Title

Neurodiversity Through a Lens: Television Depictions of Autism Spectrum Disorder (ASD), Perceptions of ASD, and Prosociality Toward the Autistic Community

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Neurodiversity Through a Lens:
Television Depictions of Autism Spectrum Disorder (ASD), Perceptions of ASD, and
Prosociality Toward the Autistic Community

A Dissertation submitted in partial satisfaction
of the requirements for the degree of

Doctor of Philosophy

in

Psychology

by

Agnes Mary Varghese

September 2021

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DEDICATION

This dissertation is dedicated to the Akhtars. It is through my time with your incredibly

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strength.

ABSTRACT OF THE DISSERTATION

Neurodiversity Through a Lens:
Television Depictions of Autism Spectrum Disorder (ASD), Perceptions of ASD, and
Prosociality Toward the Autistic Community

by

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Doctor of Philosophy, Graduate Program in Psychology
University of California, Riverside, September 2021
Dr. Misaki N. Natsuaki, Chairperson

Given the influential role of television in learning about psychological disorders, extant research has highlighted the importance of scripted entertainment television depictions in forming perceptions about Autism Spectrum Disorder (ASD; Cloverdale et al., 2001). However, it has been well-documented that these portrayals depict an overrepresentation of savantism, and an underrepresentation of the day-to-day difficulties associated with the disorder (Nordahl-Hansen et al., 2018b). Because of this misrepresentation, the public has developed misconceptions in their understanding of and attitudes toward ASD.

In this study, I utilized an experimental design with a sample of 186 members of Generation Z (a cohort raised in the digital age and known for their interest in social movements; 85 male, 99 female, 2 non-binary; M_{age} = 19.61 years, SD_{age} = 1.39 years) to

compare scripted entertainment portrayals of ASD, non-scripted entertainment portrayals, and a control condition in perceptions of ASD (e.g., knowledge of ASD, stigma toward ASD). I then utilized a person-oriented approach to examine whether varying clustered profiles of knowledge and stigma produce differences in prosociality toward the ASD community. Findings showed no differences in knowledge about ASD among the various conditions, but did show that the non-scripted condition was higher (than the control condition) in ratings of stigma toward ASD. Additionally, the clustered profiles of knowledge and stigma revealed a low knowledge, low stigma group that was found to be significantly less likely to sympathize with the ASD community than the high knowledge, low stigma group. These results highlight the need for changes in the televised depictions of ASD, and the need for interventions for individuals who rate low on measures of prosociality. Results are discussed in terms of future research and applied implications.

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CHAPTER 1

Introduction

A noteworthy component of development is the process through which we come to discover, understand, and practice benevolence toward those who need our support (Colbert & Chan, 2020; Perenc et al., 2015). In 1988, the American public learned about and empathized with the characters in *Rain Man* - a story about two siblings: an autistic man named Raymond Babbitt (played by Dustin Hoffman), and his estranged brother, Charlie Babbitt (played by Tom Cruise). Through this critically acclaimed film, which was the first to highlight Autism Spectrum Disorder (ASD), the audience watched as Charlie went from referring to his brother as "weird" and a "retard" to gaining a deeper understanding of Raymond, appreciating him for his differences, and being genuinely concerned about his well-being.

Rates of ASD, a neurodevelopmental disorder marked by social communication and behavioral challenges (American Psychiatric Association [APA], 2013), have risen dramatically over time - nearly tripling in the past 20 years alone (Maenner et al., 2020). Since the release of *Rain Man*, autism has started to gain more visibility in on-screen entertainment (Nordahl-Hansen et al., 2018a), but this has come at a price. Namely, many scripted depictions (including *Rain Man*) have received criticism for their overrepresentation and exaggeration of autistic savants (and underrepresentation of autistic individuals at other points on the spectrum; Nordahl-Hansen et al., 2018b), thus providing an oversimplification and misinformation about the complexities of ASD.

