relationship between future use of sex dolls or robots and reward-based language when discussing advanced technology simulative of rape or child sexual abuse was identified. These findings suggest that individuals

may have some concerning motivations for their use and indicate that their use may carry risks of sexually violent attitudes. However, these projects did not directly investigate a relationship between use of this technology and sexually violent behaviour, and therefore no firm conclusions can be drawn regarding the safety of their use. Only tentative suggestions can be made regarding motivation, and further evidence regarding behavioural patterns is necessary before any decisions can be made regarding the policy and legal frameworks surrounding the use of this technology. As this technology continues to evolve and becomes more widely used, any potentially damaging impacts of its use should become clearer both through research and through CJS data. Overall, it is hypothesised that the influence of advanced sexual technology on behaviour would vary from person to person depending on their existing attitudes and beliefs. It is therefore important that psychological constructs, such as those investigated in this thesis, continue to be examined in relation to advanced sexual technology.

Ethical Considerations

There are several important ethical considerations related to this thesis, particularly regarding the investigation of attitudes towards advanced sexual technology. Firstly, it was not possible to fully inform participants prior to their engagement with the research, due to social desirability bias considerations, with participants being told that the study was simply investigating attitudes towards sex robots. However, within the debrief form, the full aims and research questions were detailed. It is possible that this would have contributed to psychological harm since

participants may have felt concerned about the use of their data for this purpose. However, within the debrief form participants were provided with instructions on how to withdraw if they wished to at this stage. It is hoped that this minimised psychological harm by providing participants with autonomy over their data and a full understanding of the rationale behind the research.

However, it is of note that whilst collecting data for the primary and secondary project, a complaint was made to the ethics committee, in which the individual accused these projects of being a "witch hunt". This is an important consideration, since it is clear that not all users of this technology would hold concerning attitudes or be more likely to offend, but it is likely that those individuals will feel targeted by research such as this. It is noteworthy that in the past, behaviours that are now considered to be socially acceptable were considered deviant. For example, Michael et al. (1994) writes that it was not until the 1970s that societal attitudes began to accept oral sex among unmarried couples in the US, whilst anal sex was illegal in the UK until 1967 (Stonewall Cyrmru, n.d). It is possible that the use of advanced sexual technology such as robots may also become commonplace in future society. It is therefore important that future research explicitly states that no judgements are being made by the researcher and that the research is exploratory. It may also have been beneficial to outline some more of the background research and rationale in the debrief form, to provide a clearer explanation for why certain hypotheses were made.

It is further important to clarify that findings cannot be generalised to all users of technology such as this, as it is likely that the majority of users of sex dolls or robots would not hold sexually violent attitudes. This is particularly pertinent considering this research is incredibly sensitive and was conducted using a community sample. This may have impacted upon the reliability of the data collected, since participants may have provided extreme answers and may therefore not be representative. It is important that future research continue to explore other motivations for their use, such as, as Harper et al. (2021) proposed, social isolation. This motivation for use was supported during a meeting the author undertook with Matt McMullen, the CEO of RealDoll, in July 2020. Mr. McMullen emphatically denied the development of robots with features simulative of sexual offending and described his client base as a group of individuals who utilise technology such as this because of motivations including loneliness or the death of a partner. He further agreed that regulations should be brought in for manufacturers. An important ethical consideration is therefore that judgements should not be made by researchers prior to collection of data, and it should be widely understood that data demonstrating a relationship between use of this technology in relation to sexual crime cannot be generalised to all users. For reference, the conversation with Mr. McMullen took place after a participant from the research projects contacted the author offering to provide contact details, as they had previously interviewed Mr. McMullen for their own undergraduate dissertation project. Consent to take part in the interview was obtained over email and it was

explained at the start of the discussion that any questions could be refused. Consent to be quoted in this thesis was also obtained (*Appendix Z*).

Conclusion

In conclusion, although MD has been extensively researched and the MDS adapted for a wide range of contexts, limited evidence exists investigating the relationship between MD and sexually harmful attitudes or behaviour. Furthermore, to the authors knowledge, no study has investigated the potential relationship between MD and attitudes towards advanced sexual technology, prior to this thesis. The aim of the thesis was therefore to fill a clear gap in the literature with several important implications for early intervention regarding sexually violent attitudes, and for the potential assessment and treatment of sexual offenders. It is hoped that these interventions would in turn improve victim safety and reduce offending or reoffending. The overall findings suggest that although MD did not influence sexually violent attitudes in relation to advanced sexual technology, it is possible that the influence of MD identified during the systematic review is either isolated to sexual offending behaviour or is mediated by other factors. It is considered that the potential risks of this technology are yet unknown; however, this thesis has contributed towards an early evidence base regarding the psychological constructs and personality/ demographic factors related to acceptance or use of this technology. The research projects suggest that there may be some concerns surrounding the beliefs or motivations of those more willing to use the technology. However, evidence is lacking regarding the connotations of

these attitudes for sexually violent behaviour, and further cannot be generalised to all users of this technology. Overall, when the chapters are combined, it becomes clear that research into MD and sexually violent attitudes and behaviours is lacking, and little has been done to adapt assessment of MD for sexual behaviour, whilst the impact that advanced sexual technology could have on society and offending remains unclear. It is hoped that this thesis will inspire further research into the relationship between MD and sexually violent attitudes or behaviour and will in turn contribute towards the use of this theory in practice. A need for further research into advanced sexual technology is also highlighted, since this field is rapidly evolving and it is crucial that the evidence base moves with these advances, to prevent potential harm.

References

Appel, M., Marker, C. & Mara, M. (2019). Otakuism and the Appeal of Sex Robots. *Frontiers in Psychology, 10(569).* 1-11. Doi: 10.3389/fpsyg.2019.00569

Araujo, A. B., Mohr, B. A., & McKinlay, J. B. (2004). Changes in Sexual Function in Middle-Aged and Older men: Longitudinal Data from the Massachusetts Male Aging Study. *Journal of the American Geriatrics Society*, *52*(9). 1502-1509. Doi: 10.1111/j.0002-8614.2004.52413.x

Ashton, S., McDonald, K., & Kirkman, M. (2019). What Does 'Pornography' mean in the digital age? Revisiting a Definition for Social Science Researchers. *Porn Studies*, *6*(2). 144-168. Doi: 10.1080/23268743.2018.1544096

Babchishin, K. M., Hanson, R. K. & VanZuylen, H. (2015). Online Child Pornography Offenders are Different: A Meta-Analysis of the Characteristics of Online and Offline Sex Offenders Against Children. *Archives of Sexual Behaviour, 44*(1). 45-66. Doi: 10.1007/s10508-014-0270-x

Babchishin, K. M., Merdian, H. L., Bartels, R. M., & Perkins, D. (2018). Child Sexual Exploitation Materials Offenders: A Review. *European Psychologist*, *23*(2). 130-143. Doi: 10.1027/1016-9040/a000326

Bandura, A. (1973). *Aggression: A Social Learning Theory Analysis.* Prentice Hall.

Bandura, A. (1986). *Social Foundations of Thought and Action: A Social Cognitive Theory.* Prentice Hall.

Bandura, A. (1990). Mechanisms of Moral Disengagement in Terrorism. *Origins of Terrorism: Psychologies, Ideologies, States of Mind*, *28*(7). 161-191. Retrieved from: https://www.uky.edu/~eushe2/Bandura/Bandura1990MoralDis.pdf

Bandura, A. (1991). *Social Cognitive Theory of Moral Thought and Action*. In W. M. Kurtines & J. L. Gewirtz (Eds.), Handbook of Moral Behavior and Development, Vol 1. Erlbaum.

Bandura, A. (1999). Moral Disengagement in the Perpetration of Inhumanities. *Personality and Social Psychology Review*, *3*(3). 193-209. Doi: 10.1207/s15327957pspr0303_3

Bandura, A. (2002). Selective Moral Disengagement in the Exercise of Moral Agency. *Journal of Moral Education*, *31*(2). 101-119. Doi: 10.1080/0305724022014322

Bandura, A., Barbaranelli, C., Caprara, G. V., Pastorelli, C. (1996). Mechanisms of Moral Disengagement in the Exercise of Moral Agency. *Journal of Personality and Social Psychology, 71*(2). 364-374. Doi: 10.1037/0022-3514.71.2.364

Bastién, A. J. (2015, July 19). *Humans Recap:* Instructions Not Included. *Vulture.*

Baughman, H. M., Jonason, P. K., Veselka, L. & Vernon, P. A. (2014). Four Shades of Sexual Fantasies Linked to the Dark Triad. *Personality and Individual Differences, 67.* 47-51. Doi: 10.1016/j.paid.2014.01.034

Bebeau, M. J., & Thoma, S. J. (1998, April 13-17). *Designing and Testing a Measure of Intermediate Level Ethical Concepts* [Paper Presentation]. Annual Meeting of the American Educational Research Association, San Diego, CA. Retrieved from: https://eric.ed.gov/?id=ED426662

Beck, V. S., Boys, S., Rose, C., & Beck, E. (2012). Violence Against Women in Video Games: A Prequel or Sequel to Rape Myth Acceptance? *Journal of Interpersonal Violence, 27*(15). 3016-3031. Doi: 10.1177/0886260512441078

Belamire, J. (2016, October 20). My First Virtual Reality Groping. [Blog Post]. *Medium.* Retrieved from: https://medium.com/athena-talks/my-first-virtual-reality-sexual-assault-2330410b62ee .

Bendel, O. (2019). Hologram Girl. In *AI Love You* (pp. 149-165). Springer, Cham.

Bergen, N., & Labonté, R. (2020). "Everything is Perfect, and We Have No Problems": Detecting and Limiting Social Desirability Bias in Qualitative Research. *Qualitative Health Research*, *30*(5). 783-792. Doi: 10.1177/1049732319889354

Blanchflower, D. G., & Oswald, A. J. (2004). Money, Sex and Happiness: An Empirical Study. *Scandinavian Journal of Economics*, *106*(3). 393-415. Doi: 10.1111/j.0347-0520.2004.00369.x

Blanker, M. H., Ruud Bosch, J. L. H., Groeneveld, F. P M. J.., Bohnen, A. M., Prins, A., Thomas, S., & Hop, W. C. J. (2001). Erectile and Ejaculatory Dysfunction in a Community-Based Sample of Men 50 to 78 Years Old:

Prevalence, Concern, and Relation to Sexual Activity. *Urology*, *57*(4). 763-768. Doi: 10.1016/S0090-4295(00)01091-8.

Boardley, I. D., & Kavussanu, M. (2007). Development And Validation of The Moral Disengagement in Sport Scale. *Journal Of Sport and Exercise Psychology*, *29*(5). 608-628. Doi: 10.1123/jsep.29.5.608

Bohner, G., Eyssel, F., Pina, A., Siebler, F., & Viki, G. T. (2013). Sexual Aggression Myth Acceptance: Cognitive, Affective and Behavioural Effects of Beliefs that Blame the Victim and Exonerate the Perpetrator. In M. Horvath & J. Brown (Eds.), *Rape* (pp. 40-68). Willan.

Bornstein, R. F., Rossner, S. C., Hill, E. L., & Stepanian, M. L. (1994). Face Validity and Fakability of Objective and Projective Measures Of Dependency. *Journal of Personality Assessment*, *63*(2). 363-386. Doi: 10.1207/s15327752jpa6302_14

Bouffard, L. A. (2010). Exploring the Utility of Entitlement in Understanding Sexual Aggression. *Journal of Criminal Justice*, *38*(5). 870-879. Doi: 10.1016/j.jcrimjus.2010.06.002

Bourke, M. L., Hernandez, A. E. (2009). The 'Butner Study' Redux: A Report of the Incidence of Hands-On Child Victimization by Child Pornography Offenders. *Journal of Family Violence, 24*(3). 183-191. Doi: 10.1007/s10896-008-9219-y

Bresin, K., & Gordon, K. H. (2013). Aggression as Affect Regulation: Extending Catharsis Theory to Evaluate Aggression and Experiential Anger

in the Laboratory and Daily Life. *Journal of Social and Clinical Psychology*, *32*(4). 400-423. Doi: 10.1521/jscp.2013.32.4.400

Briere, J., & Malamuth, N. M. (1983). Self-Reported Likelihood of Sexually Aggressive Behavior: Attitudinal Versus Sexual Explanations. *Journal of Research in Personality*, *17*(3). 315-323. Doi: 10.1016/0092-6566(83)90023-5

Brooker, C., Jones, A. & Reisz, B. (Executive Producers) (2011-2019). *Black Mirror* [TV Series]. Channel 4; Netflix. Brophy, M. (2010). Sex, Lies, and Virtual Reality. In D. Monroe (Eds.), *Porn—Philosophy for Everyone* (pp. 204–218). Wiley-Blackwell.

Brown, R., & Shelling, J. (2019). Exploring the Implications of Child Sex Dolls. *Trends and Issues in Crime and Criminal Justice,* 570. 1-13. Doi: 10.3316/agispt.20190501009719

Burt, M. R. (1980). Cultural Myths and Supports for Rape. *Journal of Personality and Social Psychology*, *38*. 217–230. Doi: 10.1037/0022-3514.38.2.217

Bushman, B. J. (2002). Does Venting Anger Feed or Extinguish the Flame? Catharsis, Rumination, Distraction, Anger, and Aggressive Responding. *Personality and Social Psychology Bulletin, 28*(6). 724-731. Doi: 10.1177/0146167202289002

Bushman, B. J., and Baumeister, R. F. (1998). Threatened Egotism, Narcissism, Self Esteem, and Direct and Displaced Aggression: Does Self-

Love or Self-Hate Lead to Violence? *Journal of Personality and Social Psychology, 75*(1). 219–229. Doi: 10.1037/0022-3514.75. 1.219

Bustamante, A., & Chaux, E. (2014). Reducing Moral Disengagement Mechanisms: A Comparison of Two Interventions. *Journal of Latino/Latin American Studies*, *6*(1). 52-54. Doi: 10.18085/llas.6.1.123583644qq115t3

Çapan, B. E., & Bakioglu, F. (2016). Adaptation Of Collective Moral Disengagement Scale into Turkish Culture for Adolescents. *Universal Journal of Educational Research*, *4*(6). 1452-1457. Doi: 10.13189/ujer.2016.040624

Caprara, G. V., Bandura, A., Barbaranelli, C., & Vicino, S. (1996). La Misura del Disimpegno Morale [The Measure of Moral Disengagement]. *Rassegna di Psicologia, 13*. 93–105.

Caprara, G. V., Fida, R., Vecchione, M., Tramontano, C., & Barbaranelli, C. (2009). Assessing Civic Moral Disengagement: Dimensionality and Construct Validity. *Personality And Individual Differences*, *47*(5). 504-509. Doi: 10.1016/j.paid.2009.04.027

Cardwell, S. M., Piquero, A. R., Jennings, W. G., Copes, H., Schubert, C. A., & Mulvey, E. P. (2015). Variability In Moral Disengagement and Its Relation to Offending in A Sample of Serious Youthful Offenders. *Criminal Justice and Behavior*, *42*(8). 819-839. Doi: 10.1177/0093854814567472

Caretti, V., Manzi, G.S., Schimmenti, A., & Seragusa, L. (2011). *PCL-R. Hare Psychopathy Checklist Revised.* OS Giunti.

Carroll, J. A. (2009). *Impact of Moral Judgement and Moral Disengagement on Rape-Supportive Attitudes in College Males* (Doctoral Thesis, The

University of Alabama, Alabama, United States). Retrieved from: https://ir.ua.edu/bitstream/handle/123456789/623/file_1.pdf?sequence=1&isAllowed=y

Centre for Reviews and Dissemination, University of York (2009). *Systematic Reviews: CRD's Guidance for Undertaking Reviews in Health Care.* York, UK: York Publishing Services Ltd. Retrieved from: https://www.york.ac.uk/media/crd/Systematic_Reviews.pdf

Chatterjee, B. B. (2017, August 3). *Child Sex Dolls and Robots: Exploring the Legal Challenges.* The Conversation. Retrieved from: https://theconversation.com/child-sex-dolls-and-robots-exploring-the-legal-challenges-81912

Chatterjee, B. B. (2019). Child Sex Dolls and Robots, Challenging the Boundaries of the Child Protection Framework. *International Review of Law, Computers & Technology, 34*(1). 22-43. Doi: 10.1080/13600869.2019.1600870

Chester, D. S., DeWall, C. N., & Enjaian, B. (2019). Sadism and Aggressive Behavior: Inflicting Pain to Feel Pleasure. *Personality and Social Psychology Bulletin*, *45*(8). 1252-1268. Doi: 10.1177/0146167218816327

Christanti, D., & Putra, M. G. B. A. (2019). A Case Study of Moral Disengagement on the Juvenile Sex Offenders. *Journal of Educational, Health and Community Psychology*, *8*(4). 419-452. Retrieved from: https://core.ac.uk/download/pdf/295346425.pdf

Christian, M. (2020, March 4th). Feeling the Future: Touchable Holograms are on the Way. https://futureofsex.net/virtual-sex-entertainment/feeling-the-future-touchable-holograms-on-the-way/

Ciclitira, K. (2004). Pornography, Women and Feminism: Between Pleasure and Politics. *Sexualities*, *7*(3). 281-301. Doi: 10.1177/1363460704040143

Citor3 (2019). Amoreon [Video Game]. Citor3. https://news.citor3.com/games/amoreon

Cohen-Almagor, R. (2013). Online Child Sex Offenders: Challenges and Counter-Measures. *The Howard Journal of Criminal Justice 52*(2). 190–215. Doi: 10.1111/hojo.12006

Collings, S. J. (1997). Development, Reliability, and Validity of the Child Sexual Abuse Myth Scale. *Journal of Interpersonal Violence, 12*(5). 665-674. Doi: 10.1177/088626097012005004

Corrion, K., Scoffier, S., Gernigon, C., Cury, F., & d'Arripe-Longueville, F. (2010). Development And Factorial Validity of a Moral Disengagement in Sport Short Scale. *L'encephale*, *36*(6). 495-503. Doi: 10.1016/j.encep.2010.03.003

Cox-George, C. & Bewley, S. (2018). I, Sex Robot: The Health Implications of the Sex Robot Industry. *BMJ Sexual & Reproductive Health, 44*(3). 161-164. Doi*:* 10.1136/bmjsrh-2017-200012

Cushman, F., Gray, K., Gaffey, A., & Mendes, W. B. (2012). Simulating Murder: The Aversion to Harmful Action. *Emotion*, *12*(1). 2-7. Doi: 10.1037/a0025071

Danaher, J. (2017a). Should We Be Thinking about Robot Sex? In Danaher, J. & McArthur, N. (Eds.), *Robot Sex: Social and Ethical Implications* (pp. 133-152). MIT Press.

Danaher, J. (2017b). The Symbolic-Consequences Argument in the Sex Robot Debate. In Danaher, J. & McArthur, N. (Eds.), *Robot Sex: Social and Ethical Implications* (pp. 103-132). MIT Press.

Danaher, J. (2017c). Robotic Rape and Robotic Child Sexual Abuse: Should They be Criminalised? *Criminal Law and Philosophy*, *11*(1). 71-95. Doi: 10.1007/s11572-014-9362-x

Danaher, J., Earp, B. D., & Sandberg, A. (2017). Should We Campaign Against Sex Robots? In J. Danaher & N. McArthur (Eds.), *Robot Sex: Social and Ethical Implications (pp. 47-72).* MIT Press.

Danaher, J., & McArthur, N. (2017). The Case for Sexbots. In J. Danaher & N. McArthur (Eds.), *Robot Sex: Social and Ethical Implications (pp. 31-46).* MIT Press.

Danaher, J. (2019). Regulating Child Sex Robots: Restriction or Experimentation? *Medical Law Review*, *27*(4). 553-575. Retrieved from: https://philpapers.org/archive/DANRCS.pdf

Das, R. (2017, July 17). Goodbye Loneliness, Hello Sexbots! How Can Robots Transform Human Sex? *Forbes.* Retrieved from: https://www.forbes.com/sites/reenitadas/2017/07/17/goodbye-loneliness-hello-sexbots-how-can-robots-transform-human-sex/?sh=75033e8a76e3

Davies, M., Gilston, J., & Rogers, P. (2012). Examining the Relationship Between Male Sexual Aggression Myth Acceptance, Female Sexual Aggression Myth Acceptance, Victim Blame, Homophobia, Gender Roles, and Ambivalent Sexism. *Journal of Interpersonal Violence*, *27*(14). 2807-2823. Doi: 10.1177/0886260512438281

Dekker, A., Wenzlaff, F., Biedermann, S. V., Briken, P., & Fuss, J. (2021). VR Porn as "Empathy Machine"? Perception of Self and Others in virtual Reality Pornography. *The Journal of Sex Research*, *58*(3). 273-278. Doi: 10.1080/00224499.2020.1856316

De Leo, G., Petruccelli, I., & Pedata, L. T. (2004). I Minori Devianti E l'Influenza Del Gruppo Nelle Azioni Violente. *Terapia Familiare, 75.* 21–44. Retrieved from: https://www.francoangeli.it/riviste/Scheda_rivista.aspx?IDArticolo=22484

DeLisi, M., Peters, D. J., Dansby, T., Vaughn, M. G., Shook, J. J., Hochstetler, A. (2014). Dynamid'urscs of Psychopathy and Moral Disengagement in the Etiology of Crime. *Youth Violence and Juvenile Justice, 12*(4). 295-314. Doi: 10.1177/1541204013506919

Detert, J. R., Trevino, L. K., & Sweitzer, V. L. (2008). Moral Disengagement in Ethical Decision Making: A Study of Antecedents and Outcomes. *Journal of Applied Psychology, 93*(2). 374-391. Doi: 10.1037/0021-9010.93.2.374

Dill, K. E., Brown, B. P., & Collins, M. A. (2008). Effects of Exposure to Sex-Stereotyped Video Game Characters on Tolerance of Sexual

Harassment. *Journal of Experimental Social Psychology*, *44*(5). 1402-1408. Doi: 10.1016/j.jesp.2008.06.002

Döring, N., & Pöschl, S. (2018). Sex Toys, Sex Dolls, Sex Robots: Our Under-Researched Bed-Fellows. *Sexologies*, *27*(3). e51-e55. Doi: 10.1016/j.sexol.2018.05.009

D'Urso, G., Petruccelli, I., Grilli, S. & Pace, U. (2018). Risk Factors Related to Cognitive Distortions Toward Women and Moral Disengagement: A Study on Sex Offenders. *Sexuality & Culture, 23*(2). 544-557. Doi: 10.1007/s12119-018-9572-9

D'Urso, G., Petruccelli, I., Costantino, V., Zappulla, C., Pace, U. (2019). The Role of Moral Disengagement and Cognitive Distortions Toward Children Among Sex Offenders. *Psychiatry, Psychology, and Law, 26*(3). 414-422. Doi: 10.1080/13218719.2018.1506718

Effective Public Health Practice Project (1988-). *Quality Assessment Tool for Quantitative Studies*. Retrieved from: https://www.ephpp.ca/quality-assessment-tool-for-quantitative-studies/

Egan, V., Hughes, N. & Palmer, E. J. (2015). Moral Disengagement, the Dark Triad, and Unethical Consumer Attitudes. *Personality and Individual Differences, 76.* 123-128. Doi: 10.1016/j.paid.2014.11.054f

Eichenberg, C., Khamis, M. & Hübner, L. (2019). The Attitudes of Therapists and Physicians on the Use of Sex Robots in Sexual Therapy: Online Survey and Interview Study. *Journal of Medical Internet Research, 21*(8). e13853. Doi: 10.2196/13853

Ekstein, L. & Sparr, J. L. (2005). Introducing A New Scale for The Measurement of Moral Disengagement in Peace and Conflict. *Research Conflict & Communication Online*, *4*(2). Retrieved from: https://www.researchgate.net/publication/295080270_Introducing_a_new_scale_for_the_measurement_of_moral_disengagement_in_peace_and_conflict_research

Elsey, J. W., van Andel, K., Kater, R. B., Reints, I. M., & Spiering, M. (2019). The Impact Of Virtual Reality Versus 2D Pornography On Sexual Arousal And Presence. *Computers in Human Behavior*, *97*. 35-43. Doi: 10.1016/j.chb.2019.02.031

Emmelkamp, P. M., & Meyerbröker, K. (2021). Virtual Reality Therapy in Mental Health. *Annual Review of Clinical Psychology*, *17*. 495-519. Doi: 10.1146/annurev-clinpsy-081219-115923

Esposito, L. (2018). Sexual Ageplay in Virtual Reality: Practicing Free Speech or Producing Child Pornography. *Cardozo L. Rev.*, *40*. 1913. Retrieved from: https://heinonline.org/HOL/LandingPage?handle=hein.journals/cdozo40&div=51&id=&page=

Evans, L. (2021). 'The Embodied Empathy Revolution…': Pornography and The Contemporary State of Consumer Virtual Reality. *Porn Studies*, *8*(1). 121-127. Doi: 10.1080/23268743.2020.1777894

Fabrizi, A., Petruccelli, I., Turella, B., Di Palma, T., & Simonelli, C. (2008). Moral Disengagement in Sex Offenders: Contribution of Research. *Sexologies*, *17*. S98. Doi: 10.1016/S1158-1360(08)72784-1

Fairbairn, E. (2017, March 9). No Sex Please… We're Japanese. Young Japanese Mena and Women Shunning Sex for Hologram Partners, Cartoon Dates and Cuddle Cafes. *The Sun.* Retrieved from: https://www.thesun.co.uk/living/3054290/young-japanese-men-and-women-shunning-sex-for-hologram-partners-cartoons-and-cuddle-cafes/

Farnese, M. L., Tramontano, C., Fida, R., & Paciello, M. (2011). Cheating Behaviors in Academic Context: Does Academic Moral Disengagement Matter? *Procedia-Social and Behavioral Sciences*, *29*. 356-365. Doi: 10.1016/j.sbspro.2011.11.250

Faul, F., Erdfelder, E., Buchner, A., & Lang, A-G. (2009). Statistical Power Analyses using G*Power 3.1: Tests for Correlation and Regression Analyses. *Behaviour Research Methods*, *41*(4). 1149-1160. Doi: 10.3758/BRM.41.4.1149

Felitti, V. J., Anda, R. F., Nordenberg, D., Williamson, D. F., Spitz, A. M., Edwards, V., Koss, M.P., Marks, J.S. (1998). Original Articles: Relationship of Childhood Abuse and Household Dysfunction to Many of the Leading Causes of Death in Adults. The Adverse Childhood Experiences (ACE) Study. *American Journal of Preventive Medicine*, *14*. 245–258. Doi: 10.1016/j.amepre.2019.04.001

Fink, A. (2010). Survey Research Methods. In P. Peters, E. Baker & B. McGaw (Eds.) *International Encyclopedia of Education (Third Edition)*. Retrieved from:

https://Www-Sciencedirect-Com.Nottingham.Idm.Oclc.Org/Topics/Social-Sciences/Construct-Validity#:~:Text=Construct%20validity%20is%20the%20extent,Indicative%20of%20the%20theoretical%20construct.