Given that mass media, such as movies and television, is considered to be the general public's most prominent source of information about psychological disorders (Cloverdale et al., 2001), it is essential that on-screen depictions of ASD authenticate the public's perception through accurate representations. In this dissertation, I compare recent scripted and non-scripted depictions of ASD to elucidate if there is a difference in impact on society's understanding of and attitudes toward the disorder, and individuals who have it. I also utilize a person-oriented approach to investigate how our varying perceptions of ASD can lead to differences in prosociality toward the ASD community. This study was conducted with a Generation Z sample (alternatively known as "Gen Z;" born in the years ranging from 1997 to 2012) as this cohort has exhibited high exposure to on-screen content, and is characterized as having increased interest in contributing toward social causes (Rideout & Robb, 2019, Fry & Parker, 2018). In this opening chapter, I discuss the prevalence of and relevant conversations/controversies pertaining to ASD, reflect on the importance of on-screen depictions (specifically *entertainment television*) in building our understanding of and attitudes toward ASD, and highlight how an understudied perception of ASD needs to be further examined in association with prosociality toward the ASD community.

ASD: What It Is and How We Talk About It

Prevalence

ASD is now estimated to be present at rates as high as 1 in 54 children and 1 in 45 adults in the United States (Maenner et al., 2020; Dietz et al., 2020). According to the 5th Edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5), which

was the first edition in the series to classify autism as a spectrum, individuals with ASD experience "persistent deficits in social communication and social interaction across contexts," and "restricted, repetitive patterns of behaviors, interests or activities (2013)." These symptoms are present from early childhood (can be diagnosed as early as 18 months) and limit and impair everyday functioning (Hodges et al., 2020; Hyman et al., 2020). While the cause of ASD is not yet fully understood, as we are still discerning its etiology, research has suggested various genetic and environmental factors that may elevate the risk of developing this disorder (e.g., genetic or chromosomal conditions such as fragile X syndrome or tuberous sclerosis, prescription drugs taken during pregnancy such as valproic acid and thalidomide; Hodges et al., 2020). It is currently unclear whether the dramatic increase in rates of ASD over the past few decades is a result of improved detection, a rise in true cases, or a combination of these two explanations (CDC, 2020).

Controversial History of ASD

Detailed below are a few of the notable controversies surrounding autism:

Refrigerator Mothers. In the 1940s, a U.S. based psychiatrist by the name of Leo Kanner posited that the underlying cause of autism was psychogenic in nature (Cook, 2015). Particularly, he theorized that cold, distant, career-oriented mothers (also known as "refrigerator mothers") were responsible for the emotional and behavioral difficulties of autistic children (Davidson, 2017). This interpretation gained traction through another psychiatrist, Bruno Bettelheim, who used his prolific writing and media appearances to widely perpetuate the idea that parenting styles were the root of autism (Cook, 2015;

Mesibov et al., 2005). Bettelheim's therapeutic approach included removing children from the homes of their "emotionally cold parents" (whom he compared to the concentration camp guards in Nazi Germany), and placing them in residential treatment facilities (Mesibov et al., 2005). While institutionalized, children were encouraged to play on a large stone sculpture of a woman to help them learn that their mothers had hearts as cold as stone (Mesibov et al., 2005). It comes as no surprise that in this context, there were very few parents willing to disclose that they had an autistic child (Grinker, 2007). Several mothers felt sorrow and animosity toward child psychiatrists in that era for villainizing and shaming them for their children's autism. Further, despite the lack of epidemiological evidence, the strengthening feminist movement, and the offensive nature of Kanner and Belleheim's claims, this hypothesis was not dislodged till the 1970s, when biological explanations of autism became more popular (Davidson, 2017).

      Autism and Vaccines. While we are witnessing a current controversy of vaccine hesitancy in the COVID-19 pandemic, many of us are reminded of a prior vaccine controversy that arose from a false link to autism. In the late 1990s, research by Wakefield et al. (1998) proposed that receiving the measles, mumps, and rubella (MMR) vaccine leads to the development of autism. This study, which shifted conversations about the origins of autism from biological to environmental, resulted in increased coverage of the disorder in news media, and decreased rates of MMR vaccinations (and along with it, a rise in cases of measles, mumps, and rubella; CDC, 2013; Clarke, 2008; Godlee et al., 2011). Although this research was later retracted for misrepresented data that led to incorrect findings, the series of mixed messaging in the media surrounding

vaccinations, and a general lack of public knowledge about autism perpetuated stigma about the disorder (Farrell., 2014). As a result, autistic individuals and their family members experienced further avoidance and hostility from the general public, and complications in access to support services, thus increasing the difficulties in navigating the diagnosis (Dew et al., 2008; Farrell, 2014; Kogan et al., 2008).

Neurodiversity Movement. This ideology, which aims to combat stigma and promote inclusion for autistic individuals, was begun in the late 1990s by advocate and sociologist on the autism spectrum, Judy Singer. Originating on the internet as a response to those marginalizing the autistic community, the neurodiversity movement opposes the medical model of disability, which assumes that an autistic individual's behaviors and traits are agents of dysfunction and disability that need to be cured (Kapp, 2020). Instead, guided by a social approach, neurodiversity encourages acknowledging brain differences associated with the disorder as natural human variations, rather than abnormalities (Kapp, 2013). Guided by the goal of increasing quality of life, advocates of neurodiversity campaign for society to provide the necessary support to autistic individuals (e.g., through therapies that build skills such as language and flexibility) so that they can fully participate as members of the general community (Kapp, 2020). Additionally, given one of the movement's guiding principles, that autism is inseparable from identity, autistic self-advocates prefer identity-first language (e.g., "autistic person") than the person-first language (e.g., "person with autism") that may be commonly used with other disorders and illnesses (Bagatell, 2010; Kapp et al., 2013).

While the neurodiversity perspective allows individuals on the spectrum to frame their challenges as differences, and utilizes an approach that emphasizes the strengths associated with certain neurodivergent behaviors (e.g., advanced visual-spatial skills; Caron et al., 2006), it does not come without criticism. One especially notable opposition of the neurodiversity approach relates to the suggestion that this movement is unrepresentative of all neurodivergent individuals, particularly those with more severe forms of autism (Russell et a1., 2018). Whereas the neurodiversity movement disagrees with cure-based approaches, families of children with more acute forms of autism may view the symptoms associated with the disorder as impairments as they lead to severe hardships in functioning and quality of life (Kapp., 2020). These families, driven by the medical approach to disability, are seeking treatments that mitigate their children's condition (Russell et a1., 2018).

From some of the controversies elaborated on above, it is clear that historically, the public's conceptualization of ASD (often informed by various forms of media) is riddled with misunderstanding and stigma (some of it unfortunately perpetuated by medical doctors and scientists). It is also noted that even supposed positive frameworks of the disorder come with complexities. In the following section, I first provide an overview of the impact of a specific form of media, television, on development, and then I examine how current representations of ASD in *entertainment television* play a complicated role in the conceptualization of this disorder.

Television, and its Importance in Forming Perceptions of ASD

Television - General Historical and Theoretical Significance

Television, America's current number one leisure activity (U.S. Bureau of Labor Statistics, 2021), has served as a powerful form of information dissemination since the 1920s, when the first television station was introduced (Whittier et al., 2005). However, how we interact with this information portal has intensified quite dramatically in recent years. In tracking society's relationship with television over the last several decades, it can be concluded that youth raised in the modern era have had a qualitatively different experience with this form of media than youth in prior generations (Jordan, 2004; Podara, 2021). In the 1970s, the average family had approximately one television set, with just a few channels, making the viewing experience a casual family event. In modern day, the average family has multiple television sets (in addition to a variety of portable screens, such as laptops, tablets, and smartphones) and access to several channels (and oftentimes, streaming services such as YouTube, Netflix, and Hulu; Jordan, 2004), leading to a more private, intensified viewing experience. Market research has shown that one of our newest generations of youth, Gen Z, spends a substantial amount of screen time watching television/videos (an average of approximately 3 hours per day), with youth from lower-income families averaging even more time engaging with screens than those who come from higher-income families (nearly 2 hours more; Rideout & Robb, 2019). When considering the substantial amount of time that this younger generation spends engaging with television media, and the fact that their views and values about the world (e.g., the social causes that they are interested in supporting) can be shaped by the television that