Forbes, B. (1975). *The Stepford Wives* [Film]. EMI Films.

Fox, J., & Bailenson, J. N. (2009). Virtual Virgins and Vamps: The Effects of Exposure to Female Characters' Sexualized Appearance and Gaze in An Immersive Virtual Environment. *Sex Roles*, *61*(3). 147-157. Doi: 10.1007/s11199-009-9599-3

Fox, J., Ralston, R. A., Cooper, C. K., & Jones, K. A. (2015). Sexualized Avatars Lead to Women's Self-Objectification And Acceptance Of Rape Myths. *Psychology of Women Quarterly*, *39*(3). 349-362. Doi: 10.1177/0361684314553578

Fox, J. & Potocki, B. (2016). Lifetime Video Game Consumption, Interpersonal Aggression, Hostile Sexism, And Rape Myth Acceptance: A Cultivation Perspective. *Journal of Interpersonal Violence, 31*(10). 1912-1931. Doi: 10.1177/0886260515570747

Freel, M. (2003). Child Sexual Abuse and The Male Monopoly: An Empirical Exploration of Gender And A Sexual Interest In Children. *British Journal of Social Work*, *33*(4). 481-498. Doi: 10.1093/bjsw/33.4.481

Galbraith, P. W. (2017). RapeLay and the Return of the Sex Wars in Japan. *Porn Studies*, *4*(1). 105-126. Doi: 10.1080/23268743.2016.1252159

García-Vázquez, F. I., Valdés-Cuervo, Á. A., Carlos-Martínez, E. A., & Alcántar-Nieblas, C. (2019). Psychometric Properties of a Scale Measuring Moral Disengagement in Mexican Children. *Acta Colombiana De Psicología*, *22*(1). 107-117. Doi: 10.14718/acp.2019.22.1.6

Gerger, H., Kley, H., Bohner, G., & Siebler, F. (2013). *Acceptance of Modern Myths About Sexual Aggression*. Bielefeld University. Doi: 10.4119/unibi/2641521

Gini, G., Pozzoli, T., & Bussey, K. (2014). Collective Moral Disengagement: Initial Validation of a Scale for Adolescents. *European Journal of Developmental Psychology*, *11*(3). 386-395. Doi: 10.1080/17405629.2013.851024

Glick, P., & Fiske, S.T. (1996). The Ambivalent Sexism Inventory: Differentiating Hostile and Benevolent Sexism. *Journal of Personality and Social Psychology, 70.* 491-512. Doi: 10.1037/0022-3514.70.3.491.

Gordijn, E.H., Yzerbyt, V., Wigboldus, D., & Dumont, M. (2006). Emotional Reactions to Harmful Intergroup Behavior. *European Journal of Social Psychology, 36*. 15-30. Doi: 10.1002/ejsp.296

Greitemeyer, T., & Sagioglou, C. (2017). The Longitudinal Relationship Between Everyday Sadism and The Amount Of Violent Video Game Play. *Personality and Individual Differences*, *104.* 238-242. Doi: 10.1016/j.paid.2016.08.021

Guggisberg, M. (2019). "Rape day'-A virtual Reality Video Game Causes Outrage. *Psychology Psychotherapy Research Studies*, *2*(3). 1-5. Doi: 10.31031/PPRS.2019.02.000537

Gulotta G., & Curci A. (2010). *Mente, Società e Diritto.* Giuffrè

Gutiu, S. M. (2016*). The Roboticization of Consent*. In: R. Calo, A. Froomkin & I. Kerr (Eds.) *Robot law*. Edward Elgar Publishing.

Hald, G. M., L. Kuyper, P. C. G. Adam., & De Wit., J. B. F. (2013). Does Viewing Explain Doing? Assessing the Association between Sexually Explicit Materials Use and Sexual Behaviours in a Large Sample of Dutch Adolescents and Young Adults. *Journal of Sexual Medicine, 10*(12). 2986-2995. Doi: 10.1111/jsm.12157.

Hald, G. M., & Malamuth, N. M. (2008). Self-Perceived Effects of Pornography Consumption. *Archives of Sexual Behavior*, *37*(4). 614-625. Doi: 10.1007/s10508-007-9212-1

Hanson, R. K., Gizzarelli, R., & Scott, H. (1994). The Attitudes of Incest Offenders Sexual Entitlement and Acceptance of Sex with Children. *Criminal Justice and Behavior, 21*(2). 187–202. Doi: 10.1177/0093854894021002001

Hanson, R. K. (2010). *Meta-Analysis of Treatment Outcome in Sexual Offenders* [Paper Presentation]. The 11th Conference of The International Association for The Treatment of Sexual Offenders, Oslo, Norway. Retrieved from: http://www.iatso.org/images/stories/pdfs/hanson_r.k._iatso_2010_meta-analysis_of_treatment_outcome_in_sexual_offenders.pdf

Hanson, R. K. (2020). Altruistic (Costly) Punishment as Motivation for Vindictive Rape. *Sexual Offending: Theory, Research, and Prevention, 15*(1). E3067. Doi: 10.5964/sotrap.3067

Harper, C. A., & Lievesley, R. (2020). Sex Doll Ownership: An Agenda for Research. *Current Psychiatry Reports*, *22*(10). 1-8. Doi: 10.1007/s11920-020-01177-w

Harper, C. A., Lievesley, R., & Wanless, K. (2021). *Exploring the Psychological Characteristics of Individuals Who Own Sex Dolls.* PsyArXiv.

Haynes, W. (2013). *Benjamini–Hochberg Method.* In: Dubitzky W., Wolkenhauer O., Cho KH., Yokota H. (Eds.) Encyclopedia of Systems Biology. Springer. https://doi.org/10.1007/978-1-4419-9863-7_1215

Haywood, E. (2014, September 2). There's Something About "Blade Runner". *Rogerebert.com.* Retrieved from: https://www.rogerebert.com/features/theres-something-about-blade-runner

Hernandez, J. (2018). Sex Robots: Negative Impact Towards Society. *Augustana Center for the Study of Ethics Essay Contest.* Retrieved from: https://digitalcommons.augustana.edu/ethicscontest/15

Herzfeld, N. L. (2017). Religious Perspective on Sex with Robots. In J. Danaher & N. McArthur (Eds.), Robot Sex: Social and Ethical Implications (pp. 91-102). MIT Press.

Hirayama, R., Plasencia, D. M., Masuda, N., & Subramanian, S. (2019). A Volumetric Display for Visual, Tactile And Audio Presentation Using Acoustic

Trapping. *Nature*, *575*(7782). 320-323. Retrieved from: https://core.ac.uk/download/pdf/237394098.pdf

Hunter, J. A., Figueredo, A. J. & Malamuth, N. M. (2010). Developmental Pathways into Social and Sexual Deviance. *Journal of Family Violence, 25*(2). 141-148. Doi: 10.1007/s10896-009-9277-9

Illusion (2017). VR Konojo [Video Game]. Illusion.

Jisc (2020). Online Surveys [Computer Software]. Retrieved from: https://www.onlinesurveys.ac.uk/

Johnson, L. G., & Beech, A. (2017). Rape Myth Acceptance in Convicted Rapists: A Systematic Review of the Literature. *Aggression and Violent Behavior*, *34*. 20-34. Doi: 10.1016/j.avb.2017.03.004

Jones, D. N. & Paulhus, D. L. (2014). Introducing the Short Dark Triad (SD3): A Brief Measure of Dark Personality Traits. *Assessment, 21*(1). 28-41. Doi: 10.1177/1073191113514105

Jones, A. (2019). *An Examination of the Relationship between Moral Disengagement, Adverse Childhood Experiences, and Sexual Misconduct Victimization and Perpetration among Men and Women on the College Campus in the United States* (Masters Thesis, Middle Tennessee State University, United States. Retrieved from: https://jewlscholar.mtsu.edu/bitstream/handle/mtsu/6084/Jones_mtsu_0170N_11202.pdf?sequence=1

Jonze, S. (Director) (2013). *Her* [Film]. Warner Bros Pictures.

Kavussanu, M., Hatzigeorgiadis, A., Elbe, A. M., & Ring, C. (2016). The Moral Disengagement in Doping Scale. *Psychology Of Sport and Exercise*, *24*. 188-198. Doi: 10.1016/j.psychsport.2016.02.003

Khan, K., Kunz, R., Kleijnen, J. & Antes, G. (2003). *Systematic Reviews to Support Evidence-Based Medicine: How to Review and Apply Findings of Healthcare Research.* Royal Society of Medicine Press.

Kiriakidis, S. P. (2008). Moral Disengagement: Relation to Delinquency and Independence from Indices of Social Dysfunction. *International Journal of Offender Therapy and Comparative Criminology*, *52*(5). 571-583. Doi: 10.1177/0306624X07309063

Kirsch, L. G., and Becker, J. V. (2007). Emotional Deficits in Psychopathy and Sexual Sadism: Implications for Violent and Sadistic Behavior. *Clinical Psychology Review*, 27(8). 904–922. Doi: 10.1016/j.cpr.2007.01.011

Kirshenbaum, J. M., Miller, M. K., Kaplan, T., Cramer, R. J., Trescher, S. A., & Neal, T. M. (2021). Development And Validation of a General Legal Moral Disengagement Scale. *Psychology, Crime & Law*, *27*(8). 751-778. Doi: 10.1080/1068316X.2020.1850722

Kish-Gephart, J. J., Harrison, D. A., & Treviño, L. K. (2010). Bad Apples, Bad Cases, and Bad Barrels: Meta-Analytic Evidence about Sources of Unethical Decisions at Work. *Journal of Applied Psychology, 95*(1). 1-31. Doi: 10.1037/a0017103.

Kline, P. (2015). *A Handbook of Test Construction (Psychology Revivals): Introduction to Psychometric Design*. Routledge.

Kollerová, L., Soukup, P., & Gini, G. (2018). Classroom Collective Moral Disengagement Scale: Validation in Czech Adolescents. *European Journal of Developmental Psychology*, *15*(2). 184-191. Doi: 10.1080/17405629.2017.1292907

Krueger, A. (2016, Oct 28). Virtual Reality Gets Naughty. *The New York Times.* Retrieved from: https://www.nytimes.com/2017/10/28/style/virtual-reality-porn.html

Langcaster-James, M. & Bentley, G. R. (2018). Beyond the Sex Doll: Post-Human Companionship and the Rise of the 'Allodoll'. *Robotics, 7*(4). 62. Doi: 10.3390/robotics7040062

Leach, C.W., Van Zomeren, M., Zebel, S., Vliek, M.L.W., Pennekamp, S.F., Doosje, B., Ouwerkerk, J.W., & Spears, R. (2008). Group-Level Self-Definition and Self-Investment: A Hierarchical (Multicomponent) Model of In-Group Identification. *Journal of Personality and Social Psychology, 95*. 144-165. Doi: 10.1037/0022-3514.95.1.144.

Le Cessie, S., Goeman, J. J., & Dekkers, O. M. (2020a). Who is Afraid of Non-Normal Data? Choosing Between Parametric and Non-Parametric Tests. *European Journal of Endocrinology*, *182*(2). E1-E3. Doi: 10.1530/EJE-19-0922

Le Cessie, S., Goeman, J. J., & Dekkers, O. M. (2020b). Authors' Reply: Who Is Afraid of Non-Normal Data? Choosing Between T-Tests and Non-Parametric Tests. *European Journal of Endocrinology*, *183*(2). L5-L6. Doi: 10.1530/EJE-20-0596

Lee, C., Segal, R., Kimberlin, C., Smith, W. T., & Weiler, R. M. (2014). Reliability And Validity for The Measurement of Moral Disengagement in Pharmacists. *Research In Social and Administrative Pharmacy*, *10*(2). 297-312. Doi: 10.1016/j.sapharm.2013.06.006

Levy, N. (2002). Virtual Child Pornography: The Eroticization of Inequality. *Ethics and Information Technology*, *4*(4). 319-323. Doi: 10.1023/A:1021372601566

Linz, D., Donnerstein, E., Adams, S. M. (1989). Physiological Desensitization and Judgements about Female Victims of Violence. *Human Communication Research 15*(4). 509-522. Doi: 10.1111/j.1468-2958.1989.tb00197.x

Lonsway, K.A., Cortina, L.M., & Magley, V.J. (2008). Sexual Harassment Mythology: Definition, Conceptualization, and Measurement. *Sex Roles, 58*. 599-615. Doi: 10.1007/s11199-007-9367-1

Maras, M-H. & Shapiro, L. R. (2017). Child Sex Dolls and Robots: More Than Just an Uncanny Valley. *Journal of Internet Law, 21*(5). 3-17. Retrieved from: https://www.researchgate.net/profile/Lauren_Shapiro5/publication/321137227_Child_Sex_Dolls_and_Robots_More_Than_Just_an_Uncanny_Valley/links/5a3062850f7e9b0d50f8e28e/Child-Sex-Dolls-and-Robots-More-Than-Just-an-Uncanny-Valley.pdf

Market Research Engine (2018). *Virtual-Reality Pornography Market by Regional Analysis – Global Forecast by 2018 – 2025.* (Accessed 2019, March

24th). Retrieved from: https://www.marketresearchengine.com/ virtual-reality-pornography-market.

Martyniuk, U., Briken, P., Sehner, S., Richter-Appelt, H., & Dekker, A. (2016). Pornography Use and Sexual Behavior among Polish and German University Students. *Journal of Sex & Marital Therapy*, *42*(6). 494-514. Doi: 10.1080/0092623X.2015.1072119

McAlister, A. L., Ama, E., Barroso, C., Peters, R. J. & Kelder, S. (2000). Promoting Tolerance and Moral Engagement Through Peer Modeling. *Cultural Diversity and Ethnic Minority Psychology, 6*(4). 363-373. Doi: 10.1037//1099-9809.6.4.363

McAlister, A. L. (2001). Moral Disengagement: Measurement and Modification. *Journal Of Peace Research*, *38*(1). 87-99. Doi: 10.1177/0022343301038001005

McCarthy, J. A. (2010). Internet Sexual Activity: A Comparison Between Contact and Non-Contact Child Pornography Offenders. *Journal of Sexual Aggression, 16*(2). 181-195. Doi: 10.1080/13552601003760006

McKee, A. (2007). The Positive and Negative Effects of Pornography as Attributed by Consumers. *Australian Journal of Communication*, *34*(1). 87-104. Retrieved from: https://eprints.qut.edu.au/14575/1/14575.pdf

McHaney, R., Tako, A., & Robinson, S. (2018). Using LIWC to Choose Simulation Approaches: A Feasibility Study. *Decision Support Systems*, *111*. 1-12. Doi: 10.1016/j.dss.2018.04.002

Meloy, M. L. (2005). The Sex Offender Next Door: An Analysis Of Recidivism, Risk Factors, And Deterrence Of Sex Offenders On Probation. *Criminal Justice Policy Review*, *16*(2). 211-236. Doi: 10.1177/0887403404270601

Michael, R. T., Gagnon, J. H., Laumann, E. O., & Kolata, G. (1994). *Sex in America: A Definitive Survey.* Little, Brown & Company. Retrieved from: http://hdl.handle.net/10822/869677

Mill, J. S. (1859). *On Liberty.* Oxford University. Retrieved from: https://books.google.co.uk/books?id=qCQCAAAAQAAJ&dq=on+liberty&pg=PP1&prev=http://www.google.com/search%3Frlz%3D&q=On+Liberty&redir_esc=y#v=onepage&q=On%20Liberty&f=false

Ministry of Justice, Home Office & the Office for National Statistics (2013, January 10th). An Overview of Sexual Offending in England and Wales. Retrieved from: https://www.gov.uk/government/statistics/an-overview-of-sexual-offending-in-england-and-wales

Mitrofan, O., Paul, M., Weich, S., & Spencer, N. (2014). Aggression in Children with Behavioural/Emotional Difficulties: Seeing Aggression on Television and Video Games. *BMC Psychiatry*, *14*(1). 1-10. Doi: 10.1186/s12888-014-0287-7

Moor, L., & Anderson, J. R. (2019). A Systematic Literature Review of The Relationship Between Dark Personality Traits and Antisocial Online Behaviours. *Personality and individual differences*, *144*. 40-55. Doi: 10.1016/j.paid.2019.02.027

Moore, C., Detert, J.R., Trevino, L.K., Baker, V.L., & Mayer, D.M. (2012). Why Employees Do Bad Things: Moral Disengagement and Unethical Organizational Behavior. *Personnel Psychology, 65.* 1-48. Doi: 10.1111/j.1744-6570.2011.01237.x

Moore, C. (2008). Moral Disengagement in Processes of Organizational Corruption. *Journal of Business Ethics, 80*(1). 129-139. Doi: 10.1007/s10551-007-9447-8

Moore, C. (2015). Moral Disengagement. *Current Opinion in Psychology, 6.* 199-204. Doi: 10.1016/j.copsyc.2015.07.018

Morgan, E. M. (2011). Associations Between Young Adults' Use of Sexually Explicit Materials and their Sexual Preferences, Behaviors, and Satisfaction. *Journal of Sex Research*, *48*(6). 520-530. Doi: 10.1080/00224499.2010.543960

Mundorf, N., Allen, M., D'Alessio, D., & Emmers-Sommer, T. M. (2007). Effects of Sexually Explicit Media. In R. W. Preiss, B. M. Gayle, N. Burrell, M. Allen, & J. Bryant (Eds.), Mass Media Effects Research: Advances Through Meta-Analysis (pp. 181–198). Lawrence Erlbaum Associates Publishers.

Murphy, W. D. & Carich, M. S. (2001). Cognitive Distortions and Restructuring in Sexual Abuser Treatment, In M. S. Carich & S. E. Mussack (Eds.). *Handbook for Sexual Abuser Assessment and Treatment.* Safer Society.

Nakasatomi, H. [2009] 2013. '"RapeLay" and the Problem of Legal Reform in Japan.' Translated by Caroline Norma. *Electronic Journal of*

Contemporary Japanese Studies 12(3). Retrieved from: http://www.japanesestudies.org.uk/ejcjs/vol12/iss3/nakasatomi.html.

Neumann, C. S., Jones, D. N., & Paulhus, D. L. (2021). Examining the Short Dark Tetrad (SD4) Across Models, Correlates, and Gender. *Assessment, 00*(0). 1-17. Doi: /10.1177/1073191120986624

Newman, M. L., Groom, C. J., Handelman, L. D., & Pennebaker, J. W. (2008). Gender Differences in Language Use: An Analysis Of 14,000 Text Samples. *Discourse Processes*, *45*(3). 211-236. Doi: 10.1080/01638530802073712

Newton, N. C., Stapinski, L. A., Champion, K. E., Teesson, M., & Bussey, K. (2016). The Reliability and Validity of The Australian Moral Disengagement Scale. *Behaviour Change*, *33*(3). 136-149. Doi: 10.1017/bec.2016.9

O'Meara, A., Davies, J., & Hammond, S. (2011). The Psychometric Properties and Utility of the Short Sadistic Impulse Scale (SSIS). *Psychological Assessment, 23(*2). 523– 531. Doi: 10.1037/a0022400

Orel, M. (2020). Escaping Reality and Touring for Pleasure: The Future of Virtual Reality Pornography. *Porn Studies*, *7*(4). 449-453. Doi: 10.1080/23268743.2020.1777895

Osofsky, M. J., Bandura, A., & Zimbardo, P. G. (2005). The Role of Moral Disengagement in The Execution Process. *Law And Human Behavior*, *29*(4). 371-393. Doi: 10.1007/s10979-005-4930-1

Outlaw, J. & Duckles, B. (2017). Why Women Don't Like Social Virtual Reality: A Study of Safety, Usability, and Self-Expression in Social VR. *The*

Extended Mind (Accessed 2019, March 24th). Retrieved from: https://static1.squarespace.com/static/56e315ede321404618e90757/t/5afca0716d2a73e7b3c77f28/1526505624385/The(Extended(Mind_Why(Women(Don%27t(Like(Social(VR_Oct(16(2017.pdf .

Page, T. E., Pina, A., & Giner-Sorolla, R. (2015). "It Was Only Harmless Banter!" The Development and Preliminary Validation of the Moral Disengagement in Sexual Harassment Scale. *Aggressive Behavior*, *42*(3). 254-273. Doi: 10.1002/ab.21621

Page, T. E., & Pina, A. (2015). Moral Disengagement as a Self-Regulatory Process in Sexual Harassment Perpetration at Work: A Preliminary Conceptualization. *Aggression and Violent Behavior*, *21*. 73-84. Doi: 10.1016/j.avb.2015.01.004

Page, T. & Pina, A. (2018). Moral Disengagement and Self-Reported Harassment Proclivity in Men: The Mediating Effects of Moral Judgment and Emotions. *Journal of Sexual Aggression, 24*(2). 257-180. Doi: 10.1080/13552600.2018.1440089

Page, M. J., McKenzie, J. E., Bossuyt, P. M., Boutron, I., Hoffmann, T. C., Mulrow, C. D., et al. (2021). The PRISMA 2020 Statement: An Updated Guideline for Reporting Systematic Reviews. *British Medical Journal. 372*(71). Doi: 10.1136/bmj.n71

Passingham, A. (2018, May 5). *'Child Sex Dolls- What's Your View?'* Safeguarding Hub. Retrieved from: https://safeguardinghub.co.uk/child-sex-dolls-whats-your-view/

Paulhus, D. L. (2014). Toward a Taxonomy of Dark Personalities. *Current Directions in Psychological Science, 23*(6). 421-426. Doi: 10.1177/0963721414547737

Paulhus, D.L. (1991). *Measurement and Control of Response Bias.* In J.P. Robinson, P.R. Shaver, & L.S. Wrightsman (Eds.), Measures of Personality and Social Psychological Attitudes (pp.17-59). Academic Press.

Paulhus, D. L. & Williams, K. M. (2002). The Dark Triad of Personality: Narcissism, Machiavellianism, and Psychopathy. *Journal of Research in Personality, 36*(6). 556-563. Doi: 10.1016/S0092-6566(02)00505-6

Pelton, J., Gound, M., Forehand, R., & Brody, G. (2004). The Moral Disengagement Scale: Extension with An American Minority Sample. *Journal Of Psychopathology and Behavioral Assessment*, *26*(1). 31-39. Doi: 10.1023/B:JOBA.0000007454.34707.a5

Pennebaker, J. W., Booth, R. J. & Francis, M. E. (2007). *Linguistic Inquiry and Word Count: LIWC2007 Operators Manual.* Retrieved from: http://www.gruberpeplab.com/teaching/psych231_fall2013/documents/231_Pennebaker2007.pdf

Pennebaker, J.W., Boyd, R.L., Jordan, K., & Blackburn, K. (2015). *The Development and Psychometric Properties of LIWC 2015.* University of Texas, Austin.

Petruccelli, I., Simonelli, C., Barbaranelli, C., Grilli, S., Tripodi, M. F., & D'Urso, G. (2017a). Moral Disengagement Strategies in Sex

Offenders. *Psychiatry, Psychology and Law*, *24*(3). 470-480. Doi: 10.1080/13218719.2016.1252291

Petruccelli, I., Barbaranelli, C., Costantino, V., Gherardini, A., Grilli, S., Craparo, G., & D'Urso, G. (2017b). Moral Disengagement and Psychopathy: A Study on Offenders in Italian Jails. *Psychiatry, Psychology and Law*, *24*(5). 670-681. Doi: 10.1080/13218719.2017.1291291

Pornhub. (2017). *Pornhub's 2016 Year in Review* (Accessed 2017, May 15th). Retrieved from: www.pornhub.com/insights/2016-year-in-review.

Rape Crisis England & Wales (Accessed 2022, January 7th). *What is Sexual Violence?* Retrieved from: https://rapecrisis.org.uk/get-help/looking-for-information/what-is-sexual-violence/

Ratner, P. (2018). *Why the Future of VR Will be Shaped by Porn* (Accessed 2021, August 20th). Retrieved from: https:// bigthink.com/paul-ratner/the-future-of-vr-will-be-shaped-by-the-pornography-of-today.

Rheingold, H. (1992). *Virtual Reality: The Revolutionary Technology of Computer-Generated Artificial Worlds and How It Promises to Transform Society*. Simon & Schuster.

Riaz, S., & Bano, Z. (2018). Development And Psychometric Properties of Moral Disengagement Scale for Adolescents. *Pakistan Journal of Psychology*, *49*(1). 3-22. Retrieved from: http://pjpku.com/index.php/pjp/article/view/27/26

Richardson, K. (2016). The Asymmetrical 'Relationship' Parallels Between Prostitution and the Development of Sex Robots. *ACM SIGCAS Computers and Society*, *45*(3). 290-293. Doi: 10.1145/2874239.2874281

Robertson, C. A. & Knight, R. A. (2014). Sexual Sadism and Psychopathy to One Another, Sexual Violence, and Sexual Crime Behaviors. *Aggressive Behavior, 40*(1). 12-23. Doi: 10.1002/ab.21505

Rodenberg, Cassie. 2013. 'Grand Theft Auto V Makes It Cool to Pick Up—Even Kill—Prostitutes.' *The Guardian*. December 27 (Accessed 2017, May 25th). https://www.theguardian.com/commentisfree/2013/dec/27/grand-theft-auto-v-prostitutes-killed.