they watch (Uhls & Greenfield, 2011), we must be cognizant of the messages that are being portrayed on screen about various prevalent topics in our society, such as ASD.

One grand theory working in parallel with this conversation concerning the importance of television for learning and development is Bronfenbrenner's ecological systems theory (Bronfenbrenner, 1979). The ecological approach has elucidated the importance of context in developmental processes, via multiple levels within the environment (Bronfenbrenner, 1979). In Bronfenbrenner's era (the 20th century), elements such as mass media (e.g., television) were largely considered a portion of the exosystem, an outer layer of the ecological system that indirectly interacts with the individual (Bronfenbrenner, 1979). Specifically, in that time period, various forms of media were far less developed, and far less likely to be influenced by individuals who consumed it to the extent that it influenced those who consumed (Bronfenbrenner, 1979; O-Neill, 2015). However, more recent literature has argued for the adaptation of television (a form of mass media) to the microsystem (Jordan, 2004), the most proximal influencer of human development, considering our now heightened and reciprocal relationship with this medium. Unlike in the previous era, television not only shapes society's values, but also society's values and requests can be incorporated and depicted on television. In context, this bidirectional capability highlights not only the influence that television content about disorders like ASD can have on society, but also the influence that we, as members of society, can have on television, by advocating for authentic and accurate content.

Entertainment Television Explained

In this study, the specific type of television that will be highlighted is entertainment television (also known as entertainment programs), which refers to narrative content that often has well-defined story premises and possibilities (Smelser, 2001). Broadly defined in the modern landscape, entertainment television includes scripted (fiction; e.g., genres such as comedy, drama, mystery, science fiction, etc.) and non-scripted (non-fiction; genres such as documentary, true crime, travelogue, reality, etc.) storytelling on both traditional (e.g., network, cable) and non-traditional television platforms (e.g., streaming services, web shows). While the primary goal of entertainment television is to entertain the audience through storytelling (which often draws viewers), this form of media may also have additional goals at varying levels to inform and/or educate. Entertainment television is also widely available (e.g., at home) and relatively low cost (Belcher & Maich, 2014), making it more easily accessible than other platforms of visual storytelling, like box office movies (especially during a global pandemic). These aspects give entertainment television a consistent presence in most individuals' lives, thus highlighting the importance of conducting more research within this category of media.

ASD and Entertainment Television

Given the popularity of entertainment television, it often serves as one of the primary sources from which individuals develop an understanding of and a frame of attitude about ASD (Brown, 1992; Nordahl-Hansen et al., 2018b), especially when they do not have any close family members or friends who experience this disorder. As mentioned before, entertainment television includes the two subcategories of scripted and non-scripted content. Most of the prior literature pertaining to the portrayal of ASD in

entertainment television has highlighted scripted depictions, which have been criticized for their lack of representation (Nordahl-Hansen et al., 2018b). Because non-scripted entertainment television is more realistic by nature, it may comparatively show meaningful distinctions in viewers' understanding of and attitudes about ASD. A further discussion of scripted and non-scripted depictions is provided below.

Scripted. Considering that ASD is recognized as one of the more common neurodevelopmental disorders (Nordahl-Hansen et al., 2018a), there has been a steady increase in the amount of ASD representation on scripted television. However, an increase in the quantity of representation is not always indicative of an increase in quality (Besana et al., 2019). In fact, scripted representations of ASD may be hindering the understanding of autism by perpetuating stereotypes (Draaisma, 2009).

The primary stereotype that has been promoted in ASD characters is savantism (Nordahl-Hansen et al., 2018b). This refers to characters who have exceptional knowledge/abilities in a specific area (Prochnow, 2014). While some scripted characters may be medical geniuses (e.g., Shaun from *The Good Doctor),* others may be members of the scientific elite (e.g., Sheldon from *The Big Bang Theory*). A 2014 study by Belcher and Maich indicated that savant skills were present in virtually all scripted ASD characters at the time. A 2018 follow-up study by Nordahl-Hansen & colleagues (2018a) indicated that four years later, savant skills were evident in 46% of characters.[1] While the decrease in proportion of savant-like characters is a great push toward authenticity, it

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[1] This percentage was taken across television and movies.

should be noted that savantism is only present in 10% of the autistic population, thus indicating further progress to be made in decreasing overrepresentation of this subgroup.

Another issue lies in scripted television's lack of coverage of the day-to-day difficulties that autistic individuals (even savants) may face (e.g., in participating in special education courses, in navigating the job market, in having repetitive behaviors that may be self-injurious). Given the heavily fictional nature of scripted television, writers may forego including these realistic elements if they find it disruptive to the plot or the tone of the show (e.g., the comedic nature of *The Big Bang Theory* may be interrupted by highlighting the mental health struggles that Sheldon may face (mental health complications are common with this disorder; Nordahl-Hansen et al., 2018b; Russell et al., 2016)).

Comparatively, there are more positive portrayals of ASD on scripted television than other disorders (e.g., the portrayals of schizophrenia, for example, are fewer, and often negative; Owen, 2012), but these skewed representations can also impact the public's perception of autism. Specifically, when ASD is presented in primarily one light, it becomes difficult for neurotypical individuals to conceptualize the diversity of its manifestations (the true spectrum). Additionally, it leads a majority of autistic viewers to feel unrepresented on screen. This pattern with ASD television portrayals parallels the complexity of the neurodiversity movement (Kapp, 2020).

Non-scripted. While related research on non-scripted entertainment television programs is scarce, useful knowledge about the importance of the entertainment factor emerges from prior comparisons to educational videos which are not classified as

entertainment programs (e.g., videos of college lectures). As an example, in a study by Stern and Barnes (2018) assessing knowledge of and attitudes toward ASD, results showed that participants who watched an episode of a fictional drama depicting ASD (*The Good Doctor*) reported more accurate knowledge of, and less stigma toward ASD than participants who watched a video of a college lecture about ASD. While the college lecture may have provided more inherently accurate information about ASD (by nature of being academic/scientific content, and not fictional television), *The Good Doctor*, by nature of being an entertainment program, drew more students in, and was able to maintain their attention when sharing information about the disorder. In fact, participants who were in *The Good Doctor* condition were significantly more likely to report a high level of interest in learning more about ASD (Stern & Barnes, 2018). Additionally, having an ASD character highlighted by the show (not as typical for college lectures on clinical topics to be focused on a character/individual), and having the show's ASD character serve as the lead character/protagonist in the story (e.g., Shaun's leading role in *The Good Doctor*), rather than a supporting role, can lead audiences to develop more of a connection with those who have ASD, and an understanding of the experience of ASD (Holton, 2013).

Examples like the one above highlight why the component of entertainment plays an important role when attempting to teach individuals about unfamiliar concepts. While primarily educational content (like college lectures) may be more authentic by nature, a storyline is often necessary to capture attention. Non-scripted entertainment television, such as documentaries (which will be utilized as the non-scripted stimuli in this study),