Rosedale, P. (2003). Second Life [Video Game]. Linden Lab. https://secondlife.com/

Rubio-Garay, F., Amor, P. J., & Carrasco, M. A. (2017). Dimensionality And Psychometric Properties of The Spanish Version of The Mechanisms of Moral Disengagement Scale (MMDS-S). *Revista De Psicopatología Y Psicología Clínica*, *22*(1). 43-54. Retrieved from: https://www.aepcp.net/wp-content/uploads/2020/04/Revista-de-Psicopatologia-y-Psicologia-Clinica_Vol.221.2017_Parte8.pdf

Saif, A., & Riaz, S. (2021). Construction Of Moral Disengagement Scale for Adults: A Reliable Measure. *Pakistan Journal of Psychological Research*, *36*(2). 199-223. Retrieved from: http://www.pjprnip.edu.pk/index.php/pjpr/article/view/759

Samji, K., & Vasquez, E. A. (2020). The Link Between Myths about Sexual Aggression and Sexual Objectification via Hostile Attitudes Toward Women. *Journal of Sexual Aggression*, *26*(3). 385-393. Doi: 10.1080/13552600.2019.1676924

Scarpati, A. S., & Pina, A. (2017). Cultural and Moral Dimensions of Sexual Aggression: The Role of Moral Disengagement in Men's Likelihood to Sexually Aggress. *Aggression and Violent Behavior*, *37*. 115-121. Doi: 10.1016/j.avb.2017.09.001

Schamborg, S., Tully, R. J., & Browne, K. D. (2016). The Use of The State–Trait Anger Expression Inventory–II With Forensic Populations: A Psychometric Critique. *International Journal of Offender Therapy and Comparative Criminology*, *60*(11). 1239-1256. Doi: 10.1177/0306624X15577932

Scheutz, M., Arnold, T. (2016, March). Are We Ready for Sex Robots? *The Eleventh ACM/ IEEE International Conference on Human Robot Interaction* (pp. 351-358). New Jersey, USA: IEEE Press Piscataway. Retrieved from: https://www.researchgate.net/profile/Matthias_Scheutz/publication/301912956_Are_we_ready_for_sex_robots/links/5ad72464458515c60f5729f9/Are-we-ready-for-sex-robots.pdf

Scheutz, M., & Arnold, T. (2017). Intimacy, Bonding, and Sex Robots: Examining Empirical Results and Exploring Ethical Ramifications. In J. Danaher & N. McArthur (Eds.), *Robot Sex: Social and Ethical Implications (pp. 247-260).* MIT Press.

Schwartz, H. A., Eichstaedt, J. C., Kern, M. L., Dziurzynski, L., Ramones, S. M., Agrawal, M., ... & Ungar, L. H. (2013). Personality, Gender, and Age in The Language of Social Media: The Open-Vocabulary Approach. *PloS one*, *8*(9). e73791. Doi: 10.1371/journal.pone.0073791

Scott, R. (1982). *Blade Runner* [Film]. The Ladd Company.

Sharkey, N., Van Wynsberghe, A., Robbins, S., Hancock, E. (2017). *Our Sexual Future with Robots. A Foundation for Responsible Robotics Consultation Report.* The Hague, Netherlands: The Foundation for Responsible Robotics at the Hague Global Institute for Justice. Retrieved from: http://responsiblerobotics.org/wp-content/uploads/2017/07/FRR-Consultation-Report-Our-Sexual-Future-with-robots_Final.pdf

Shulman, E. P., Cauffman, E., Piquero, A. R., & Fagan, J. (2011). Moral Disengagement Among Serious Juvenile Offenders: A Longitudinal Study of The Relations Between Morally Disengaged Attitudes and Offending. *Developmental Psychology*, *47*(6). 1619-1632. Doi: 10.1037/a0025404

Simon, S. C., & Greitemeyer, T. (2019). The Impact of Immersion On The Perception Of Pornography: A Virtual Reality Study. *Computers in Human Behavior*, *93*. 141-148. Doi: 10.1016/j.chb.2018.12.018

Simonelli, C., Rossi, R., Petruccelli, I., Turella, B., & Fabiani, F. (2008). Mechanisms of Moral Disengagement in Sex Offenders. *Sexologies*, 17(1). S37-S38. Doi: 10.1016/S1158-1360(08)72615-X

Singal, J. (2016, April 13th). How Should Society Handle Pedophiles Who Haven't Hurt Anyone? *The Cut*. Retrieved from: http://nymag.com/scienceofus/2 016/04/how-shouldsociety-handle-pedophiles-who -haven- t-hurt-anyone.html [https://perma.cc/3YWH-5ABA].

SinVR (2017). SinVR [Video Game]. inVR.

Sollee, K. (2015, September 22nd). 5 Stimulating Facts About Hologram Sex. *Bustle.* Retrieved from: https://www.bustle.com/articles/111447-5-stimulating-facts-about-hologram-porn-because-virtual-reality-sex-is-here

Sparrow, R. (2017). Robots, Rape, and Representation. *International Journal of Society Robotics. 9*(4). 465-477. Doi: 10.1007/s12369-017-0413-z

Stonewall Cymru (n.d.). *Sexual Offences: The Current Law in England and Wales.* Retrieved 2022, January 8th, from: https://www.stonewallcymru.org.uk/help-advice/criminal-law/sexual-offences

Strikwerda, L. (2015). Present and Future Instances of Virtual Rape In Light Of Three Categories Of Legal Philosophical Theories On Rape. *Philosophy & Technology*, *28*(4). 491-510. Doi: 10.1007/s13347-014-0167-6

Strikwerda, L. (2017). Legal and Moral Implications of Child Sex Robots, In Danaher, J. & McArthur, N. (Eds.), *Robot Sex: Social and Ethical Implications* (pp. 133-152). MIT Press.

Swann, A., Lennon, A., & Cleary, J. (2017). Development And Preliminary Validation of a Scale of Driving Moral Disengagement As A Tool In The Exploration Of Driving Aggression. *Transportation Research Part F: Traffic Psychology and Behaviour*, *46*(Part A). 124-136. Doi: 10.1016/j.trf.2017.01.011

Tan, L. & Grace, R. C. (2008). Social Desirability and Sexual Offenders: A Review. *Sexual Abuse: A Journal of Research and Treatment, 20.* 61. Doi: 10.1177/1079063208314820

Tang, W. Y., Reer, F., & Quandt, T. (2019). Investigating Sexual Harassment in Online Video Games: How Personality and Context Factors Are Related to Toxic Sexual Behaviors Against Fellow Players. *Aggressive behavior*, *46*(1). 127-135. Doi: 10.1002/ab.21873

Tausczik, Y. R., & Pennebaker, J. W. (2010). The Psychological Meaning of Words: LIWC And Computerized Text Analysis Methods. *Journal of Language and Social Psychology*, *29*(1). 24-54. Doi: 10.1177/0261927X09351676

Thurston, S. C. (2005). *An Exploration of Family Interactions and Male Juvenile Sexual Offending: A Qualitative Study*. [Doctoral Dissertation, Texas Woman's University]. ProQuest Dissertations Publishing.

Tiehen, J. (2018). Virtue Ethics and the CREEPER Act. *Seattle University Law Review, 41*(4). 1153-1161. Retrieved from: https://digitalcommons.law.seattleu.edu/cgi/viewcontent.cgi?article=2552&context=sulr

Torjesen, I. (2017). Society Must Consider Risks of Sex Robots, Report Warns. *British Medical Journal, 3267.* 358. Doi: 10.1136/bmj.j3267

Træen, B., & Daneback, K. (2013). The Use of Pornography and Sexual Behaviour among Norwegian Men and Women Of Differing Sexual Orientation. *Sexologies*, *22*(2). e41-e48. Doi: 10.1016/j.sexol.2012.03.001

Tourangeau, R., Yan, T. (2007). Sensitive Questions in Surveys. *Psychological Bulletin, 133*(5). 859–883. Doi: 10.1037/0033-2909.133.5.859

Vance, K., Sutter, M., Perrin, P. B., & Heesacker, M. (2015). The Media's Sexual Objectification of Women, Rape Myth Acceptance, and Interpersonal Violence. *Journal of Aggression, Maltreatment & Trauma*, *24*(5). 569-587. Doi: 10.1080/10926771.2015.1029179

Van de Poel, I. (2016). An Ethical Framework for Evaluating Experimental Technology. *Science and Engineering Ethics*, *22*(3). 667-686. Doi: 10.1007/s11948-015-9724-3

VReleased (2019). Nympho Trainer VR [Computer Game]. VReleased.

Wang, X. C., & Yang, J. P. (2010). Reliability And Validity of Moral Disengagement Scale in Chinese Students. *Chinese Journal of Clinical Psychology*, *18*(2). 177-179. Retrieved from: https://psycnet-apa-org.nottingham.idm.oclc.org/record/2010-12768-014

Ward, T., & Beech, A. (2006). An Integrated Theory of Sexual Offending. *Aggression And Violent Behavior*, *11*(1). 44-63. Doi: 10.1016/j.avb.2005.05.002

Wax, D., Fry, C., Lundström, L., Widman, H., Brackley, J., Vincent, S., Featherstone, J. & Kingsman-Lloyd, E. (Executive Producers). (2015-2018). *Humans* [TV Series]. Channel 4 Television Corporation & Kudos Film and Television.

Wegner, R., Abbey, A., Pierce, J., Pegram, S. E., & Woerner, J. (2015). Sexual Assault Perpetrators' Justifications for their Actions: Relationships to Rape Supportive Attitudes, Incident Characteristics, and Future Perpetration. *Violence against Women*, *21*(8). 1018-1037. Doi: 10.1177/1077801215589380

Williams, K. M., Cooper, B. S., Howell, T. M. Yuille, J. C. & Paulhus, D. L. (2009). Inferring Sexually Deviant Behaviour from Corresponding Fantasies: The Role of Personality and Pornography Consumption. *Criminal Justice and Behavior 36*(2). 198-222. Doi: 10.1177/0093854808327277

Williams, K. M., McAndrew, A., Learn, T., Harms, P., & Paulhus, D. L. (2001, August). The Dark Triad returns: Entertainment Preferences and Antisocial Behavior Among Narcissists, Machiavellians, and Psychopaths. In *Poster presented at the 109th Annual Convention of the American Psychological Association, San Francisco, CA*.

Wood, M., Wood, G., & Balaam, M. (2017, May). "They're Just Tixel Pits, Man": Disputing the 'Reality' of Virtual Reality Pornography through the Story Completion Method. In *Proceedings of the 2017 CHI Conference on Human Factors in Computing Systems* (pp. 5439-5451).

Yao, M. Z., Mahood, C., & Linz, D. (2010). Sexual Priming, Gender Stereotyping, And Likelihood to Sexually Harass: Examining the Cognitive Effects of Playing A Sexually-Explicit Video Game. *Sex roles*, *62*(1). 77-88. Doi: 10.1007/s11199-009-9695-4

Young, C. (2020, March 12th). How it Works: 13 Famous People Brought Back to Life as Holograms. *Interesting Engineering.* Retrieved from: https://interestingengineering.com/how-it-works-13-famous-people-brought-back-to-life-as-holograms

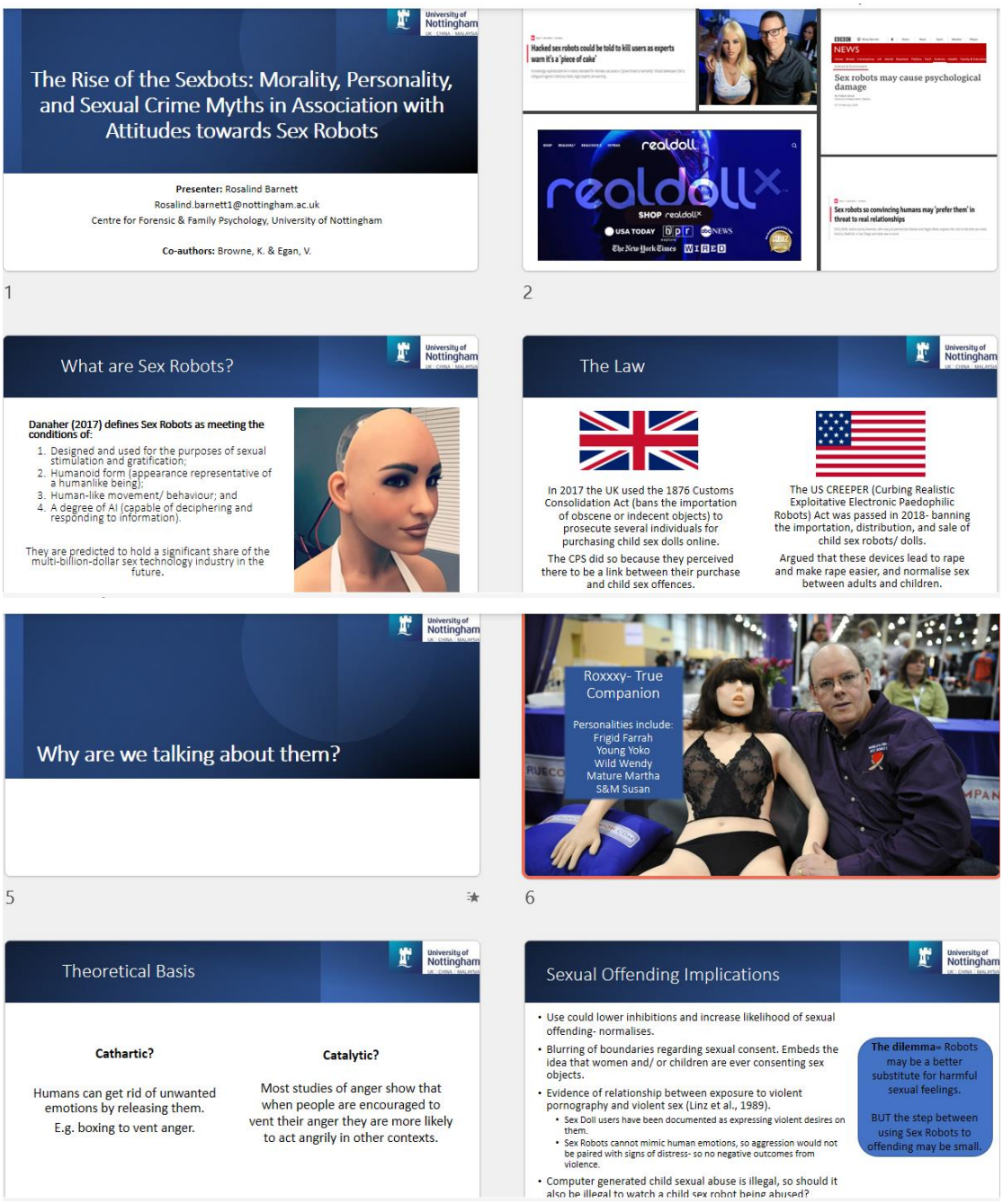
Wang, Y., Zhao, Y., Zhang, J., Bian, J., & Zhang, R. (2020). Detecting Associations Between Dietary Supplement Intake and Sentiments Within Mental Disorder Tweets. *Health Informatics Journal*, *26*(2). 803-815. Doi: 10.1177/1460458219867231

Wicclair, M. R. (2018). Robots as Imagined in the Television Series Humans. *Cambridge Quarterly of Healthcare Ethics*, *27*(3). 497-510. Doi: 10.1017/S0963180117000901

Zelidman, A. (2014). *Empathy As a Moderator of Adolescent Bullying Behavior and Moral Disengagement After Controlling for Social Desirability* [Doctoral Thesis, Wayne State University]. Retrieved from: https://digitalcommons.wayne.edu/cgi/viewcontent.cgi?referer=https://scholar.google.com/&httpsredir=1&article=1943&context=oa_dissertations

Appendices

Appendix A. The Conference Presentation of the Primary Research Project.



Campaign Against Sex Robots

- Led by Professor Kathleen Richardson.
- Argument:
  - Robots encourage dehumanisation and power imbalances during sex.
  - Sex toys, pornography, and the sex trade have co-existed for years with sexual crime- so this behaviour can't be cathartic.
- *'The CASR was founded in 2015 to warn against the dangers of normalising relationships with machines and reinforcing female dehumanisation… Our first campaign image featured a broken mannequin and represents dissociation from relationship and the instrumentality of women's bodies, reduced to parts'*



9

The Other Argument

- Potential to create safe and controlled situations for people with anxiety to prepare for human relationships.
  - Evidence that frequency of sex increases happiness and improves health.
  - Sexual rights dilemma- everyone is entitled to sexual satisfaction, but not everyone has this available to them. So should we allow people the choice to have sex if the other option is celibacy?
- Since Sex Robots are humanlike and interactive, people might be less willing to disobey social norms when using them.
- Does a person with a sexual preference for children actually demonstrate good moral character by using a robot instead?
- Ostritsch (2017)- people behave immorally in video games. Are they stepping outside the rules of moral life temporarily?
- Roboticist Ronald Arkin suggested that child sex robots could be used to treat those with paedophilic preferences in the same way methadone is used to treat heroin addicts.

10

Previous Research

- Scheutz & Arnold (2016, 2017)- systematic survey of attitudes.
  - Strongest agreement aligned with statements about robots heightening risk of abuse to humans.
- Harper & Lievesley (2020)- agenda for research.
  - Almost complete lack of empirical research of the psychological characteristics or behavioural implications of doll ownership. Existing arguments from philosophical positions.
  - Research needed into the motivations for owning dolls/ robots, the effects of these on sexual cognition/ behaviour, and social attitudes and responses to them.
- Harper et al. (2021)- first empirical research into personality of doll owners.
  - No significant difference between doll owners and controls with regards to sexual aggression proclivity, sexual objectification, and dark personality traits.
  - Emerging profile of doll ownership, made up of higher coercive sexual fantasies and lower sexual aggression proclivity, suggesting that dolls may have a cathartic effect on forceful sexual fantasies

Research Questions

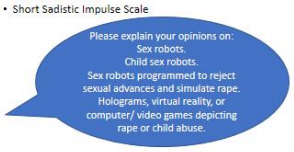
Are people who are more accepting of Sex Robots more accepting of rape/ child sexual abuse myths?

Do they have darker personality traits? Are they more likely to morally disengage? Demographics?

What about people who have used Sex Dolls or Robots before? Or who would in the future?

Methods

- 718 participants- 699 analysed
- Counterbalanced questionnaires- 5 psychometrics + demographics
  - Moral Disengagement Scale
  - Acceptance of Modern Myths about Sexual Aggression Scale
  - Child Sexual Abuse Myth Acceptance Scale
  - Short Dark Triad-3
  - Short Sadistic Impulse Scale



13

Analysis

- Total acceptance score= sum of mean scores from uses, forms, and legality questions. Therefore scores between 3-15.
- Genders analysed separately.
- Dependent Variables
  - Acceptance of Sex Robots- multiple regression
  - Legality of Child Sex Robots- multiple regression
  - Previous use of Sex Robots- logistic regression
  - Future use of Sex Robots- logistic regression
- Linguistic Inquiry & Wordcount Software.

14

Findings- Male Respondents

Sex Robot Acceptance:
- Males higher.
- Increased as pornography consumption increased.

Child Sex Robot Legality:
- Males higher.
- Increased as pornography consumption increased.

Previous Use of Sex Dolls or Robots
-Associated with higher acceptance of sexual aggression myths.

Future Use of Sex Dolls or Robots
- Associated with higher acceptance of sexual aggression myths.
- Associated with increasing age.
- Increased likelihood as pornography use increased.

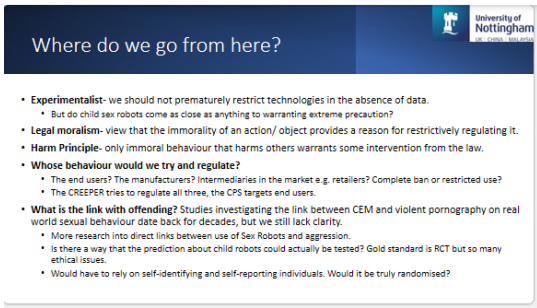
Findings- Female Respondents

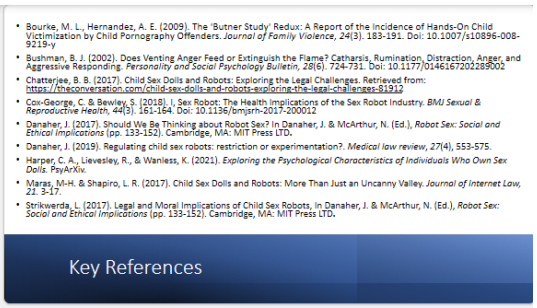
Sex Robot Acceptance:
- Females lower.
- Increased as pornography consumption increased.

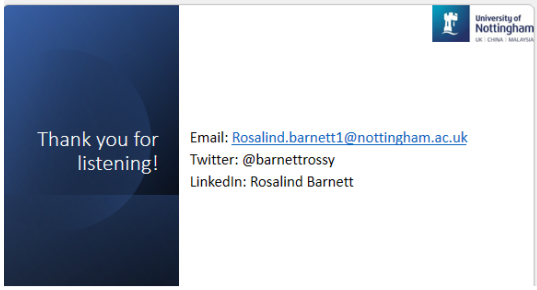
Child Sex Robot Legality:
- Females lower.
- Increased as pornography consumption increased.
- LGBTQIA+ participants higher on agreement.

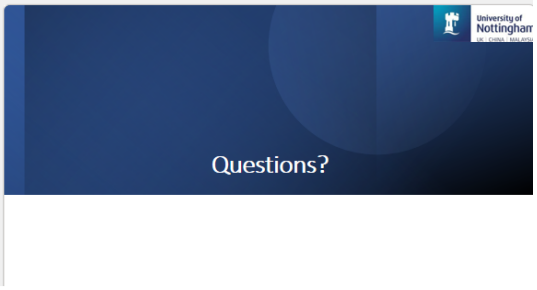
Previous Use of Sex Dolls or Robots
No analysis conducted.

Future Use of Sex Dolls or Robots
- Increased likelihood as pornography use increased.


Where do we go from here?
University of Nottingham
Experimentalist- we should not prematurely restrict technologies in the absence of data.
But do child sex robots come as close as anything to warranting extreme precaution?
Legal moralism- view that the immorality of an action/ object provides a reason for restrictively regulating it.
Harm Principle- only immoral behaviour that harms others warrants some intervention from the law.
Whose behaviour would we try and regulate?
The end users? The manufacturers? Intermediaries in the market e.g. retailers? Complete ban or restricted use?
The CREEPER tries to regulate all three, the CPS targets end users.
What is the link with offending? Studies investigating the link between CEM and violent pornography on real world sexual behaviour date back for decades, but we still lack clarity.
More research into direct links between use of Sex Robots and aggression.
Is there a way that the prediction about child robots could actually be tested? Gold standard is RCT but so many ethical issues.
Would have to rely on self-identifying and self-reporting individuals. Would it be truly randomised?
17


Bourke, M. L., Hernandez, A. E. (2009). The 'Butner Study' Redux: A Report of the Incidence of Hands-On Child Victimization by Child Pornography Offenders. Journal of Family Violence, 24(3). 183-191. Doi: 10.1007/s10896-008-9219-y
Bushman, B. J. (2002). Does Venting Anger Feed or Extinguish the Flame? Catharsis, Rumination, Distraction, Anger, and Aggressive Responding. Personality and Social Psychology Bulletin, 28(6). 724-731. Doi: 10.1177/0146167202289002
Chatterjee, B. B. (2017). Child Sex Dolls and Robots: Exploring the Legal Challenges. Retrieved from: https://theconversation.com/child-sex-dolls-and-robots-exploring-the-legal-challenges-81912
Cox-George, C. & Bewley, S. (2018). I, Sex Robot: The Health Implications of the Sex Robot Industry. BMJ Sexual & Reproductive Health, 44(3). 161-164. Doi: 10.1136/bmjsrh-2017-200012
Danaher, J. (2017). Should We Be Thinking about Robot Sex? In Danaher, J. & McArthur, N. (Ed.), Robot Sex: Social and Ethical Implications (pp. 133-152). Cambridge, MA: MIT Press LTD.
Danaher, J. (2019). Regulating child sex robots: restriction or experimentation?. Medical law review, 27(4), 553-575.
Harper, C. A., Lievesley, R., & Wanless, K. (2021). Exploring the Psychological Characteristics of Individuals Who Own Sex Dolls. PsyArXiv.
Maras, M-H. & Shapiro, L. R. (2017). Child Sex Dolls and Robots: More Than Just an Uncanny Valley. Journal of Internet Law, 21. 3-17.
Strikwerda, L. (2017). Legal and Moral Implications of Child Sex Robots, In Danaher, J. & McArthur, N. (Ed.), Robot Sex: Social and Ethical Implications (pp. 133-152). Cambridge, MA: MIT Press LTD.
Key References
18


Thank you for listening!
University of Nottingham
Email: Rosalind.barnett1@nottingham.ac.uk
Twitter: @barnettrossy
LinkedIn: Rosalind Barnett


University of Nottingham
Questions?

Appendix B. The Moral Disengagement Scale (Detert et al., 2008).

On a scale of 1 (strongly disagree) to 5 (strongly agree), please rate how much you agree with the following statements.

1. It is alright to fight to protect your friends.
2. It's okay to steal to take care of your family's needs.
3. It's okay to attack someone who threatens your family's honour.
4. It is alright to lie to keep your friends out of trouble.
5. Sharing test questions is just a way of helping your friends.
6. Talking about people behind their backs is just part of the game.
7. Looking at a friend's homework without permission is just "borrowing it".
8. It is not bad to "get high" once in a while.
9. Damaging some property is no big deal when you consider that others are beating people up.
10. Stealing some money is not too serious compared to those who steal a lot of money.
11. Not working very hard in school is really no big deal when you consider that other people are probably cheating.
12. Compared to other illegal things people do, taking some things from a shop without paying for them is not very serious.
13. If people are living under bad conditions, they cannot be blamed for behaving aggressively.
14. If the professor doesn't discipline cheaters, student should not be blamed for cheating.
15. If someone is pressured into doing something, they shouldn't be blamed for it.
16. People cannot be blamed for misbehaving if their friends pressured them to do it.
17. A member of a group or team should not be blamed for the trouble the team caused.
18. A student who only suggests breaking the rules should not be blamed if others go ahead and do it.
19. If a group decides together to do something harmful, it is unfair to blame any one member of the group for it.
20. You can't blame a person who plays only a small part in the harm caused by a group.
21. It is okay to tell small lies because they don't really do any harm.
22. People don't mind being teased because it shows interest in them.
23. Teasing someone does not really hurt them.
24. Insults don't really hurt anyone.
25. If students misbehave in class, it's their teacher's fault.

26. If someone leaves something lying around, it's their own fault if it gets stolen.
27. People who are mistreated have usually done things to deserve it.
28. People are not at fault for misbehaving at work if their managers mistreat them.
29. Some people deserve to be treated like animals.
30. It is okay to treat someone badly who behaved like a "worm".
31. Someone who is obnoxious does not deserve to be treated like a human being.
32. Some people have to be treated roughly because they lack feelings that can be hurt.

Appendix C. The Study Inclusion Form used for the Systematic Review.

Study Inclusion Form

Review Question: Is there evidence of a relationship between violent sexual attitudes and behaviour and the use of MD strategies?

Inclusion Criteria (based on PICOSS)

Population= Males over the age of 18.

Exposure= Participants must have been exposed to a psychometric measure of MD related to sexual attitudes or behaviour and must have been convicted of a sexual offence.

Comparisons/ control groups= Participants must have been exposed to a psychometric assessment of MD related to sexual attitudes or behaviour and must not have been convicted of a sexual offence.

Outcomes= Evidence of MD related to sexual attitudes or behaviour as measured by a psychometric scale.

Setting= Any setting.

Study designs= Any study design.

Moral Disengagement and Sexual Attitudes or Behaviour Selection Tool

Reviewer Name: Rosalind Barnett **Date:**

Author Name/ Study ID: **Year:**

Title:

Journal:

Patient Population	Include	Exclude	Location in text e.g. page number
	☐Males over the age of 18	☐Females of any age ☐Males under the age of 18	
Exposure*			
	☐Psychometric measure of MD related to sexual attitudes/ behaviour ☐Current or previous conviction of a sexual offence*	☐No measure of MD ☐Measure of MD related to attitudes/ behaviour other than sexual ☐No conviction of a sexual offence*	
Comparators*			
	☐Psychometric measure of MD related to sexual attitudes/ behaviour ☐Never convicted of a sexual offence*	☐No exposure to a measure of MD ☐Exposure to a measure of MD related to attitudes/ behaviour other than sexual ☐Conviction of sexual offence*	
Outcomes			
	☐Evidence of MD related to sexual attitudes/ behaviour measured by a psychometric assessment	☐No reporting of MD related to sexual attitudes/ behaviour	
Setting			
	☐Any	☐None	
Study Design			

	☐Any	☐None
Overall Decision	☐INCLUDE	☐EXCLUDE
Notes (including reason for inclusion/ exclusion)	***This will differ for exposure & comparator- to be included a study only needs to meet Exposure or Comparator criteria**	

Appendix D. The Adapted Quality Assessment Tool for Quantitative Studies.

The Adapted EPHPP: QUALITY ASSESSMENT TOOL FOR QUANTITATIVE STUDIES

COMPONENT RATINGS

Author Name/ Study ID: **Year:**

Title:

A. SELECTION BIAS

1. ***Are the individuals selected to participate in the study likely to be representative of the target population?***

1. Very likely

2. Somewhat likely

3. Not likely

4. Can't tell

2. ***How were participants selected?***

1. Volunteered

2. Selected by researchers

3. ***If selected, what percentage of selected individuals agreed to participate?***

1. 80-100% agreement

2. 60-79% agreement

3. Less than 60% agreement

4. Not applicable

5. Can't tell

6. N/A

RATE THIS SECTION	***Strong***	***Moderate***	***Weak***
See Dictionary	*1*	*2*	*3*

B. STUDY DESIGN

1. *Indicate the study design*

1. Randomised Controlled Trial

2. Controlled Clinical Trial

3. Cohort analytic (two group pre+ post)

4. Case-control

5. Cross-sectional

6. Cohort (one group pre + post (before and after))

7. Interrupted time series

8. Other, specify: _____

9. Can't tell

2. *Was the study described as randomised? If NO, go to component C.*

1. Yes

2. No

3. *If yes, was the method of randomisation described? (See Dictionary)*

1. Yes

2. No

4. *If yes, was the method appropriate? (See dictionary)*

1. Yes

2. No

RATE THIS SECTION	***Strong***	***Moderate***	***Weak***
See Dictionary	*1*	*2*	*3*

C. BLINDING

1. *Were the study participants aware of the research question?*

1. Yes

2. No

3. Can't tell

RATE THIS SECTION	***Strong***	***Moderate***	***Weak***
See Dictionary	*1*	*2*	*3*

D. DATA COLLECTION METHODS

1. *Were data collection tools shown to be valid?*

1. Yes

2. No

3. Can't tell

2. *Were data collection tools shown to be reliable?*

1. Yes (but awareness of problems with self-report)

2. No

3. Can't tell

RATE THIS SECTION	***Strong***	***Moderate***	***Weak***
See Dictionary	*1*	*2*	*3*

E. WITHDRAWALS AND DROP-OUTS

1. *Were withdrawals and drop-outs reported in terms of numbers and/ or reasons per group?*

1. Yes

2. No

3. Can't tell

4. Not applicable

2. *Indicate the percentage of participants completing the study (if the percentage differs by groups, record the lowest).*

1. 80-100%

2. 60-79%

3. Less than 60%

4. Can't tell

5. Not applicable (i.e. retrospective case-control)

RATE THIS SECTION	***Strong***	***Moderate***	***Weak***
See Dictionary	*1*	*2*	*3*

F. REPORTING

1. *Were all outcomes measured reported?*

1. Yes

2. No

3. Can't tell

RATE THIS SECTION	***Strong***	***Moderate***	***Weak***
See Dictionary	*1*	*2*	*3*

G. ANALYSES

1. *Are the statistical methods appropriate for the study design?*

1. Yes

2. No

3. Can't tell

RATE THIS SECTION	***Strong***	***Moderate***	***Weak***
See Dictionary	*1*	*2*	*3*

Component ratings	***Strong***	***Moderate***	***Weak***
A: Selection Bias	*1*	*2*	*3*
B: Study Design	*1*	*2*	*3*
C: Blinding	*1*	*2*	*3*
D: Data Collection Method	*1*	*2*	*3*
E: Withdrawals and Dropouts	*1*	*2*	*3*
F: Reporting	*1*	*2*	*3*
G: Analyses	*1*	*2*	*3*

Global Rating for this Paper (circle one):

1 ***STRONG*** *(no WEAK ratings)*

2 ***MODERATE*** *(one WEAK rating)*

3 ***WEAK*** *(two or more WEAK ratings)*

Is there a discrepancy between the two reviewers with respect to the component (A-G) ratings? (Please circle):

Yes No

If yes, indicate the reason for the discrepancy:

1 *Oversight*

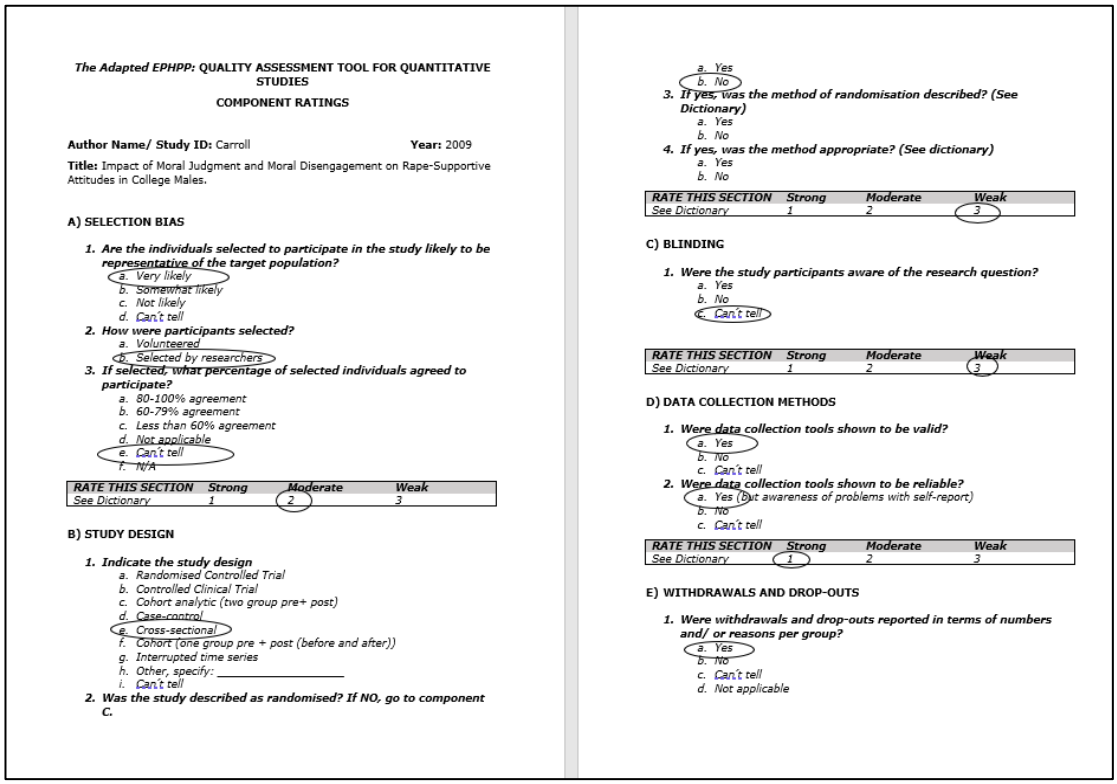
2 *Differences in interpretation of criteria*

3 *Differences in interpretation of study*

FINAL DECISION	***Strong***	***Moderate***	***Weak***
See Dictionary	*1*	*2*	*3*

Appendix E. The Applied Quality Assessment Tool for Quantitative Studies for Each Included Study.

Carroll (2009)



The Adapted EPHPP: **QUALITY ASSESSMENT TOOL FOR QUANTITATIVE STUDIES**

COMPONENT RATINGS

Author Name/ Study ID: Carroll **Year:** 2009

Title: Impact of Moral Judgment and Moral Disengagement on Rape-Supportive Attitudes in College Males.

A) SELECTION BIAS

1. ***Are the individuals selected to participate in the study likely to be representative of the target population?***
   a. Very likely
   b. Somewhat likely
   c. Not likely
   d. Can't tell
2. ***How were participants selected?***
   a. Volunteered
   b. Selected by researchers
3. ***If selected, what percentage of selected individuals agreed to participate?***
   a. 80-100% agreement
   b. 60-79% agreement
   c. Less than 60% agreement
   d. Not applicable
   e. Can't tell
   f. N/A

RATE THIS SECTION	Strong	Moderate	Weak
See Dictionary	1	2	3

B) STUDY DESIGN

1. ***Indicate the study design***
   a. Randomised Controlled Trial
   b. Controlled Clinical Trial
   c. Cohort analytic (two group pre+ post)
   d. Case-control
   e. Cross-sectional
   f. Cohort (one group pre + post (before and after))
   g. Interrupted time series
   h. Other, specify: _____
   i. Can't tell
2. ***Was the study described as randomised? If NO, go to component C.***
   a. Yes
   b. No
3. ***If yes, was the method of randomisation described? (See Dictionary)***
   a. Yes
   b. No
4. ***If yes, was the method appropriate? (See dictionary)***
   a. Yes
   b. No

RATE THIS SECTION	Strong	Moderate	Weak
See Dictionary	1	2	3

C) BLINDING

1. ***Were the study participants aware of the research question?***
   a. Yes
   b. No
   c. Can't tell

RATE THIS SECTION	Strong	Moderate	Weak
See Dictionary	1	2	3

D) DATA COLLECTION METHODS

1. ***Were data collection tools shown to be valid?***
   a. Yes
   b. No
   c. Can't tell
2. ***Were data collection tools shown to be reliable?***
   a. Yes (but awareness of problems with self-report)
   b. No
   c. Can't tell

RATE THIS SECTION	Strong	Moderate	Weak
See Dictionary	1	2	3

E) WITHDRAWALS AND DROP-OUTS

1. ***Were withdrawals and drop-outs reported in terms of numbers and/ or reasons per group?***
   a. Yes
   b. No
   c. Can't tell
   d. Not applicable
2. ***Indicate the percentage of participants completing the study (if the percentage differs by groups, record the lowest).***
   a. 80-100%
   b. 60-79%
   c. Less than 60%
   d. Can't tell
   e. Not applicable (i.e. retrospective case-control)

RATE THIS SECTION	Strong	Moderate	Weak
See Dictionary	1	2	3

F) REPORTING

1. ***Were all outcomes measured reported?***
   a. Yes
   b. No
   c. Can't tell

RATE THIS SECTION	Strong	Moderate	Weak
See Dictionary	1	2	3

G) ANALYSES

1. ***Are the statistical methods appropriate for the study design?***
   a. Yes
   b. No
   c. Can't tell

RATE THIS SECTION	Strong	Moderate	Weak
See Dictionary	1	2	3

Component ratings	Strong	Moderate	Weak
A: Selection Bias	1	2	3
B: Study Design	1	2	3
C: Blinding	1	2	3
D: Data Collection Method	1	2	3
E: Withdrawals and Dropouts	1	2	3
F: Reporting	1	2	3
G: Analyses	1	2	3

Global Rating for this Paper (circle one):

1 **STRONG** (no WEAK ratings)

2 **MODERATE** (one WEAK rating)

3 **WEAK** (two or more WEAK ratings)

Is there a discrepancy between the two reviewers with respect to the component (A-G) ratings? (Please circle):

Yes No

If yes, indicate the reason for the discrepancy:

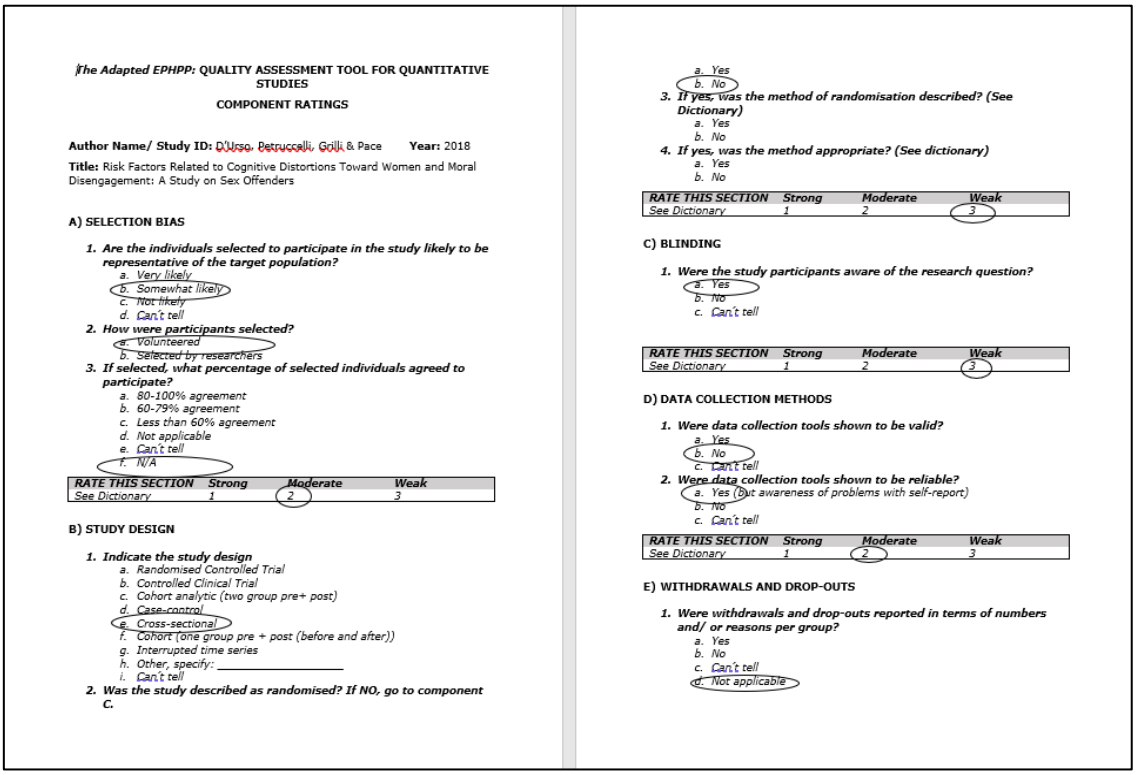
1 Oversight

2 Differences in interpretation of criteria

3 Differences in interpretation of study

FINAL DECISION	Strong	Moderate	Weak
See Dictionary	1	2	3

D'Urso et al. (2018)



The Adapted EPHPP: **QUALITY ASSESSMENT TOOL FOR QUANTITATIVE STUDIES**

COMPONENT RATINGS

Author Name/ Study ID: D'Urso, Petruccelli, Grilli & Pace **Year:** 2018

Title: Risk Factors Related to Cognitive Distortions Toward Women and Moral Disengagement: A Study on Sex Offenders

A) SELECTION BIAS

1. ***Are the individuals selected to participate in the study likely to be representative of the target population?***
   a. *Very likely*
   b. *Somewhat likely*
   c. *Not likely*
   d. *Can't tell*
2. ***How were participants selected?***
   a. *Volunteered*
   b. *Selected by researchers*
3. ***If selected, what percentage of selected individuals agreed to participate?***
   a. *80-100% agreement*
   b. *60-79% agreement*
   c. *Less than 60% agreement*
   d. *Not applicable*
   e. *Can't tell*
   f. *N/A*

RATE THIS SECTION	Strong	Moderate	Weak
See Dictionary	1	2	3

B) STUDY DESIGN

1. ***Indicate the study design***
   a. *Randomised Controlled Trial*
   b. *Controlled Clinical Trial*
   c. *Cohort analytic (two group pre+ post)*
   d. *Case-control*
   e. *Cross-sectional*
   f. *Cohort (one group pre + post (before and after))*
   g. *Interrupted time series*
   h. *Other, specify: _____*
   i. *Can't tell*
2. ***Was the study described as randomised? If NO, go to component C.***
   a. *Yes*
   b. *No*
3. ***If yes, was the method of randomisation described? (See Dictionary)***
   a. *Yes*
   b. *No*
4. ***If yes, was the method appropriate? (See dictionary)***
   a. *Yes*
   b. *No*

RATE THIS SECTION	Strong	Moderate	Weak
See Dictionary	1	2	3

C) BLINDING

1. ***Were the study participants aware of the research question?***
   a. *Yes*
   b. *No*
   c. *Can't tell*

RATE THIS SECTION	Strong	Moderate	Weak
See Dictionary	1	2	3

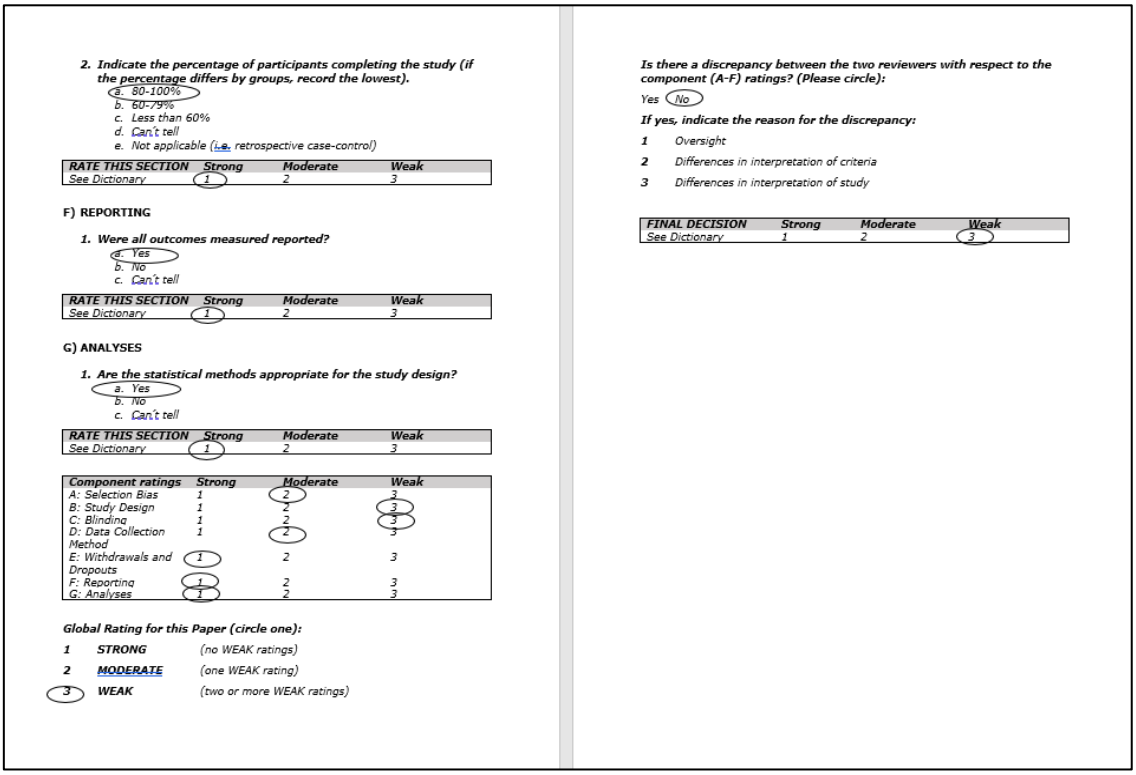
D) DATA COLLECTION METHODS

1. ***Were data collection tools shown to be valid?***
   a. *Yes*
   b. *No*
   c. *Can't tell*
2. ***Were data collection tools shown to be reliable?***
   a. *Yes (but awareness of problems with self-report)*
   b. *No*
   c. *Can't tell*

RATE THIS SECTION	Strong	Moderate	Weak
See Dictionary	1	2	3

E) WITHDRAWALS AND DROP-OUTS

1. ***Were withdrawals and drop-outs reported in terms of numbers and/ or reasons per group?***
   a. *Yes*
   b. *No*
   c. *Can't tell*
   d. *Not applicable*



2. ***Indicate the percentage of participants completing the study (if the percentage differs by groups, record the lowest).***
   a. *80-100%*
   b. *60-79%*
   c. *Less than 60%*
   d. *Can't tell*
   e. *Not applicable (i.e. retrospective case-control)*

RATE THIS SECTION	Strong	Moderate	Weak
See Dictionary	1	2	3

F) REPORTING

1. ***Were all outcomes measured reported?***
   a. *Yes*
   b. *No*
   c. *Can't tell*

RATE THIS SECTION	Strong	Moderate	Weak
See Dictionary	1	2	3

G) ANALYSES

1. ***Are the statistical methods appropriate for the study design?***
   a. *Yes*
   b. *No*
   c. *Can't tell*

RATE THIS SECTION	Strong	Moderate	Weak
See Dictionary	1	2	3

Component ratings	Strong	Moderate	Weak
A: Selection Bias	1	2	3
B: Study Design	1	2	3
C: Blinding	1	2	3
D: Data Collection Method	1	2	3
E: Withdrawals and Dropouts	1	2	3
F: Reporting	1	2	3
G: Analyses	1	2	3

Global Rating for this Paper (circle one):

1 **STRONG** *(no WEAK ratings)*

2 **MODERATE** *(one WEAK rating)*

3 **WEAK** *(two or more WEAK ratings)*

Is there a discrepancy between the two reviewers with respect to the component (A-F) ratings? (Please circle):

Yes *No*

If yes, indicate the reason for the discrepancy:

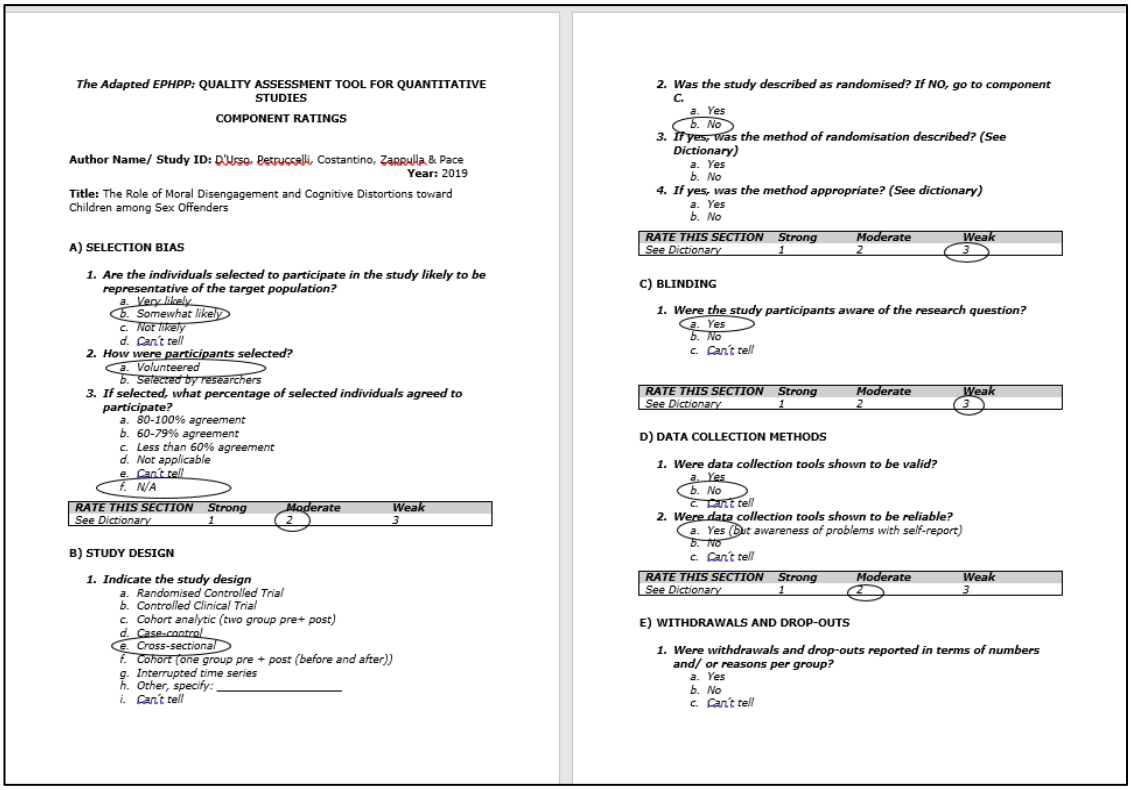
1 *Oversight*

2 *Differences in interpretation of criteria*

3 *Differences in interpretation of study*

FINAL DECISION	Strong	Moderate	Weak
See Dictionary	1	2	3

D'Urso et al. (2019)



The Adapted EPHPP: **QUALITY ASSESSMENT TOOL FOR QUANTITATIVE STUDIES**

COMPONENT RATINGS

Author Name/ Study ID: D'Urso, Petruccelli, Costantino, Zappulla & Pace **Year:** 2019

Title: The Role of Moral Disengagement and Cognitive Distortions toward Children among Sex Offenders

A) SELECTION BIAS

1. ***Are the individuals selected to participate in the study likely to be representative of the target population?***
   a. Very likely
   b. Somewhat likely
   c. Not likely
   d. Can't tell
2. ***How were participants selected?***
   a. Volunteered
   b. Selected by researchers
3. ***If selected, what percentage of selected individuals agreed to participate?***
   a. 80-100% agreement
   b. 60-79% agreement
   c. Less than 60% agreement
   d. Not applicable
   e. Can't tell
   f. N/A

RATE THIS SECTION	Strong	Moderate	Weak
See Dictionary	1	2	3

B) STUDY DESIGN

1. ***Indicate the study design***
   a. Randomised Controlled Trial
   b. Controlled Clinical Trial
   c. Cohort analytic (two group pre+ post)
   d. Case-control
   e. Cross-sectional
   f. Cohort (one group pre + post (before and after))
   g. Interrupted time series
   h. Other, specify: _____
   i. Can't tell

2. ***Was the study described as randomised? If NO, go to component C.***
   a. Yes
   b. No
3. ***If yes, was the method of randomisation described? (See Dictionary)***
   a. Yes
   b. No
4. ***If yes, was the method appropriate? (See dictionary)***
   a. Yes
   b. No

RATE THIS SECTION	Strong	Moderate	Weak
See Dictionary	1	2	3

C) BLINDING

1. ***Were the study participants aware of the research question?***
   a. Yes
   b. No
   c. Can't tell

RATE THIS SECTION	Strong	Moderate	Weak
See Dictionary	1	2	3

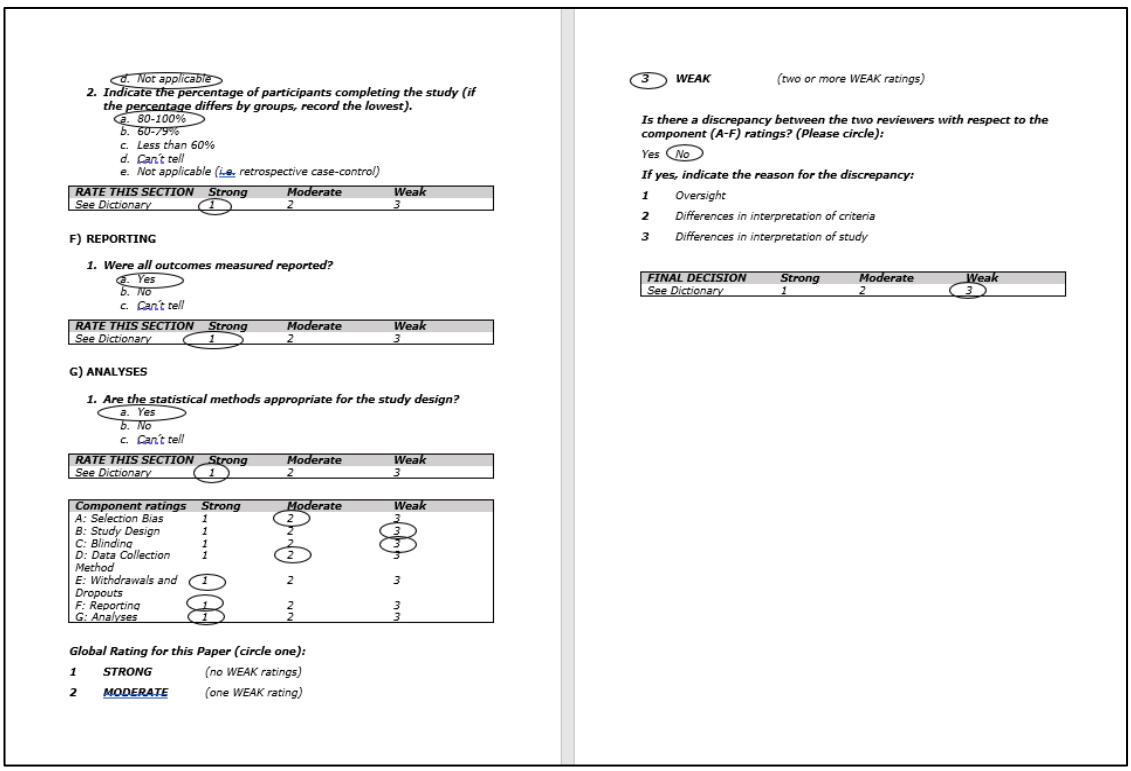
D) DATA COLLECTION METHODS

1. ***Were data collection tools shown to be valid?***
   a. Yes
   b. No
   c. Can't tell
2. ***Were data collection tools shown to be reliable?***
   a. Yes (but awareness of problems with self-report)
   b. No
   c. Can't tell

RATE THIS SECTION	Strong	Moderate	Weak
See Dictionary	1	2	3

E) WITHDRAWALS AND DROP-OUTS

1. ***Were withdrawals and drop-outs reported in terms of numbers and/ or reasons per group?***
   a. Yes
   b. No
   c. Can't tell



   d. Not applicable
2. ***Indicate the percentage of participants completing the study (if the percentage differs by groups, record the lowest).***
   a. 80-100%
   b. 60-79%
   c. Less than 60%
   d. Can't tell
   e. Not applicable (i.e. retrospective case-control)

RATE THIS SECTION	Strong	Moderate	Weak
See Dictionary	1	2	3

F) REPORTING

1. ***Were all outcomes measured reported?***
   a. Yes
   b. No
   c. Can't tell

RATE THIS SECTION	Strong	Moderate	Weak
See Dictionary	1	2	3

G) ANALYSES

1. ***Are the statistical methods appropriate for the study design?***
   a. Yes
   b. No
   c. Can't tell

RATE THIS SECTION	Strong	Moderate	Weak
See Dictionary	1	2	3

Component ratings	Strong	Moderate	Weak
A: Selection Bias	1	2	3
B: Study Design	1	2	3
C: Blinding	1	2	3
D: Data Collection Method	1	2	3
E: Withdrawals and Dropouts	1	2	3
F: Reporting	1	2	3
G: Analyses	1	2	3

Global Rating for this Paper (circle one):

1 ***STRONG*** *(no WEAK ratings)*

2 ***MODERATE*** *(one WEAK rating)*

3 ***WEAK*** *(two or more WEAK ratings)*

Is there a discrepancy between the two reviewers with respect to the component (A-F) ratings? (Please circle):

Yes No

If yes, indicate the reason for the discrepancy:

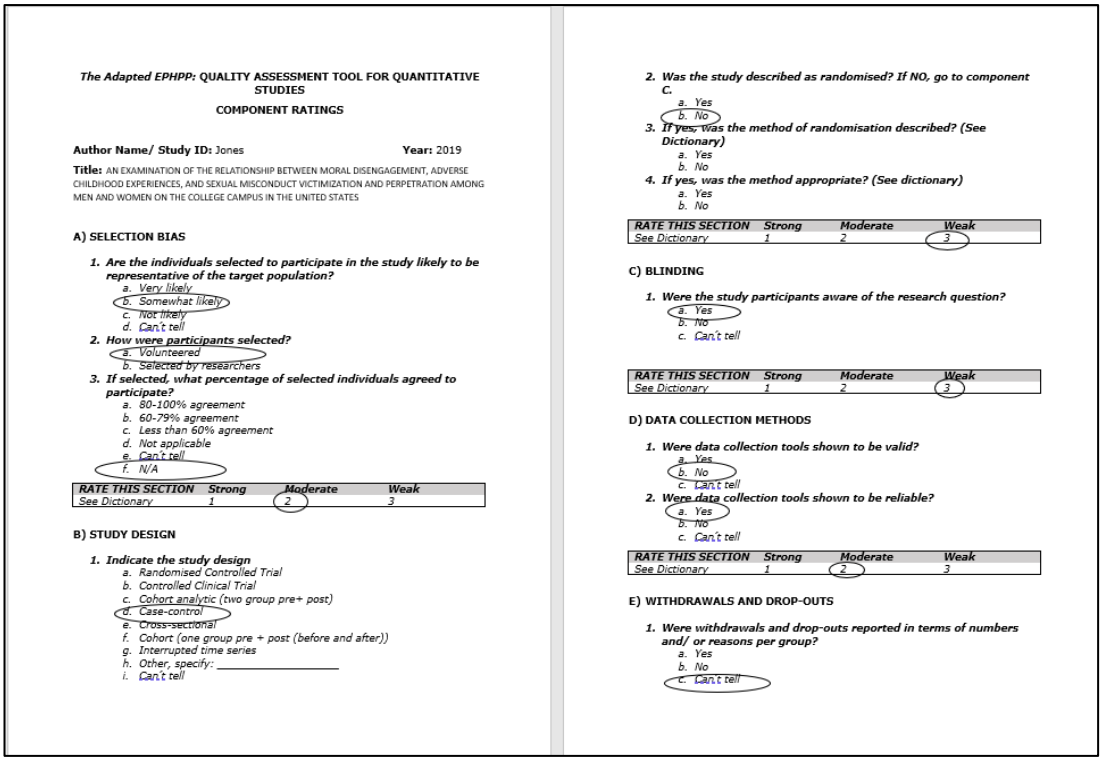
1 *Oversight*

2 *Differences in interpretation of criteria*

3 *Differences in interpretation of study*

FINAL DECISION	Strong	Moderate	Weak
See Dictionary	1	2	3

Jones (2019)



The Adapted EPHPP: **QUALITY ASSESSMENT TOOL FOR QUANTITATIVE STUDIES**

COMPONENT RATINGS

Author Name/ Study ID: Jones **Year:** 2019

Title: AN EXAMINATION OF THE RELATIONSHIP BETWEEN MORAL DISENGAGEMENT, ADVERSE CHILDHOOD EXPERIENCES, AND SEXUAL MISCONDUCT VICTIMIZATION AND PERPETRATION AMONG MEN AND WOMEN ON THE COLLEGE CAMPUS IN THE UNITED STATES

A) SELECTION BIAS

1. ***Are the individuals selected to participate in the study likely to be representative of the target population?***
   a. *Very likely*
   b. *Somewhat likely* (circled)
   c. *Not likely*
   d. *Can't tell*
2. ***How were participants selected?***
   a. *Volunteered* (circled)
   b. *Selected by researchers*
3. ***If selected, what percentage of selected individuals agreed to participate?***
   a. *80-100% agreement*
   b. *60-79% agreement*
   c. *Less than 60% agreement*
   d. *Not applicable*
   e. *Can't tell*
   f. *N/A* (circled)

RATE THIS SECTION	Strong	Moderate	Weak
See Dictionary	1	2 (circled)	3

B) STUDY DESIGN

1. ***Indicate the study design***
   a. *Randomised Controlled Trial*
   b. *Controlled Clinical Trial*
   c. *Cohort analytic (two group pre+ post)*
   d. *Case-control* (circled)
   e. *Cross-sectional*
   f. *Cohort (one group pre + post (before and after))*
   g. *Interrupted time series*
   h. *Other, specify:* _____
   i. *Can't tell*

2. ***Was the study described as randomised? If NO, go to component C.***
   a. *Yes*
   b. *No* (circled)
3. ***If yes, was the method of randomisation described? (See Dictionary)***
   a. *Yes*
   b. *No*
4. ***If yes, was the method appropriate? (See dictionary)***
   a. *Yes*
   b. *No*

RATE THIS SECTION	Strong	Moderate	Weak
See Dictionary	1	2	3 (circled)

C) BLINDING

1. ***Were the study participants aware of the research question?***
   a. *Yes* (circled)
   b. *No*
   c. *Can't tell*

RATE THIS SECTION	Strong	Moderate	Weak
See Dictionary	1	2	3 (circled)

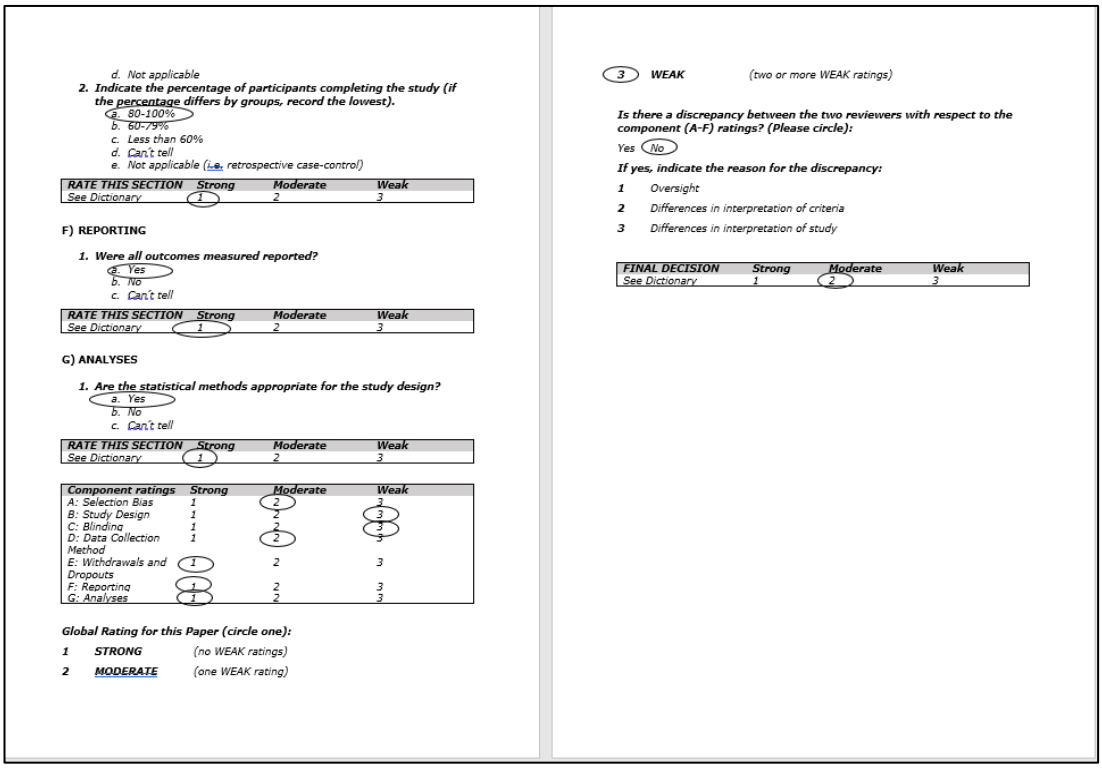
D) DATA COLLECTION METHODS

1. ***Were data collection tools shown to be valid?***
   a. *Yes*
   b. *No* (circled)
   c. *Can't tell*
2. ***Were data collection tools shown to be reliable?***
   a. *Yes* (circled)
   b. *No*
   c. *Can't tell*

RATE THIS SECTION	Strong	Moderate	Weak
See Dictionary	1	2 (circled)	3

E) WITHDRAWALS AND DROP-OUTS

1. ***Were withdrawals and drop-outs reported in terms of numbers and/ or reasons per group?***
   a. *Yes*
   b. *No*
   c. *Can't tell* (circled)



   d. *Not applicable*
2. ***Indicate the percentage of participants completing the study (if the percentage differs by groups, record the lowest).***
   a. *80-100%* (circled)
   b. *60-79%*
   c. *Less than 60%*
   d. *Can't tell*
   e. *Not applicable (i.e. retrospective case-control)*

RATE THIS SECTION	Strong	Moderate	Weak
See Dictionary	1 (circled)	2	3

F) REPORTING

1. ***Were all outcomes measured reported?***
   a. *Yes* (circled)
   b. *No*
   c. *Can't tell*

RATE THIS SECTION	Strong	Moderate	Weak
See Dictionary	1 (circled)	2	3

G) ANALYSES

1. ***Are the statistical methods appropriate for the study design?***
   a. *Yes* (circled)
   b. *No*
   c. *Can't tell*

RATE THIS SECTION	Strong	Moderate	Weak
See Dictionary	1 (circled)	2	3

Component ratings	Strong	Moderate	Weak
A: Selection Bias	1	2 (circled)	3
B: Study Design	1	2	3 (circled)
C: Blinding	1	2	3 (circled)
D: Data Collection Method	1	2 (circled)	3
E: Withdrawals and Dropouts	1 (circled)	2	3
F: Reporting	1 (circled)	2	3
G: Analyses	1 (circled)	2	3

Global Rating for this Paper (circle one):

1 ***STRONG*** *(no WEAK ratings)*

2 ***MODERATE*** *(one WEAK rating)*

3 ***WEAK*** *(two or more WEAK ratings)* (circled)

Is there a discrepancy between the two reviewers with respect to the component (A-F) ratings? (Please circle):

Yes *No* (circled)

If yes, indicate the reason for the discrepancy:

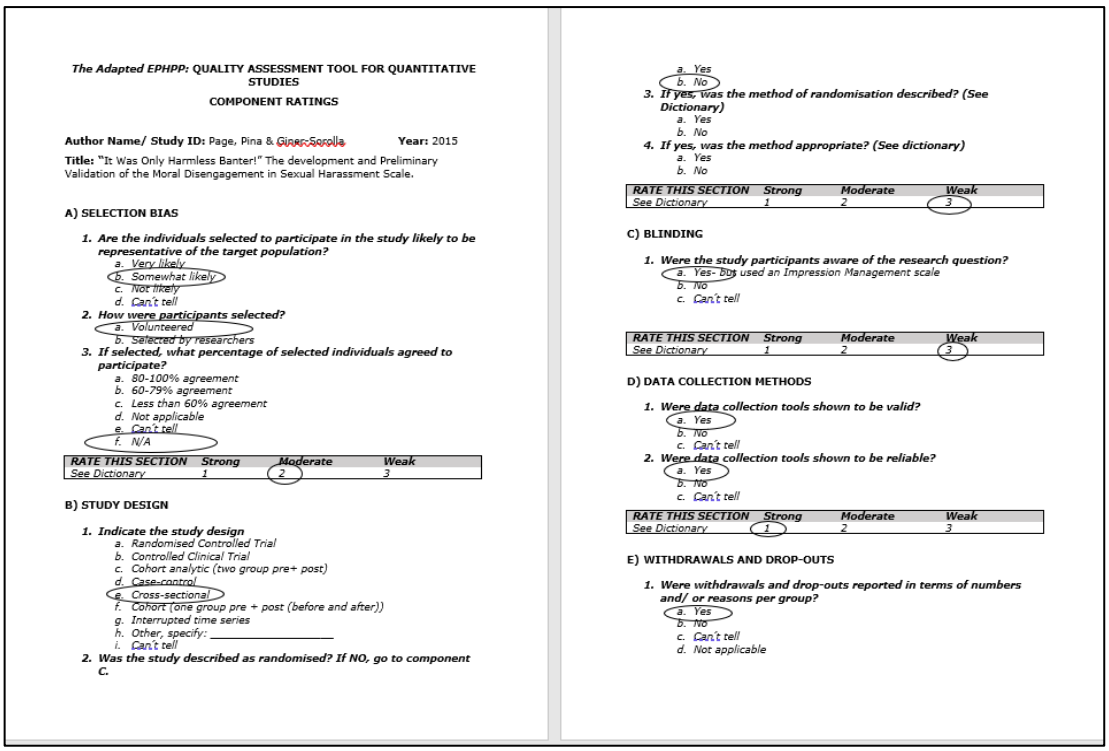
1 *Oversight*

2 *Differences in interpretation of criteria*

3 *Differences in interpretation of study*

FINAL DECISION	Strong	Moderate	Weak
See Dictionary	1	2 (circled)	3

Page et al. (2015)



The Adapted EPHPP: **QUALITY ASSESSMENT TOOL FOR QUANTITATIVE STUDIES**

COMPONENT RATINGS

Author Name/ Study ID: Page, Pina & Giner-Sorolla **Year:** 2015

Title: "It Was Only Harmless Banter!" The development and Preliminary Validation of the Moral Disengagement in Sexual Harassment Scale.

A) SELECTION BIAS

1. ***Are the individuals selected to participate in the study likely to be representative of the target population?***
   a. *Very likely*
   b. *Somewhat likely* (circled)
   c. *Not likely*
   d. *Can't tell*
2. ***How were participants selected?***
   a. *Volunteered* (circled)
   b. *Selected by researchers*
3. ***If selected, what percentage of selected individuals agreed to participate?***
   a. *80-100% agreement*
   b. *60-79% agreement*
   c. *Less than 60% agreement*
   d. *Not applicable*
   e. *Can't tell*
   f. *N/A* (circled)

RATE THIS SECTION	Strong	Moderate	Weak
See Dictionary	1	2 (circled)	3

B) STUDY DESIGN

1. ***Indicate the study design***
   a. *Randomised Controlled Trial*
   b. *Controlled Clinical Trial*
   c. *Cohort analytic (two group pre+ post)*
   d. *Case-control*
   e. *Cross-sectional* (circled)
   f. *Cohort (one group pre + post (before and after))*
   g. *Interrupted time series*
   h. *Other, specify:* _____
   i. *Can't tell*
2. ***Was the study described as randomised? If NO, go to component C.***
   a. *Yes*
   b. *No* (circled)
3. ***If yes, was the method of randomisation described? (See Dictionary)***
   a. *Yes*
   b. *No*
4. ***If yes, was the method appropriate? (See dictionary)***
   a. *Yes*
   b. *No*

RATE THIS SECTION	Strong	Moderate	Weak
See Dictionary	1	2	3 (circled)

C) BLINDING

1. ***Were the study participants aware of the research question?***
   a. *Yes- but used an Impression Management scale* (circled)
   b. *No*
   c. *Can't tell*

RATE THIS SECTION	Strong	Moderate	Weak
See Dictionary	1	2	3 (circled)

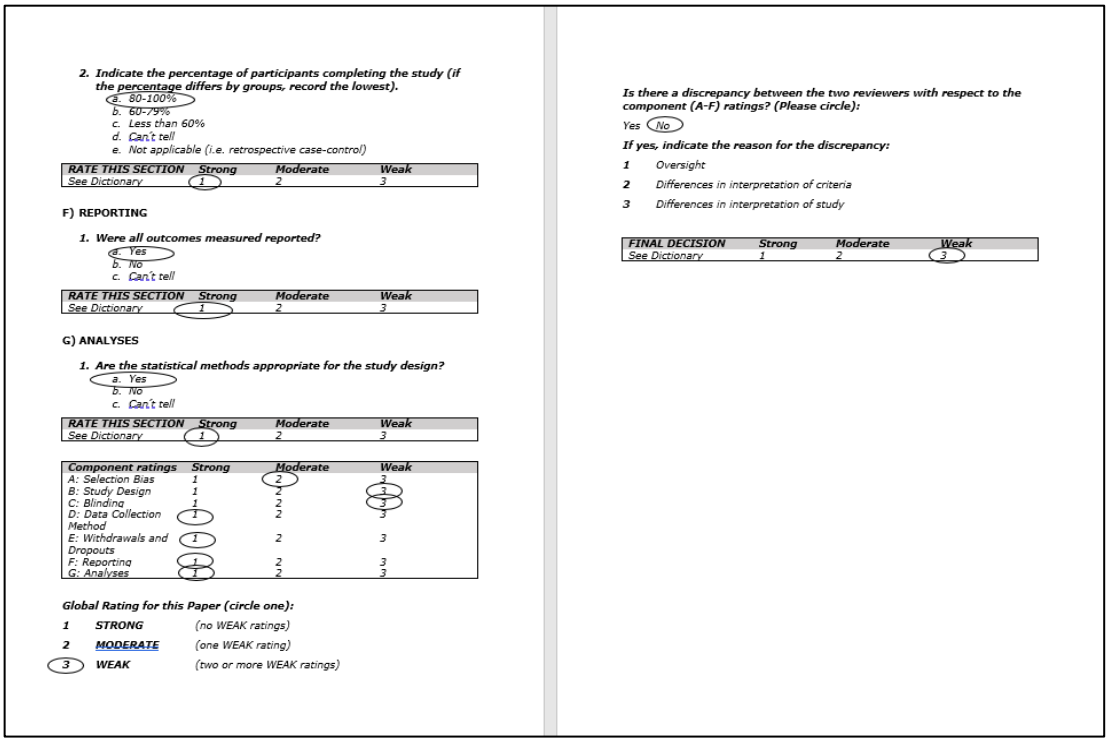
D) DATA COLLECTION METHODS

1. ***Were data collection tools shown to be valid?***
   a. *Yes* (circled)
   b. *No*
   c. *Can't tell*
2. ***Were data collection tools shown to be reliable?***
   a. *Yes* (circled)
   b. *No*
   c. *Can't tell*

RATE THIS SECTION	Strong	Moderate	Weak
See Dictionary	1 (circled)	2	3

E) WITHDRAWALS AND DROP-OUTS

1. ***Were withdrawals and drop-outs reported in terms of numbers and/ or reasons per group?***
   a. *Yes* (circled)
   b. *No*
   c. *Can't tell*
   d. *Not applicable*



2. ***Indicate the percentage of participants completing the study (if the percentage differs by groups, record the lowest).***
   a. *80-100%* (circled)
   b. *60-79%*
   c. *Less than 60%*
   d. *Can't tell*
   e. *Not applicable (i.e. retrospective case-control)*

RATE THIS SECTION	Strong	Moderate	Weak
See Dictionary	1 (circled)	2	3

F) REPORTING

1. ***Were all outcomes measured reported?***
   a. *Yes* (circled)
   b. *No*
   c. *Can't tell*

RATE THIS SECTION	Strong	Moderate	Weak
See Dictionary	1 (circled)	2	3

G) ANALYSES

1. ***Are the statistical methods appropriate for the study design?***
   a. *Yes* (circled)
   b. *No*
   c. *Can't tell*

RATE THIS SECTION	Strong	Moderate	Weak
See Dictionary	1 (circled)	2	3

Component ratings	Strong	Moderate	Weak
A: Selection Bias	1	2 (circled)	3
B: Study Design	1	2	3 (circled)
C: Blinding	1	2	3 (circled)
D: Data Collection Method	1 (circled)	2	3
E: Withdrawals and Dropouts	1 (circled)	2	3
F: Reporting	1 (circled)	2	3
G: Analyses	1 (circled)	2	3

Global Rating for this Paper (circle one):

1 **STRONG** *(no WEAK ratings)*

2 **MODERATE** *(one WEAK rating)*

3 (circled) **WEAK** *(two or more WEAK ratings)*

Is there a discrepancy between the two reviewers with respect to the component (A-F) ratings? (Please circle):

Yes *No* (circled)

If yes, indicate the reason for the discrepancy:

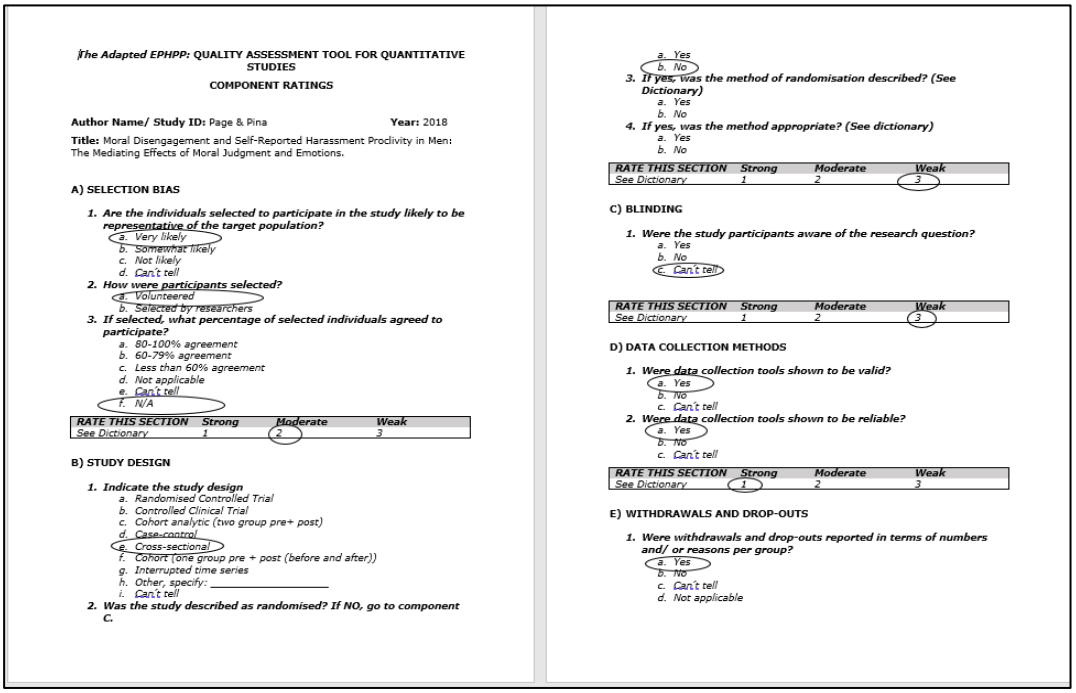
1 *Oversight*

2 *Differences in interpretation of criteria*

3 *Differences in interpretation of study*

FINAL DECISION	Strong	Moderate	Weak
See Dictionary	1	2	3 (circled)

Page & Pina (2018)



The Adapted EPHPP: **QUALITY ASSESSMENT TOOL FOR QUANTITATIVE STUDIES**

COMPONENT RATINGS

Author Name/ Study ID: Page & Pina **Year:** 2018

Title: Moral Disengagement and Self-Reported Harassment Proclivity in Men: The Mediating Effects of Moral Judgment and Emotions.

A) SELECTION BIAS

1. ***Are the individuals selected to participate in the study likely to be representative of the target population?***
   a. Very likely
   b. Somewhat likely
   c. Not likely
   d. Can't tell
2. ***How were participants selected?***
   a. Volunteered
   b. Selected by researchers
3. ***If selected, what percentage of selected individuals agreed to participate?***
   a. 80-100% agreement
   b. 60-79% agreement
   c. Less than 60% agreement
   d. Not applicable
   e. Can't tell
   f. N/A

RATE THIS SECTION	Strong	Moderate	Weak
See Dictionary	1	2	3

B) STUDY DESIGN

1. ***Indicate the study design***
   a. Randomised Controlled Trial
   b. Controlled Clinical Trial
   c. Cohort analytic (two group pre+ post)
   d. Case-control
   e. Cross-sectional
   f. Cohort (one group pre + post (before and after))
   g. Interrupted time series
   h. Other, specify: _____
   i. Can't tell
2. ***Was the study described as randomised? If NO, go to component C.***
   a. Yes
   b. No
3. ***If yes, was the method of randomisation described? (See Dictionary)***
   a. Yes
   b. No
4. ***If yes, was the method appropriate? (See dictionary)***
   a. Yes
   b. No

RATE THIS SECTION	Strong	Moderate	Weak
See Dictionary	1	2	3

C) BLINDING

1. ***Were the study participants aware of the research question?***
   a. Yes
   b. No
   c. Can't tell

RATE THIS SECTION	Strong	Moderate	Weak
See Dictionary	1	2	3

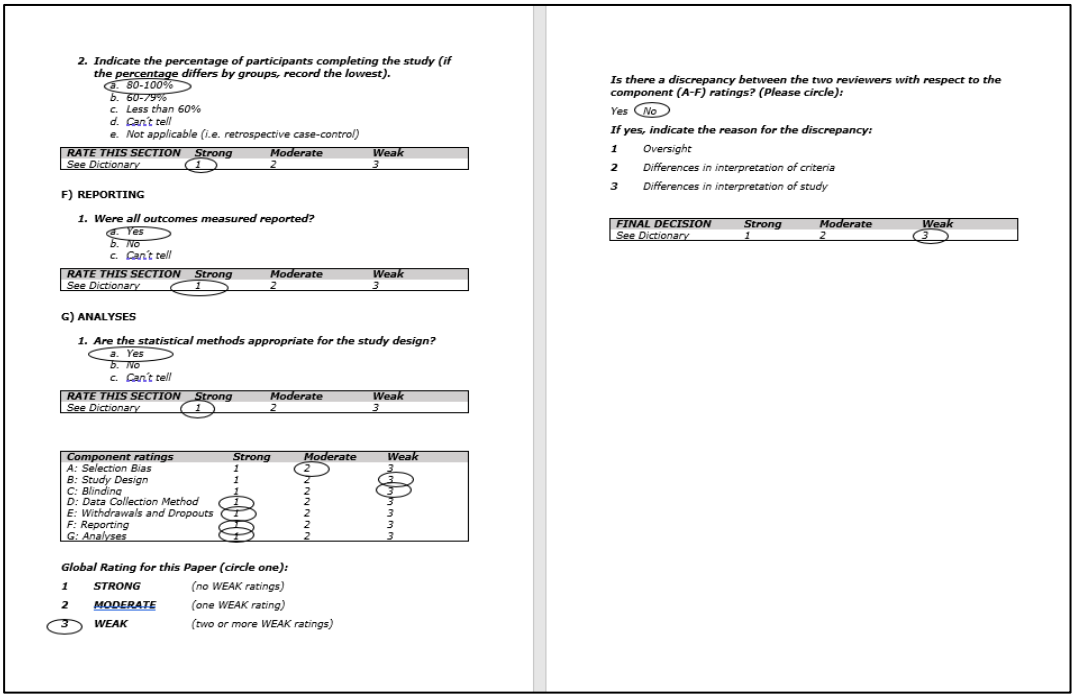
D) DATA COLLECTION METHODS

1. ***Were data collection tools shown to be valid?***
   a. Yes
   b. No
   c. Can't tell
2. ***Were data collection tools shown to be reliable?***
   a. Yes
   b. No
   c. Can't tell

RATE THIS SECTION	Strong	Moderate	Weak
See Dictionary	1	2	3

E) WITHDRAWALS AND DROP-OUTS

1. ***Were withdrawals and drop-outs reported in terms of numbers and/ or reasons per group?***
   a. Yes
   b. No
   c. Can't tell
   d. Not applicable



2. ***Indicate the percentage of participants completing the study (if the percentage differs by groups, record the lowest).***
   a. 80-100%
   b. 60-79%
   c. Less than 60%
   d. Can't tell
   e. Not applicable (i.e. retrospective case-control)

RATE THIS SECTION	Strong	Moderate	Weak
See Dictionary	1	2	3

F) REPORTING

1. ***Were all outcomes measured reported?***
   a. Yes
   b. No
   c. Can't tell

RATE THIS SECTION	Strong	Moderate	Weak
See Dictionary	1	2	3

G) ANALYSES

1. ***Are the statistical methods appropriate for the study design?***
   a. Yes
   b. No
   c. Can't tell

RATE THIS SECTION	Strong	Moderate	Weak
See Dictionary	1	2	3

Component ratings	Strong	Moderate	Weak
A: Selection Bias	1	2	3
B: Study Design	1	2	3
C: Blinding	1	2	3
D: Data Collection Method	1	2	3
E: Withdrawals and Dropouts	1	2	3
F: Reporting	1	2	3
G: Analyses	1	2	3

Global Rating for this Paper (circle one):

1 **STRONG** (no WEAK ratings)

2 **MODERATE** (one WEAK rating)

3 **WEAK** (two or more WEAK ratings)

Is there a discrepancy between the two reviewers with respect to the component (A-F) ratings? (Please circle):

Yes No

If yes, indicate the reason for the discrepancy:

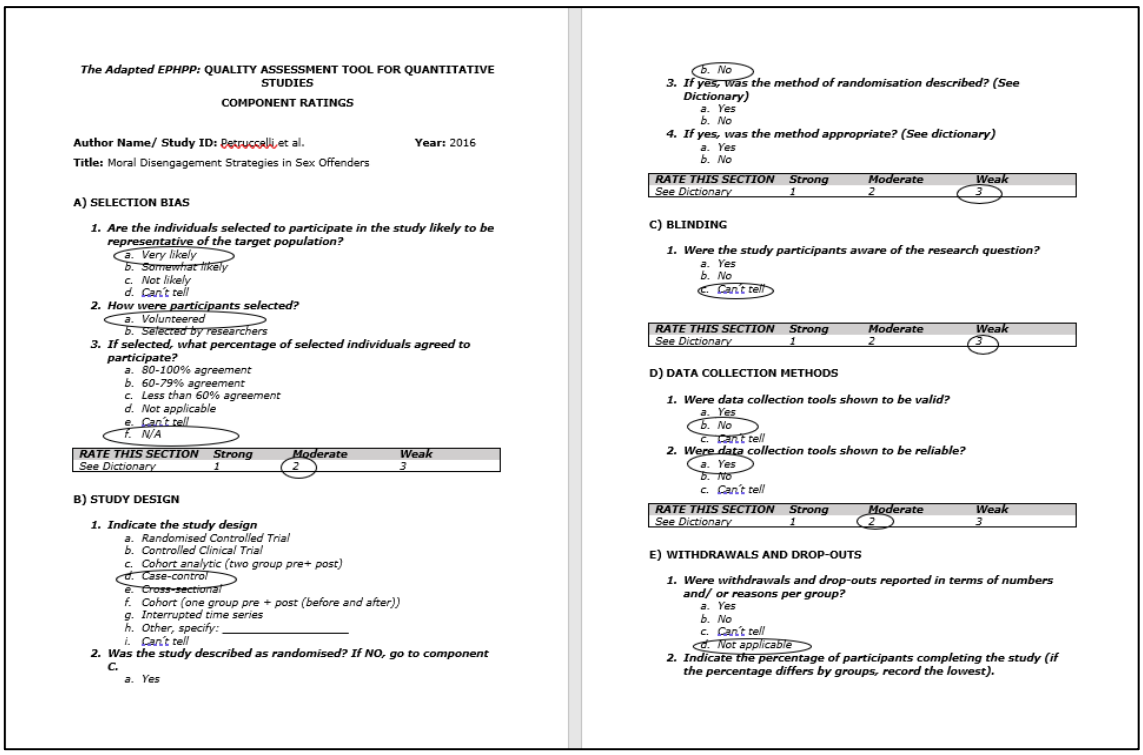
1 *Oversight*

2 *Differences in interpretation of criteria*

3 *Differences in interpretation of study*

FINAL DECISION	Strong	Moderate	Weak
See Dictionary	1	2	3

Petruccelli et al. (2017a)



The Adapted EPHPP: **QUALITY ASSESSMENT TOOL FOR QUANTITATIVE STUDIES**

COMPONENT RATINGS

Author Name/ Study ID: Petruccelli et al. **Year:** 2016

Title: Moral Disengagement Strategies in Sex Offenders

A) SELECTION BIAS

1. ***Are the individuals selected to participate in the study likely to be representative of the target population?***
   a. *Very likely*
   b. *Somewhat likely*
   c. *Not likely*
   d. *Can't tell*
2. ***How were participants selected?***
   a. *Volunteered*
   b. *Selected by researchers*
3. ***If selected, what percentage of selected individuals agreed to participate?***
   a. *80-100% agreement*
   b. *60-79% agreement*
   c. *Less than 60% agreement*
   d. *Not applicable*
   e. *Can't tell*
   f. *N/A*

RATE THIS SECTION	Strong	Moderate	Weak
See Dictionary	1	2	3

B) STUDY DESIGN

1. ***Indicate the study design***
   a. *Randomised Controlled Trial*
   b. *Controlled Clinical Trial*
   c. *Cohort analytic (two group pre+ post)*
   d. *Case-control*
   e. *Cross-sectional*
   f. *Cohort (one group pre + post (before and after))*
   g. *Interrupted time series*
   h. *Other, specify: _____*
   i. *Can't tell*
2. ***Was the study described as randomised? If NO, go to component C.***
   a. *Yes*
   b. *No*
3. ***If yes, was the method of randomisation described? (See Dictionary)***
   a. *Yes*
   b. *No*
4. ***If yes, was the method appropriate? (See dictionary)***
   a. *Yes*
   b. *No*

RATE THIS SECTION	Strong	Moderate	Weak
See Dictionary	1	2	3

C) BLINDING

1. ***Were the study participants aware of the research question?***
   a. *Yes*
   b. *No*
   c. *Can't tell*

RATE THIS SECTION	Strong	Moderate	Weak
See Dictionary	1	2	3

D) DATA COLLECTION METHODS

1. ***Were data collection tools shown to be valid?***
   a. *Yes*
   b. *No*
   c. *Can't tell*
2. ***Were data collection tools shown to be reliable?***
   a. *Yes*
   b. *No*
   c. *Can't tell*

RATE THIS SECTION	Strong	Moderate	Weak
See Dictionary	1	2	3

E) WITHDRAWALS AND DROP-OUTS

1. ***Were withdrawals and drop-outs reported in terms of numbers and/ or reasons per group?***
   a. *Yes*
   b. *No*
   c. *Can't tell*
   d. *Not applicable*
2. ***Indicate the percentage of participants completing the study (if the percentage differs by groups, record the lowest).***
   a. *80-100%*
   b. *60-79%*
   c. *Less than 60%*
   d. *Can't tell*
   e. *Not applicable (i.e. retrospective case-control)*

RATE THIS SECTION	Strong	Moderate	Weak
See Dictionary	1	2	3

F) REPORTING

1. ***Were all outcomes measured reported?***
   a. *Yes*
   b. *No*
   c. *Can't tell*

RATE THIS SECTION	Strong	Moderate	Weak
See Dictionary	1	2	3

G) ANALYSES

1. ***Are the statistical methods appropriate for the study design?***
   a. *Yes*
   b. *No*
   c. *Can't tell*

RATE THIS SECTION	Strong	Moderate	Weak
See Dictionary	1	2	3

Component ratings	Strong	Moderate	Weak
A: Selection Bias	1	2	3
B: Study Design	1	2	3
C: Blinding	1	2	3
D: Data Collection Method	1	2	3
E: Withdrawals and Dropouts	1	2	3
F: Reporting	1	2	3
G: Analyses	1	2	3

Global Rating for this Paper (circle one):

1 **STRONG** *(no WEAK ratings)*

2 **MODERATE** *(one WEAK rating)*

3 **WEAK** *(two or more WEAK ratings)*

Is there a discrepancy between the two reviewers with respect to the component (A-F) ratings? (Please circle):

Yes No

If yes, indicate the reason for the discrepancy:

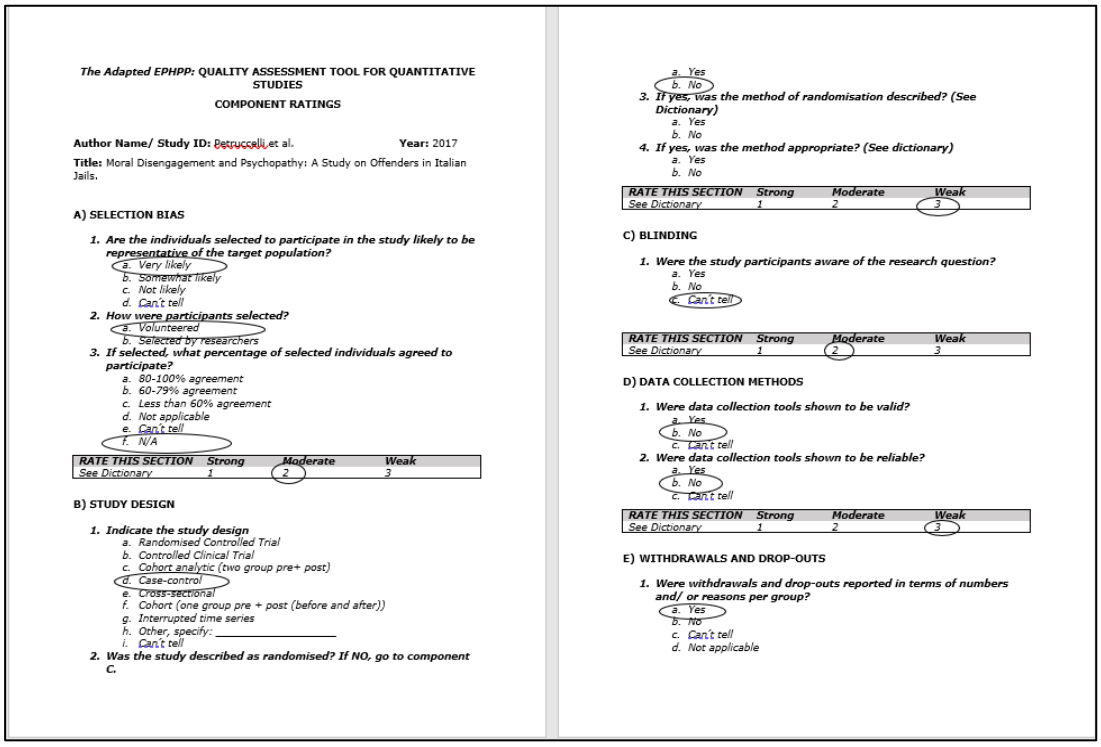
1 *Oversight*

2 *Differences in interpretation of criteria*

3 *Differences in interpretation of study*

FINAL DECISION	Strong	Moderate	Weak
See Dictionary	1	2	3

Petruccelli et al. (2017b)



The Adapted EPHPP: **QUALITY ASSESSMENT TOOL FOR QUANTITATIVE STUDIES**

COMPONENT RATINGS

Author Name/ Study ID: Petruccelli et al. **Year:** 2017

Title: Moral Disengagement and Psychopathy: A Study on Offenders in Italian Jails.

A) SELECTION BIAS

1. ***Are the individuals selected to participate in the study likely to be representative of the target population?***
   a. Very likely
   b. Somewhat likely
   c. Not likely
   d. Can't tell
2. ***How were participants selected?***
   a. Volunteered
   b. Selected by researchers
3. ***If selected, what percentage of selected individuals agreed to participate?***
   a. 80-100% agreement
   b. 60-79% agreement
   c. Less than 60% agreement
   d. Not applicable
   e. Can't tell
   f. N/A

RATE THIS SECTION	Strong	Moderate	Weak
See Dictionary	1	2	3

B) STUDY DESIGN

1. ***Indicate the study design***
   a. Randomised Controlled Trial
   b. Controlled Clinical Trial
   c. Cohort analytic (two group pre+ post)
   d. Case-control
   e. Cross-sectional
   f. Cohort (one group pre + post (before and after))
   g. Interrupted time series
   h. Other, specify: _____
   i. Can't tell
2. ***Was the study described as randomised? If NO, go to component C.***
   a. Yes
   b. No
3. ***If yes, was the method of randomisation described? (See Dictionary)***
   a. Yes
   b. No
4. ***If yes, was the method appropriate? (See dictionary)***
   a. Yes
   b. No

RATE THIS SECTION	Strong	Moderate	Weak
See Dictionary	1	2	3

C) BLINDING

1. ***Were the study participants aware of the research question?***
   a. Yes
   b. No
   c. Can't tell

RATE THIS SECTION	Strong	Moderate	Weak
See Dictionary	1	2	3

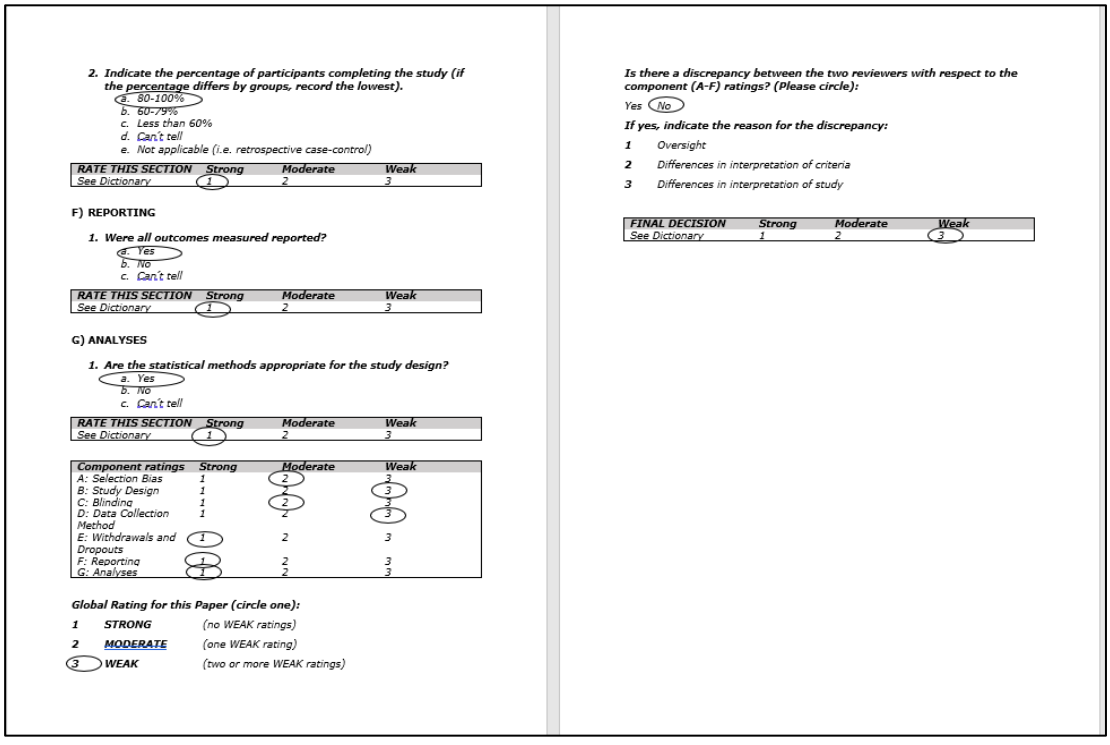
D) DATA COLLECTION METHODS

1. ***Were data collection tools shown to be valid?***
   a. Yes
   b. No
   c. Can't tell
2. ***Were data collection tools shown to be reliable?***
   a. Yes
   b. No
   c. Can't tell

RATE THIS SECTION	Strong	Moderate	Weak
See Dictionary	1	2	3

E) WITHDRAWALS AND DROP-OUTS

1. ***Were withdrawals and drop-outs reported in terms of numbers and/ or reasons per group?***
   a. Yes
   b. no
   c. Can't tell
   d. Not applicable



2. ***Indicate the percentage of participants completing the study (if the percentage differs by groups, record the lowest).***
   a. 80-100%
   b. 60-79%
   c. Less than 60%
   d. Can't tell
   e. Not applicable (i.e. retrospective case-control)

RATE THIS SECTION	Strong	Moderate	Weak
See Dictionary	1	2	3

F) REPORTING

1. ***Were all outcomes measured reported?***
   a. Yes
   b. No
   c. Can't tell

RATE THIS SECTION	Strong	Moderate	Weak
See Dictionary	1	2	3

G) ANALYSES

1. ***Are the statistical methods appropriate for the study design?***
   a. Yes
   b. No
   c. Can't tell

RATE THIS SECTION	Strong	Moderate	Weak
See Dictionary	1	2	3

Component ratings	Strong	Moderate	Weak
A: Selection Bias	1	2	3
B: Study Design	1	2	3
C: Blinding	1	2	3
D: Data Collection Method	1	2	3
E: Withdrawals and Dropouts	1	2	3
F: Reporting	1	2	3
G: Analyses	1	2	3

Global Rating for this Paper (circle one):

1 ***STRONG*** *(no WEAK ratings)*

2 ***MODERATE*** *(one WEAK rating)*

3 ***WEAK*** *(two or more WEAK ratings)*

Is there a discrepancy between the two reviewers with respect to the component (A-F) ratings? (Please circle):

Yes No

If yes, indicate the reason for the discrepancy:

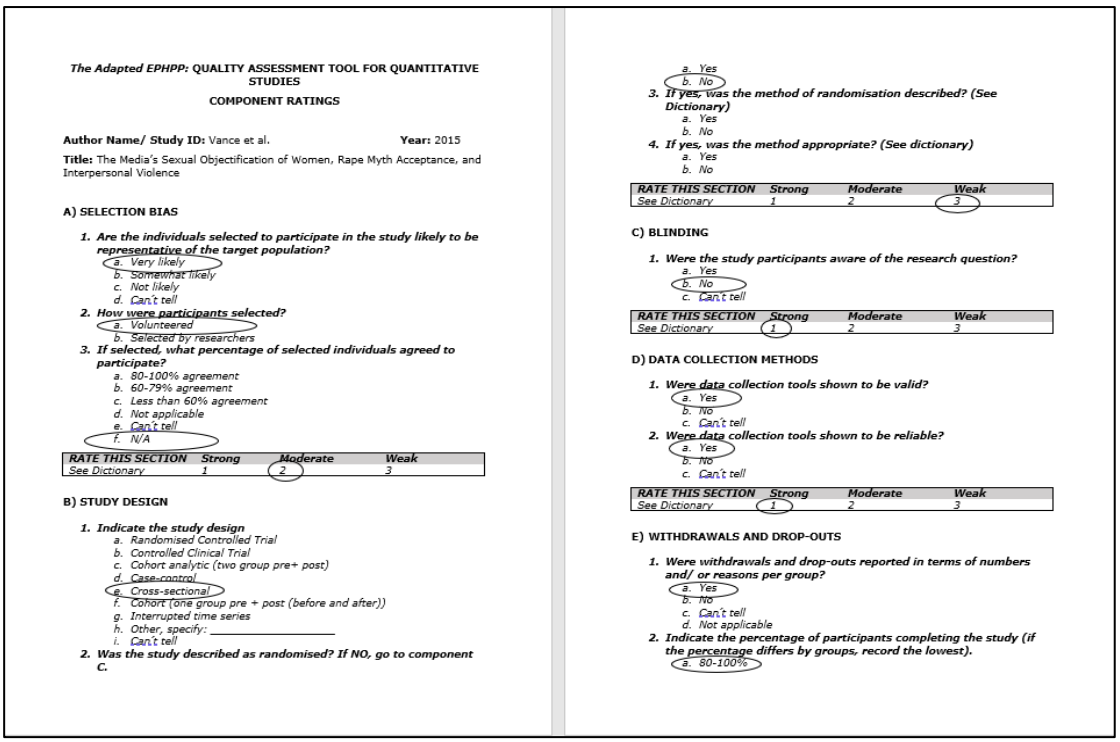
1 *Oversight*

2 *Differences in interpretation of criteria*

3 *Differences in interpretation of study*

FINAL DECISION	Strong	Moderate	Weak
See Dictionary	1	2	3

Vance et al. (2015)



The Adapted EPHPP: **QUALITY ASSESSMENT TOOL FOR QUANTITATIVE STUDIES**

COMPONENT RATINGS

Author Name/ Study ID: Vance et al. **Year:** 2015

Title: The Media's Sexual Objectification of Women, Rape Myth Acceptance, and Interpersonal Violence

A) SELECTION BIAS

1. ***Are the individuals selected to participate in the study likely to be representative of the target population?***
   a. *Very likely*
   b. *Somewhat likely*
   c. *Not likely*
   d. *Can't tell*
2. ***How were participants selected?***
   a. *Volunteered*
   b. *Selected by researchers*
3. ***If selected, what percentage of selected individuals agreed to participate?***
   a. *80-100% agreement*
   b. *60-79% agreement*
   c. *Less than 60% agreement*
   d. *Not applicable*
   e. *Can't tell*
   f. *N/A*

RATE THIS SECTION	Strong	Moderate	Weak
See Dictionary	1	2	3

B) STUDY DESIGN

1. ***Indicate the study design***
   a. *Randomised Controlled Trial*
   b. *Controlled Clinical Trial*
   c. *Cohort analytic (two group pre+ post)*
   d. *Case-control*
   e. *Cross-sectional*
   f. *Cohort (one group pre + post (before and after))*
   g. *Interrupted time series*
   h. *Other, specify: _____*
   i. *Can't tell*
2. ***Was the study described as randomised? If NO, go to component C.***
   a. *Yes*
   b. *No*
3. ***If yes, was the method of randomisation described? (See Dictionary)***
   a. *Yes*
   b. *No*
4. ***If yes, was the method appropriate? (See dictionary)***
   a. *Yes*
   b. *No*

RATE THIS SECTION	Strong	Moderate	Weak
See Dictionary	1	2	3

C) BLINDING

1. ***Were the study participants aware of the research question?***
   a. *Yes*
   b. *No*
   c. *Can't tell*

RATE THIS SECTION	Strong	Moderate	Weak
See Dictionary	1	2	3

D) DATA COLLECTION METHODS

1. ***Were data collection tools shown to be valid?***
   a. *Yes*
   b. *No*
   c. *Can't tell*
2. ***Were data collection tools shown to be reliable?***
   a. *Yes*
   b. *No*
   c. *Can't tell*

RATE THIS SECTION	Strong	Moderate	Weak
See Dictionary	1	2	3

E) WITHDRAWALS AND DROP-OUTS

1. ***Were withdrawals and drop-outs reported in terms of numbers and/ or reasons per group?***
   a. *Yes*
   b. *No*
   c. *Can't tell*
   d. *Not applicable*
2. ***Indicate the percentage of participants completing the study (if the percentage differs by groups, record the lowest).***
   a. *80-100%*
   b. *60-79%*
   c. *Less than 60%*
   d. *Can't tell*
   e. *Not applicable (i.e. retrospective case-control)*

RATE THIS SECTION	Strong	Moderate	Weak
See Dictionary	1	2	3

F) REPORTING

1. ***Were all outcomes measured reported?***
   a. *Yes*
   b. *No*
   c. *Can't tell*

RATE THIS SECTION	Strong	Moderate	Weak
See Dictionary	1	2	3

G) ANALYSES

1. ***Are the statistical methods appropriate for the study design?***
   a. *Yes*
   b. *No*
   c. *Can't tell*

RATE THIS SECTION	Strong	Moderate	Weak
See Dictionary	1	2	3

Component ratings	Strong	Moderate	Weak
A: Selection Bias	1	2	3
B: Study Design	1	2	3
C: Blinding	1	2	3
D: Data Collection Method	1	2	3
E: Withdrawals and Dropouts	1	2	3
F: Reporting	1	2	3
G: Analyses	1	2	3

Global Rating for this Paper (circle one):

1 **STRONG** *(no WEAK ratings)*
2 **MODERATE** *(one WEAK rating)*
3 **WEAK** *(two or more WEAK ratings)*

Is there a discrepancy between the two reviewers with respect to the component (A-F) ratings? (Please circle):

Yes No

If yes, indicate the reason for the discrepancy:

1 *Oversight*
2 *Differences in interpretation of criteria*
3 *Differences in interpretation of study*

FINAL DECISION	Strong	Moderate	Weak
See Dictionary	1	2	3

Appendix F. The Data Extraction Form Used in the Review.

Date form completed

Name/ ID of person extracting data

Study ID (surname of first author and year of publishing)

Full text or abstract publication

Reference citation

Study author contact details

Publication type

Notes

Characteristics of included studies	**Descriptions as stated in report/paper**	**Location in text or source** *(pg & ¶/fig/table/other)*
Aim of study *(e.g. efficacy, equivalence, pragmatic)*		
Design *(e.g. parallel, crossover, non-RCT)*		
Unit of allocation *(by individuals, cluster/ groups)*		
Start date		
End date		
Duration of participation *(from recruitment to last follow-up)*		
Ethical approval needed/ obtained for study	☐ Yes ☐ No ☐ Unclear	
Notes:		

Participants	Description *Include comparative information for each intervention or comparison group if available*	Location in text or source *(pg & ¶/fig/table/other)*
Population description *(from which study participants are drawn)*		
Setting *(including location and social context)*		
Method of recruitment of participants *(e.g. phone, mail, clinic patients)*		
Informed consent obtained	☐ Yes ☐ No ☐ Unclear	
Withdrawals and exclusions *(if not provided below by outcome)*		
Age		
Sex		
Ethnicity		
Other relevant sociodemographics		
Notes:		

Outcomes	Description as stated in report/paper	Location in text or source *(pg & ¶/fig/table/other)*

Group name			
No. studied in each group			
Theoretical basis *(include key references)*			
Primary outcomes			
Delivery of Outcome psychometric			
Person measuring/ reporting			
Scales: upper and lower limits *(indicate whether high or low score is good)*			
Is outcome/tool validated?	☐ Yes	☐ No	☐ Unclear
Analyses (include number of participants analysed)			
Notes:			

Appendix G. PRISMA Checklist Used to Assess the Quality of The Review.

Section/topic	#	Checklist item	Reported on page #
TITLE			
Title	1	Identify the report as a systematic review, meta-analysis, or both.	6
ABSTRACT			
Structured summary	2	Provide a structured summary including, as applicable: background; objectives; data sources; study eligibility criteria, participants, and interventions; study appraisal and synthesis methods; results; limitations; conclusions and implications of key findings; systematic review registration number.	8
INTRODUCTION			
Rationale	3	Describe the rationale for the review in the context of what is already known.	10 & 11
Objectives	4	Provide an explicit statement of questions being addressed with reference to participants, interventions, comparisons, outcomes, and study design (PICOS).	11 & 15
METHODS			
Protocol and registration	5	Indicate if a review protocol exists, if and where it can be accessed (e.g., Web address), and, if available, provide registration information including registration number.	12
Eligibility criteria	6	Specify study characteristics (e.g., PICOS, length of follow-up) and report characteristics (e.g., years considered, language, publication status) used as criteria for eligibility, giving rationale.	15
Information sources	7	Describe all information sources (e.g., databases with dates of coverage, contact with study authors to identify additional studies) in the search and date last searched.	12-14
Search	8	Present full electronic search strategy for at least one database, including any limits used, such that it could be repeated.	13 & 14

Study selection	9	State the process for selecting studies (i.e., screening, eligibility, included in systematic review, and, if applicable, included in the meta-analysis).	15-16
Data collection process	10	Describe method of data extraction from reports (e.g., piloted forms, independently, in duplicate) and any processes for obtaining and confirming data from investigators.	17-18
Data items	11	List and define all variables for which data were sought (e.g., PICOS, funding sources) and any assumptions and simplifications made.	18-19
Risk of bias in individual studies	12	Describe methods used for assessing risk of bias of individual studies (including specification of whether this was done at the study or outcome level), and how this information is to be used in any data synthesis.	16-17
Summary measures	13	State the principal summary measures (e.g., risk ratio, difference in means).	N/A
Synthesis of results	14	Describe the methods of handling data and combining results of studies, if done, including measures of consistency (e.g., I^2) for each meta-analysis.	26

Section/topic	#	Checklist item	Reported on page #
Risk of bias across studies	15	Specify any assessment of risk of bias that may affect the cumulative evidence (e.g., publication bias, selective reporting within studies).	24-25
Additional analyses	16	Describe methods of additional analyses (e.g., sensitivity or subgroup analyses, meta-regression), if done, indicating which were pre-specified.	N/A
RESULTS			

Study selection	17	Give numbers of studies screened, assessed for eligibility, and included in the review, with reasons for exclusions at each stage, ideally with a flow diagram.	15-16
Study characteristics	18	For each study, present characteristics for which data were extracted (e.g., study size, PICOS, follow-up period) and provide the citations.	18-19 & 23
Risk of bias within studies	19	Present data on risk of bias of each study and, if available, any outcome level assessment (see item 12).	24-25
Results of individual studies	20	For all outcomes considered (benefits or harms), present, for each study: (a) simple summary data for each intervention group (b) effect estimates and confidence intervals, ideally with a forest plot.	20-22, 26-28
Synthesis of results	21	Present results of each meta-analysis done, including confidence intervals and measures of consistency.	N/A
Risk of bias across studies	22	Present results of any assessment of risk of bias across studies (see Item 15).	24-25
Additional analysis	23	Give results of additional analyses, if done (e.g., sensitivity or subgroup analyses, meta-regression [see Item 16]).	N/A
DISCUSSION			
Summary of evidence	24	Summarize the main findings including the strength of evidence for each main outcome; consider their relevance to key groups (e.g., healthcare providers, users, and policy makers).	29
Limitations	25	Discuss limitations at study and outcome level (e.g., risk of bias), and at review-level (e.g., incomplete retrieval of identified research, reporting bias).	29-30
Conclusions	26	Provide a general interpretation of the results in the context of other evidence, and implications for future research.	30
FUNDING			
Funding	27	Describe sources of funding for the systematic review and other support (e.g., supply of data); role of funders for the systematic review.	N/A

From: Moher D, Liberati A, Tetzlaff J, Altman DG, The PRISMA Group (2009). Preferred Reporting Items for Systematic Reviews and Meta-Analyses: The PRISMA Statement. PLoS Med 6(7): e1000097. doi:10.1371/journal.pmed1000097

For more information, visit: **www.prisma-statement.org**.

Appendix H. The Letter Confirming Ethical Approval for the Primary and Secondary Research Projects.

University of Nottingham
UK | CHINA | MALAYSIA

Faculty of Medicine & Health Sciences
Research Ethics Committee
Faculty Hub
Room E41, E Floor, Medical School
Queen's Medical Centre Campus
Nottingham University Hospitals
Nottingham, NG7 2UH
Email: FMHS-ResearchEthics@nottingham.ac.uk

20 May 2020

Rosalind Barnett
Doctorate of Forensic Psychology Student
c/o Dr Vincent Egan
Associate Professor
Centre for Forensic and Family Psychology
Division of Psychiatry and Applied Psychology
School of Medicine
Room B23 Yang Fujia
Jubilee Campus
Wollaton Road
Nottingham
NG8 1BB

Dear Ms Barnett

Ethics Reference No: 508-2003 **– please always quote**	
1. The Rise of the Sexbots: Morality, Personality, and Acceptance of Sexual Crime Myths in Association with Attitudes towards Sex Robots. 2. An Analysis of Language Used by a Community Sample Discussing Sex Robots.	
Chief Investigator/Supervisor: Dr Vince Egan, Associate Professor,Centre for Forensic and Family Psychology, Psychiatry and Applied Psychology, School of Medicine	
Lead Investigators/student: Rosalind Barnett, Doctorate of Forensic Psychology	
Other Key investigators: Professor Kevin Browne, Director of Centre for Forensic and Family Psychology, Psychiatry and Applied Psychology, School of Medicine	
Proposed Start Date: 01/05/2020	**Proposed End Date:** 28/2/2021

Thank you for submitting the above application and the following documents were received:

- FMHS REC Application form and supporting documents version 1.0: 06.03.2020

These have been reviewed and are satisfactory and the project is approved.

Approval is given on the understanding that:

1. The protocol agreed is followed and the Committee is informed of any changes using a notice of amendment form (please request a form).
2. The Chair is informed of any serious or unexpected event.
3. An End of Project Progress Report is completed and returned when the study has finished (Please request a form).

Yours sincerely

pp Lawrence

Dr John Williams, Associate Professor in Anaesthesia and Pain Medicine
Chair, Faculty of Medicine & Health Sciences Research Ethics Committee

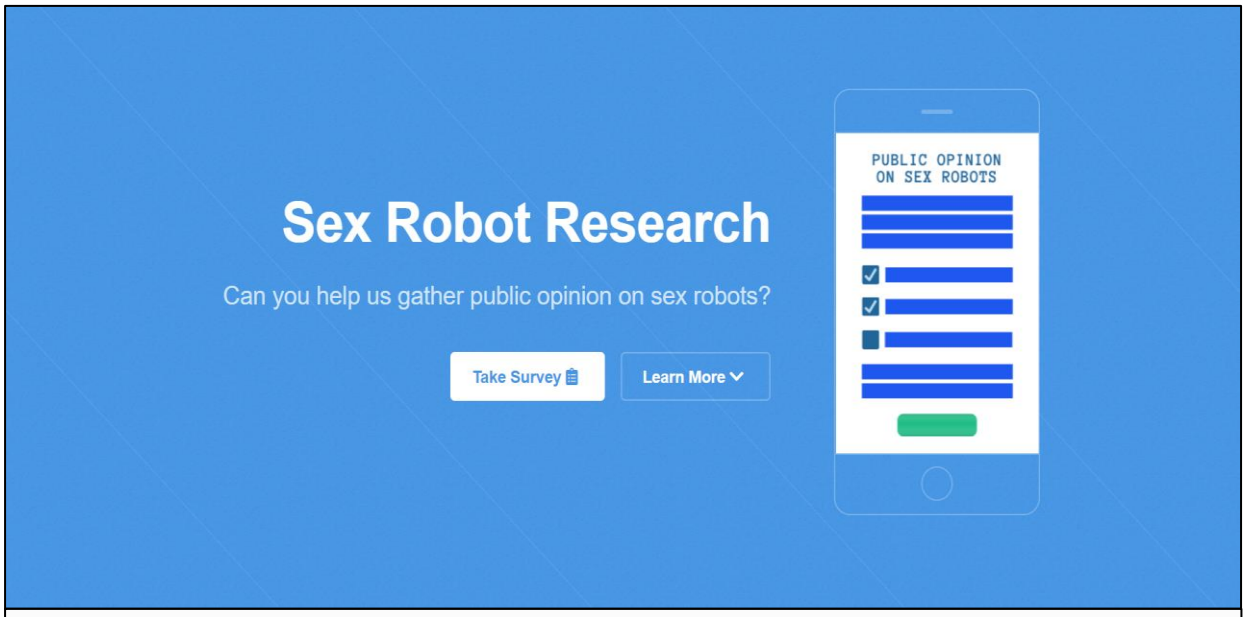
Appendix I. The Advert That Was Displayed on Social Media To Recruit Participants.



Appendix J. The Full List of Reddit Forums That the Study Was Advertised On.

1. r/antipornography
2. r/antikink
3. r/sexdollsnsfw
4. r/sexdolls
5. r/psychology
6. r/academicpsychology
7. r/askpsychology
8. r/samplesize
9. r/science
10. r/computerethics
11. r/schoolpsychology
12. r/robot_philosophy
13. r/robots
14. r/technology
15. r/tech
16. r/samplesize
17. r/futurology
18. r/foodforthought
19. r/robotics
20. r/darkfuturology
21. r/robosexual

Appendix K. The Website 'sexrobotresearch.co.uk'.



What is this?

In recent times, the sexual product market has expanded to include technology such as Sex Robots. However, scientific research has not kept pace with their rise in popularity.

Are you interested in the implications of these advances? Do you want your opinion heard?
Please follow the link above to take part in my Doctoral Research, investigating how society views Sex Robots.

Who are we?



Rosalind Barnett

Researcher

BSc, MSc(Res), MBPsS. Doctoral researcher on the DForenPsy course at The University of Nottingham.



Dr. Vincent Egan

Supervisor

Associate Professor, Year 1 Director of Forensic Psychology Programmes, Faculty of Medicine & Health Sciences



Professor Kevin Browne

Supervisor

Chair of Forensic Psychology and Child Health, as well as Director of the Professional Doctorate Programmes in Forensic Psychology and the research Centre for Forensic and Family Psychology.

Appendix L. The Information Sheet Presented to Participants.

Participant Information

Participation Information

Centre for Forensic & Family Psychology

Division of Psychiatry & Applied Psychology

School of Medicine, Faculty of Medicine & Health Sciences

Project Title: **Public Opinions of Sex Robots**

Researcher: Rosalind Barnett (Rosalind.Barnett1@nottingham.ac.uk)

Supervisors: Dr. Vincent Egan (Vincent.Egan@nottingham.ac.uk)

Professor Kevin Browne (Kevin.Browne@nottingham.ac.uk)

Ethics Reference Number: 508-2003

You are being invited to participate in a research study entitled **Public Opinions of Sex Robots** as part of a community sample between the ages of 18 and 70. Please read through this information before agreeing to participate. You can ask any questions before deciding by contacting the researchers (details above). The study is being conducted by Rosalind Barnett, Dr. Vincent Egan, and Professor Kevin Browne, all from the School of Medicine at The University of Nottingham.

What will I be asked to do?

You will be asked to provide some demographic information (i.e. age, sex, race), followed by 151 questions requiring a single answer, and four questions requesting your opinions on Sex Robots, for which you will be free to write up to 1,000 characters. These final four questions are non-compulsory, and you will have the option to finish the survey without completing them by clicking 'next'. The whole survey should take roughly 20 minutes to complete, however you can choose to finish the survey at a later time/ date by clicking 'finish later'. We would like you to answer all questions as honestly and completely as possible.

If you do decide to take part, you will be asked to complete a consent form. Your participation is voluntary, and you are free to withdraw (i.e. pull out) at any point before or during the study by closing the browser window, without giving a reason. It will not affect you in any way. The data will only be uploaded on completion of the questionnaire by clicking the FINISH button after the final question. You will then be presented with a Debrief page, providing more information about the research topic and details of where you can seek support if you have been affected by any of the topics in the survey. Because this study uses anonymous responses, once you have finished and submitted your answers, it will not be possible to withdraw your data.

What are the disadvantages of taking part?

Please be aware that some of the questions you will be asked are very personal, regarding your attitudes about sex and controversial sexual behaviours. Please do not take part in this study if you are under the age of 18 or feel uncomfortable answering questions on this topic.

What are the advantages of taking part?

Your contribution together with others will help the researchers to understand more about the different opinions and attitudes that people hold towards Sex Robots, as well as whether there are demographic and personality differences influencing these attitudes.

What will happen to my data?

No one will know you have taken part in this study. All of the information that you provide will be kept anonymous and it cannot be linked specifically to you; you will not be asked for your name or any other personal details, and no IP addresses are collected. The survey tool is set, so your IP address cannot be seen, uploaded, or stored by the researcher. For further information about the security of the online survey tool please see https://www.onlinesurveys.ac.uk/security/. The only personal data we will receive is your email if you contact us to ask further questions or need support. This will be received and handled separately from your completed questionnaire and will only be kept as long as needed to resolve your query. The UK Data Protection Act will apply to all information gathered.

We believe that there are no known risks associated with this research study. However, as with any online activity the risk of breach is possible. We will do everything possible to minimise possibility of breach and maintain anonymity and security. All data will be stored on password-protected computers and on a restricted access server at the University under the terms of its data protection policy. When you have clicked the finish button at the end of the questionnaire, it will be uploaded into a password protected database with a code number. The University of Nottingham is the data controller (legally responsible for data security) and the Supervisors of this study (named above) are the data custodians (manage access to the data) and as such will determine how your data is used in this study. Responsible members of The University of Nottingham may be given access to data for monitoring and/ or audit of the study to ensure it is being carried out correctly. All the data will be stored and held by the Researchers for a minimum of 7 years before being destroyed.

The data will contribute to the Researcher's Doctoral thesis and the results of the study may be published in scientific journals and presented at scientific conferences. Aggregated (combined) anonymous data from this study may also be used by other researchers in the future for research and teaching purposes (with research ethics approval). If you would like a summary of the results, then you can contact the researchers using the contact details above.

If you have any questions or concerns, please do not hesitate to contact us at the above email addresses. If you remain unhappy and wish to complain formally, you should then contact the Faculty of Medicine & Health Sciences Research Ethics Committee Administrator Email: FMHS-ResearchEthics@nottingham.ac.uk

THANK YOU FOR YOUR PARTICIPATION

Appendix M. The Consent Form Presented to Participants.

Consent

Participation Consent

Centre for Forensic & Family Psychology

Division of Psychiatry & Applied Psychology

School of Medicine, Faculty of Medicine & Health Sciences

Project Title: **Public Opinions of Sex Robots**

Researcher: Rosalind Barnett (Rosalind.Barnett1@nottingham.ac.uk)

Supervisor: Dr. Vincent Egan (Vincent.Egan@nottingham.ac.uk)

Professor Kevin Browne (Kevin.Browne@nottingham.ac.uk)

Ethics Reference Number: 508-2003

Please read the following statements:

1. I have read and understood the Participant Information.

2. I know how to contact the researchers if I have questions about this study.

3. I understand that my participation is voluntary, and I am free to withdraw at any time by closing the browser.

4. I understand that my answers are anonymous.

5. I understand that for anonymous questionnaire studies, once you have completed the study and submitted your questionnaire, the data cannot be withdrawn.

6. I understand the overall anonymised data from this study may be used by other researchers in the future for research (with research ethics approval) and teaching purposes.

7. I understand that non-identifiable data from this study might be used in academic research reports or publications.

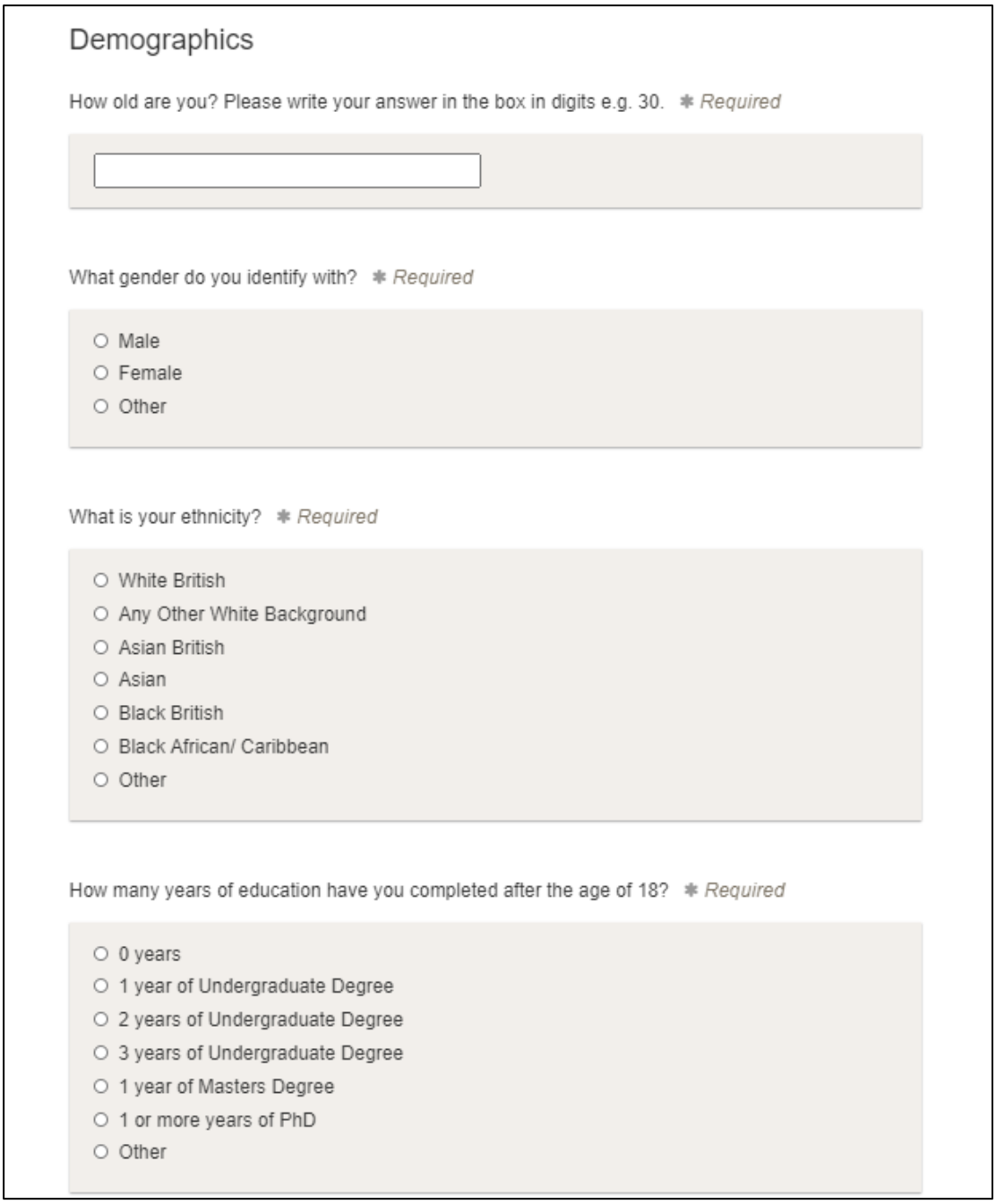
8. I am 18 or over.

9. I indicate my willingness to take part in the study voluntarily.

I agree to all of the above. * *Required*

- (●) Yes
- ( ) No

Appendix N. The Demographic Questions Presented to Participants.



Demographics

How old are you? Please write your answer in the box in digits e.g. 30. * *Required*

What gender do you identify with? * *Required*

- ○ Male
- ○ Female
- ○ Other

What is your ethnicity? * *Required*

- ○ White British
- ○ Any Other White Background
- ○ Asian British
- ○ Asian
- ○ Black British
- ○ Black African/ Caribbean
- ○ Other

How many years of education have you completed after the age of 18? * *Required*

- ○ 0 years
- ○ 1 year of Undergraduate Degree
- ○ 2 years of Undergraduate Degree
- ○ 3 years of Undergraduate Degree
- ○ 1 year of Masters Degree
- ○ 1 or more years of PhD
- ○ Other

What is your sexual orientation? * *Required*

- ○ Heterosexual
- ○ Homosexual
- ○ Bisexual
- ○ Asexual
- ○ Other

What is your relationship status? * *Required*

- ○ Single
- ○ In a Relationship
- ○ Married or Domestic Partnership
- ○ Divorced
- ○ Widowed
- ○ Separated
- ○ Other

In the last year, how often would you say you have watched pornographic material? * *Required*

- ○ Never
- ○ Monthly
- ○ Weekly
- ○ Every Other Day
- ○ Daily
- ○ Other

Appendix O. The Definition Of And Questions About Sex Robots That Were Presented To Participants.

Definition of a sex robot (Danaher, 2017):

'A "sex robot" is any artificial entity that is used for sexual purposes (i.e. for sexual stimulation and release) that meets the following three conditions:

1. **Humanoid form** i.e. it is intended [and appears to][1] to represent a human or human-like being in its appearance.
2. **Human-like movement/ behaviour** i.e. it is intended [and appears to][1] represent a human or humanlike being in its behaviours and movements.
3. **Some degree of artificial intelligence** i.e. it is capable of interpreting and responding to information in its environment. This may be minimal (e.g. simple preprogrammed behavioural responses) or more sophisticated (e.g. human-equivalent intelligence)'.

[1][]= not exact quote

Have you ever used a sex doll or robot? ✱ *Required*

Please select exactly 1 answer(s).

- ☐ Yes
- ☐ No

Would you use a sex doll or robot in the future? ✱ *Required*

Please select exactly 1 answer(s).

- ☐ Yes
- ☐ No
- ☐ Unsure

In your opinion, and on a scale from 1 (completely inappropriate) to 5 (completely appropriate), how appropriate are the following uses of Sex Robots? * *Required*

Please don't select more than 1 answer(s) per row.

Please select at least 15 answer(s).

	1- Completely Inappropriate	2- Inappropriate	3- Neither Inappropriate nor Appropriate	4- Appropriate	5- Completely Appropriate
Instead of cheating on a partner.	☐	☐	☐	☐	☐
Instead of prostitutes.	☐	☐	☐	☐	☐
For sex education.	☐	☐	☐	☐	☐
For disabled people who cannot easily have sex.	☐	☐	☐	☐	☐
For sex offenders to satisfy their drives.	☐	☐	☐	☐	☐
To improve hormone levels of people with infrequent sex lives.	☐	☐	☐	☐	☐
To improve self-esteem and overall psychological health.	☐	☐	☐	☐	☐
For group sex such as mixed human-	☐	☐	☐	☐	☐
To engage in unusual sex practices such as rough sex or sadistic behaviour.	☐	☐	☐	☐	☐
To maintain a relationship e.g. when partners have different sexual preferences.	☐	☐	☐	☐	☐
To demonstrate forms of sexual harassment for training and prevention.	☐	☐	☐	☐	☐
In isolated environments such as space missions.	☐	☐	☐	☐	☐
To practice abstinence.	☐	☐	☐	☐	☐
To reduce the risk of Sexually Transmitted Diseases e.g. in brothels.	☐	☐	☐	☐	☐

In your opinion, and on a scale from 1 (completely inappropriate) to 5 (completely appropriate), how appropriate are these potential forms of a sex robot? * *Required*

Please don't select more than 1 answer(s) per row.

Please select at least 11 answer(s).

	1- Completely inappropriate	2- Inappropriate	3- Neither inappropriate nor appropriate	4- Appropriate	5- Completely appropriate
Adult form.	☐	☐	☐	☐	☐
Adolescent form (13-18 years).	☐	☐	☐	☐	☐
Child form (0- 12 years).	☐	☐	☐	☐	☐
Animal form.	☐	☐	☐	☐	☐
Form of fantasy figures that do not resemble any known human or animal form.	☐	☐	☐	☐	☐
Form different from any recognisable life form.	☐	☐	☐	☐	☐
Form of one's family member.	☐	☐	☐	☐	☐
Form of a celebrity.	☐	☐	☐	☐	☐
Form of one's deceased spouse.	☐	☐	☐	☐	☐
Form of one's current partner.	☐	☐	☐	☐	☐
Form of one's friend.	☐	☐	☐	☐	☐

Please rate on a scale from 1 (strongly disagree) to 5 (strongly agree) how much you agree that: * *Required*

Please don't select more than 1 answer(s) per row.

Please select at least 2 answer(s).

	1- Strongly Disagree	2- Disagree	3- Neither Agree nor Disagree	4- Agree	5- Strongly Agree
Adult sex robots should be legal.	☐	☐	☐	☐	☐
Child sex robots should be legal.	☐	☐	☐	☐	☐

Appendix P. The Short Dark Triad 3 Scale (Jones & Paulhus, 2014).

Please indicate how much you agree with each of the following statements on a scale from 1 (strongly disagree) to 5 (strongly agree). It is not wise to tell your secrets.

1. It's not wise to tell your secrets.
2. I like to use clever manipulation to get my way.
3. Whatever it takes, you must get the important people on your side.
4. Avoid direct conflict with others because they may be useful in the future.
5. It's wise to keep track of information that you can use against people later.
6. You should wait for the right time to get back at people.
7. There are things you should hide from other people to preserve your reputation.
8. Make sure your plans benefit yourself, not others.
9. Most people can be manipulated.
10. People see me as a natural leader.
11. I hate being the centre of attention.
12. Many group activities tend to be dull without me.
13. I know that I am special because everyone keeps telling me so.
14. I like to be acquainted with important people.
15. I feel embarrassed if someone compliments me.
16. I have been compared to famous people.
17. I am an average person.
18. I insist on getting the respect I deserve.
19. I like to get revenge on authorities.
20. I avoid dangerous situations.
21. Payback needs to be quick and nasty.
22. People often say I'm out of control.
23. It's true that I can be mean to others.
24. People who mess with me always regret it.
25. I have never gotten into trouble with the law.
26. I enjoy having sex with people I hardly know.
27. I'll say anything to get what I want.

Appendix Q. The Short Sadistic Impulse Scale (O'Meara et al., 2011).

Please indicate whether you believe each of the following statements to be 'like' you or 'unlike' you.

1. I enjoy seeing people hurt.
2. I would enjoy hurting someone physically, sexually, or emotionally.
3. Hurting people would be exciting.
4. I have hurt people for my own enjoyment.
5. People would enjoy hurting others if they gave it a go.
6. I have fantasies which involve hurting people.
7. I have hurt people because I could.
8. I wouldn't intentionally hurt anyone.
9. I have humiliated others to keep them in line.
10. Sometimes I get so angry I want to hurt people.

Appendix R. The Acceptance of Modern Myths about Sexual Aggression Scale (Gerger et al., 2013)

You will be presented with a set of statements and asked to indicate the extent to which you agree or disagree with each. There are no right or wrong answers- we are only interested in your personal opinion. Please read each statement carefully and then choose that number form 1 (completely disagree) to 7 (completely agree) that you feel best represents your opinion.

1. When it comes to sexual contact, women expect men to take the lead.
2. Once a man and a woman have started "making out", a woman's misgivings against sex will automatically disappear.
3. A lot of women strongly complain about sexual infringements for no real reason, just to appear emancipated.
4. To get custody for their children, women often falsely accuse their ex-husband of a tendency towards sexual violence.
5. Interpreting harmless gestures as "sexual harassment" is a popular weapon in the battles of the sexes.
6. It is a biological necessity of men to release sexual pressure from time to time.
7. After a rape, women nowadays receive ample support.
8. Nowadays, a large proportion of rapes is partly caused by the depiction of sexuality in the media as this raises the sex drive of potential perpetrators.
9. If a woman invites a man to her home for a cup of coffee after a night out, this means that she wants to have sex.
10. As long as they don't go too far, suggestive remarks and allusions simply tell a woman that she is attractive.
11. Any woman who is careless enough to walk through "dark alleys" at night is partly to be blamed if she is raped.
12. When a woman starts a relationship with a man, she must be aware that the man will assert his right to have sex.
13. Most women prefer to be praised for their looks rather than their intelligence
14. Because the fascination caused by sex is disproportionately large, our society's sensitivity to crimes in this area is disproportionate as well.
15. Women like to play coy. This does not mean that they do not want sex.
16. Many women tend to exaggerate the problem of male violence.
17. When a man urges his female partner to have sex this cannot be called rape.

18. When a single woman invites a single man to her flat she signals that she is not averse to having sex.
19. When politicians deal with the topic of rape they do so mainly because this topic is likely to attract the attention of the media.
20. When defining "marital rape" there is no clear cut distinction between normal conjugal intercourse and rape.
21. A man's sexuality functions like a steam boiler- when the pressure gets too high, he has to "let off steam".
22. Women often accuse their husbands of marital rape just to retaliate for a failed relationship.
23. The discussion about sexual harassment on the job has mainly resulted in many a harmless behaviour being misinterpreted as harassment.
24. In dating situations the general expectation is that the woman "hits the brakes" and the man "pushes ahead".
25. Although the victims of armed robbery have to fear for their lives, they receive far less psychological support than do rape victims.
26. Alcohol is often the culprit when a man rapes a woman.
27. Many women tend to misinterpret a well-meant gesture as a "sexual assault".
28. Nowadays, the victims of sexual violence receive sufficient help in the form of women's shelters, therapy offers, and support groups.
29. Instead of worrying about alleged victims of sexual violence society should rather attend to more urgent problems, such as environmental destruction.
30. Nowadays, men who really sexually assault women are punished justly.

Appendix S. The Child Sexual Abuse Myth Scale (Collings, 1997).

Please read the statements below carefully and rate the extent to which you agree with them from 1 (strongly disagree) to 5 (strongly agree).

1. Sexual contact between an adult and a child that is unwanted by the child and that is physically pleasurable for the child cannot really be described as being "abusive".
2. Sexual contact with an adult can contribute favourably to a child's subsequent psychosexual development.
3. Most children are sexually abused by strangers or by men who are not well known to the child.
4. Children who act in a seductive manner must be seen as being at least partly to blame if an adult responds to them in a sexual way.
5. Sexual contact between an adult and child that does not involve force or coercion and that does not involve actual or attempted sexual intercourse is unlikely to have serious psychological consequences for the child.
6. A woman who does not satisfy her partner sexually must bear some of the responsibility if her partner feels frustrated and turns to her children for sexual satisfaction.
7. Child sexual abuse takes place mainly in poor, disorganised, unstable families.
8. It is not sexual contact with adults that is harmful for children. What is really damaging for the child is the social stigma that results once the "secret" gets out.
9. Many children have an unconscious wish to be sexually involved with an opposite sexed parent, which leads them to unconsciously behave in ways that make sexual abuse by that parent more likely.
10. Adolescent girls who wear very revealing clothing are asking to be sexually abused.
11. Children raised by gay or lesbian couples face a greater risk of being sexually abused than children raised by heterosexual couples.
12. Boys are more likely than girls to enjoy sexual contact with an adult and are therefore less likely to be emotionally traumatised by the experience.
13. Child sexual abuse is caused by social problems such as unemployment, poverty, and alcohol abuse.
14. Children who do not report ongoing sexual abuse must want the sexual contact to continue.
15. Older children, who have a better understanding of sexual matters, have a responsibility to actively resist sexual advances made by adults.

Appendix T. The Debrief Form Presented to Participants.

DEBRIEF FORM

Centre for Forensic & Family Psychology

Division of Psychiatry & Applied Psychology

School of Medicine, Faculty of Medicine & Health Sciences

Project Title: **Public Opinions of Sex Robots**

Researcher: Rosalind Barnett (Rosalind.Barnett1@nottingham.ac.uk)

Supervisors: Dr. Vincent Egan (Vincent.Egan@nottingham.ac.uk)

Professor Kevin Browne (Kevin.Browne@nottingham.ac.uk)

Ethics Reference Number: 508-2003

Hypothesis:

Sex Robots capable of mimicking female orifices and presenting particular personas are now available, including some programmed to simulate rape of the robot, and to represent children. Research into aggression has drawn upon catharsis theory, which predicts that a person will display fewer aggressive tendencies if they are provided with an outlet for their aggression, for example by boxing. However, other research has demonstrated that this instead increases aggressive behaviour, and therefore is catalytic. Research has shown associations between watching violent pornography and the desire to engage in violent sex, and between watching child pornography and contact offences. It is therefore possible that there is an association between use of Sex Robots and sexual crime and that their use is catalytic for sexual deviancy. There is limited information about the type of person who is likely to use Sex Robots, and the consequences of doing so. The aim of the present research was to investigate whether those who had more accepting views of Sex Robots were also more likely to demonstrate Moral Disengagement, be more accepting of sexual crime myths, have more 'dark' personality traits, and to be of certain demographics. However, there are currently no causal links between these factors and any links would not apply to all users. It is also important to affirm that we are measuring attitudes, **not behaviour.**

Design and Dependent Measures:

Every participant answered questions regarding their past or future use of Sex Robots, whether they thought they should be legal, and how appropriate they found various forms and uses for them. They also completed scales measuring the Dark Tetrad (Short Dark Triad 3 + Short Sadistic Impulse Scale) personality traits, Moral Disengagement, Acceptance of Modern Myths about Sexual Aggression, and Child Sexual Abuse Myths, as well as providing their gender, age, ethnicity, years of education, relationship status, sexual orientation, and pornography use.

Participants were not informed of the true aims of the study in order to encourage the most authentic responses. We would like to remind you that all of your data is anonymous, and your IP address cannot be seen or stored by the researchers. The data will be held for a minimum of 7 years before being destroyed, but any use of the data will have identifying information removed. This research has wider implications for the Sex Robot market; specifically, whether their users are likely to accept myths about sexual aggression and child sexuality. It will also inform whether these attitudes are shaped by personality or demographic factors, as has been shown in relation to other forms of sexual material. **We would like to ask you not to discuss the details of this experiment with anyone else. It is important that future participants remain unaware of the hypotheses of the study.**

If as a result of this research you have felt distressed, contact: *The Samaritans Helpline*, 24 hours a day. **Call: 116 123, email: jo@samaritans.org**; or *Mind Infoline*, 9am-6pm, Monday to Friday. **Call: 0300 123 3393, email: info@mind.org.uk, text**: **86463.**

If you are having sexual thoughts about children, contact *Stop it Now! Helpline*, 9am-9pm Monday-Thursday & 9am-5pm Friday. **Call: 0808 1000 900.**

If you have been affected by crime and need confidential support or information, contact *Victim Support*: **08 08 16 89 111, or email: https://www.victimsupport.org.uk/help-and-support/get-help/supportline/email-supportline.**

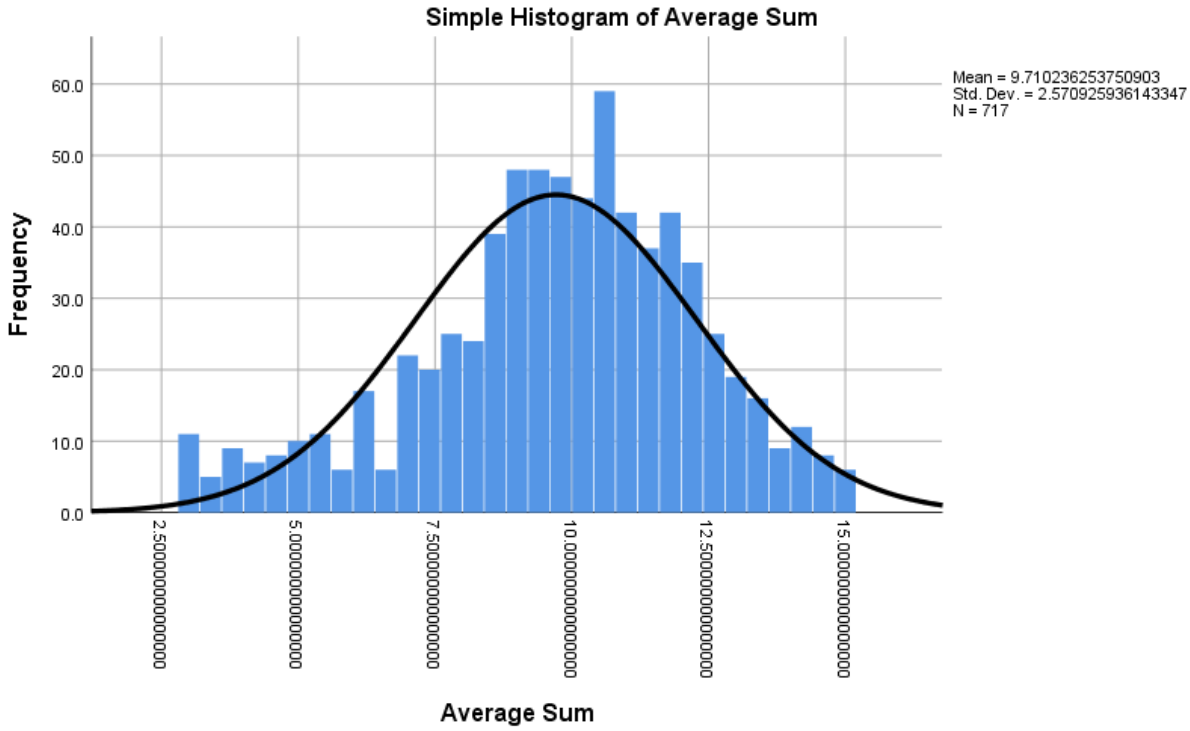
Thank you again for your participation. You can now close this window.

Appendix U. The Cronbach's Alpha Calculated Using SPSS For the Sex Robot Acceptance Measure.

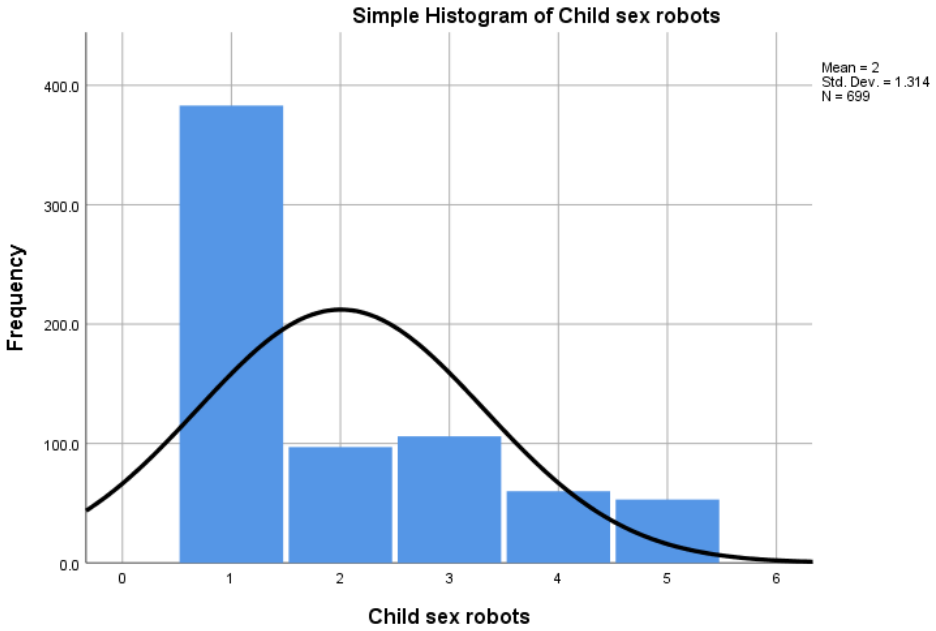
Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.958	.960	27

Appendix V. The Histogram That Was Created to Test for Normal Distribution of Sex Robot Acceptance.



Appendix W. The Histogram That Was Created to Test for Normal Distribution of Child Sex Robot Legality.



Appendix X. Example Responses to Each Question from the Secondary Research Project, Split by Gender.

Gender	Sex Robots	Child Sex Robots	Robots depicting rape	VR, games, or holograms depicting rape or child abuse
Male	"I had not thought of the educational/supportive purposes raised in this study. Basically my primary assumption was just that they would be used as a replacement for prostitutes."	"I was in 2 minds about this. On one hand, it could help prevent actual children from being hurt. However, the "physical" element of sexual attraction to children (I.e their body shape and size) is only a driving factor in a small number of offences. Obviously all offenders would need to find a child attractive to abuse them, however this more often starts with more affective drivers i.e the offender feeling inadequate as an adult in sexual relationships or experiencing a stronger emotional connection with children than with adults and distorting it to be sexual. Further, would child robots only maintain dysfunctional sexual attitudes? Would they be enough or just encourage distorted sexual thinking. If they	"Same as above regarding whether this nurtures offence related thinking and behaviour rather than reduces it. In principle it could work but there may be a risk of it back firing."	"So as long as real children are not being hurt or abused in order for this to happen, there may be potential benefits but, like the answers above, there are several qualms I have which would need to be addressed before it was clearer whether this is a good way to reduce offending."

		get used in child pornography, it could be used to mask the fact that real children were used, how could you tell when it came to trying to secure a conviction? There's too many "ifs" for me to explicitly state "ah that's a good idea". It's still dodgy."		
Female	"My main issue with sex robots would be that they would contribute to the unhealthy culture of sex without love. Sex is an emotional and physical experience and sex robots will never be able to fulfil that vital role. That being said, I would personally prefer if they did not exist for mass consumption because they would become widely used in situations where they aren't necessary. Being granted a sex robot because of a severe	"Child sex robots make me and most others rather uncomfortable, but that alone doesn't mean that they're inherently bad. The important issue with child sex abuse is the severe trauma and consequences that would happen for the child, and that's completely non-existent with a sex robot. I don't believe that most paedophiles choose to be attracted to children, but that it's an inherent desire for them because if it weren't there then there isn't much other motivation for them. Child sex robots might be appropriate for	"I don't understand the point of this."	"I don't think this is much of a problem because it doesn't impact real life."

	physical or mental disability is much different than buying a sex robot just because you're too horny and can't be bothered to be with physical humans with souls. (All of this applies to child sex robots as well)."	them to satisfy these unhealthy urges without any consequences for others."		
Other	"I think there could definitely be good potential uses for them, including therapeutic situations and just for fun. I don't think I personally would want to, but I think there are probably many situations/people who could benefit from sex robots being more available/prevalent. I don't think they can replace the human-	"I honestly feel quite uncomfortable and conflicted. Overall, I don't feel that I know enough to have an informed opinion, but this is what I do think...I don't think that these should be readily available to anyone. At the same time, I'm reflecting back on a story I read once where a man was describing how he had thoughts of wanting to have sex with kids that were very distressing and that he did not want to act on. Would this robot have applications in situations like	"I am very uncomfortable with this idea...I think it is one thing if people want to play this out in a consensual kink scene where the "victim(s)" enjoys it as well and those involved communicate with each other. I worry about someone being able to act this out with a non-sentient being because is there	"Generally uncomfortable, but could there be (therapeutic) uses? What are the potential harms/benefits? In what contexts would these be available/used? I again feel that I do not know enough."

human intimacy of sex, though.”	that? Could it do harm? Could it have benefit? I'm not sure.”	potential for dehumanization/desensitization in relation to human rape victims through this process? I don't know. I am very hesitant about this and leaning towards being against it, but I am open to learning more.”	

Appendix Y. The Moral Disengagement in Sexual Harassment Scale (Page et al., 2015).

1. Women often get jobs based on their looks and should therefore expect to receive sexual comments about their looks from male colleagues.
2. Displaying a calendar of naked women in the workplace is just a bit of fun.
3. Making sexual comments about an attractive woman's appearance is no big deal, when you consider that men may attempt to grope her.
4. Employees should not be blamed for swearing or using sexual language, when most of their colleagues do it too.
5. In a workplace with a relaxed atmosphere, men cannot be blamed for "trying it on" with attractive women when they get the chance.
6. Women shouldn't get offended by sexual jokes in the workplace as they are usually meant to be harmless.
7. Using her body and sex appeal is the best way for a woman to attract a man.
8. Women should lighten up a little bit and not get too uptight about sexual jokes at work.
9. Considering that women like to tease men by seeming sexually available, it is unfair when they complain about receiving sexual comments about their bodies.
10. Men who make sexual comments to attractive women are just flirting with them.
11. Making sexual jokes at work every now and then is not that serious compared to those who make sexual jokes all the time.
12. If a man only suggests making sexual gestures to a good-looking woman, it is not his fault if his friends go ahead and do it.
13. It is unfair to blame a man who tries to "hit on" attractive women at work, when his colleagues encouraged him to do it in the first place.
14. Accepting sexual bribes from their boss can be helpful to some women in developing their careers.
15. It is good to have an attractive woman around the workplace to keep morale up.
16. If women wear sexy clothes at work, it is their own fault if they get sexual attention from men.
17. It is fair for a woman to be put down, if she puts down her male colleagues.
18. Employees who make sexual jokes in the workplace are just bantering together.
19. When you think that some people steal from their employer, displaying a calendar of naked women in the workplace doesn't seem all that serious.

20. Employees should not be blamed for making sexual advances at work, when other colleagues did it before them.
21. If a man is being pressured to find a girlfriend, it is hardly surprising when he makes suggestive comments to women at work.
22. Women shouldn't get insulted when men show them sexual interest, as it's a sign that they find them attractive.
23. An attractive woman should expect sexual advances and should learn how to deal with them.
24. Someone who complains about sexual attention at work must have invited it in one way or another.
25. A real man should feel free to make sexual comments without worrying if it will offend women, as they are easily offended anyway.
26. Wolf whistling at an attractive woman in the workplace is just "messing around".
27. Compared to cheating in a business deal, attempting to seduce attractive women at work is really not that serious.
28. If a group of employees decide together to display a calendar of naked women, it is unfair to blame any one member of the group for it.
29. If a manager fails to discipline their staff, men should not be blamed for making sexual jokes at work.
30. Women tend to only get upset about sexual demands at work when they come from men they don't fancy.
31. Seducing attractive women gives a man status and respect.
32. Employees who receive sexual interest from their colleagues have usually sent some kind of welcoming signal to attract it.

Appendix Z. Form Signed by Matt McMullen Consenting to be Quoted/ Referenced

THE UNIVERSITY OF NOTTINGHAM
DOCTORATE IN FORENSIC PSYCHOLOGY
(D.FOREN.PSY)
CONSENT TO BE REFERENCED IN THESIS

- I understand that Rosalind Barnett (Forensic Psychologist in Training) would like my permission to reference and quote me, following our discussion that took place in July 2020.
- I understand that the thesis will be a public document and therefore available online.
- I understand that I do not have to allow information about me to be used in this way and can decline to consent.
- I understand that the following writing will be included in the thesis:

'It is important that future research continue to explore other motivations for their use, such as, as Harper et al. (2021) proposed, social isolation. This motivation for use was supported during a meeting the author undertook with Matt McMullen, the CEO of RealDoll, in July 2020. Mr. McMullen emphatically denied the development of robots with features simulative of sexual offending and described his client base as a group of individuals who utilise technology such as this because of motivations including loneliness or being widowed. He further agreed that regulations should be brought in for manufacturers.'

I consent to the above paragraph being included in Rosalind Barnett's doctoral thesis.

Name: Matt McMullen
Signature: Matt McMullen
Date: 7-8-2022