places emphasis on both the purposes of education and storytelling by utilizing storytelling to teach individuals about non-fictional people, issues, and events that they may not encounter elsewhere; Hess, 2007. Therefore, they may be the ideal platforms from which to learn more factual information (than scripted content) about unfamiliar concepts, while maintaining audience engagement. While there are individuals who may be skeptical of the true nonfictional nature of non-scripted content (e.g., documentaries are edited, it should be noted that these "creative treatments of actuality (i.e., the editing)" are what inspire more individuals to be engaged by the content (Platinga, 2005). Further, regardless of the editing, many viewers interpret documentaries as objective (Markus & Stoddard, 2009). Additionally, because the individuals who are highlighted in documentaries are, by definition, real people in real situations, they provide more authentic depictions than scripted content, and are more difficult to accuse of being "unreal" (Prochnow, 2014). Specifically, through non-scripted entertainment television, the audience can view the day-to-day unscripted realities of ASD, making it one of the more accurate depictions of the disorder (Prochnow, 2014). Thus, because non-scripted content (specifically documentaries) is more authentic and informational by nature, it is hypothesized that individuals who watch non-scripted depictions of ASD will experience enhanced understanding when compared to individuals who watch scripted depictions of ASD.

It should also be noted that prior work has shown that viewers of non-scripted entertainment television feel impactful connections (e.g., parasocial relationships, otherwise known as one-sided emotional bonds) with the personalities highlighted in

these programs (Horton & Wohl, 1956; Bond & Drogos, 2014). In a study by Brond and Drogos, it was found that exposure to the highly sexualized non-scripted show *Jersey Shore* led to increased parasocial relationships with the show's personalities, which then increased permissive sexual attitudes and behaviors (2014). Another study by Gabriel and colleagues (2018) displayed that parasocial connections developed with Donald Trump through increased exposure to the non-scripted show *The Apprentice* predicted self-reported voting behavior in favor of Trump in the 2016 election. Through these examples, it becomes clear that exposure to non-scripted content is linked to the development of impactful bonds with non-scripted personalities. Additionally, given prior work highlighting the negative correlation of parasocial relationships with stigma in the non-scripted context (Wong et al., 2017), I posit that exposure to non-scripted television about ASD will be linked to positive attitudes (e.g., decreased stigma toward ASD). Further, although there is a paucity of research comparing scripted and non-scripted entertainment television's impact on stigma, I postulate that individuals who watch non-scripted content will have significantly less stigma toward ASD individuals. To clarify, while the overly positive representations of ASD on scripted entertainment television are linked to decreased stigma, I am predicting that when compared to non-scripted entertainment television, the non-scripted content will produce significantly more positive attitudes toward ASD. This can likely be due to the strong connections that individuals often make with non-scripted content, given its more "real" nature.

Examining Knowledge and Stigma Profiles in Association with Prosociality

Knowledge and Stigma's Individual Relationships with Prosociality

Knowledge and stigma, primarily measures of cognition and attitude, can have significant social impact in neurotypicals' relationships with ASD individuals (Yu & Stronach, 2020; Gillespie et al., 2015). As support from the neurotypical community is a request from the autistic community (Kapp, 2020), it is important to examine the effects of knowledge about ASD and stigma toward ASD on prosociality toward the ASD community. While the current literature exploring the effects of knowledge about ASD on prosociality is scant, the extant work indicates a positive association between the two constructs. For example, in one knowledge-based intervention study where grade school children with ASD were partially integrated into schools with neurotypical children, significant increases were found in general empathy and cognitive empathy in neurotypical boys, and significant increases in affective empathy in neurotypical girls after the integration (Mavropoulou & Sideridis, 2014). The prior literature examining the association between stigma and prosociality, indicates an inverse relationship. In a study examining the integration of ASD individuals into university institutions, it was found that more accepting (less stigmatic) neurotypical students were significantly more likely to practice positive behaviors toward their ASD peers (i.e., sign up to volunteer with a local ASD organization; Gardner & Iarocci, 2013).

Knowledge and Stigma's Potential Clustered Relationships with Prosociality

While knowledge and stigma have indicated individual relationships with prosociality, there has been no literature, to my knowledge, examining their clustered

effect on prosociality. This constellation is important to examine, because although literature typically highlights a negative correlation between knowledge of and stigma toward ASD (Yu & Stronach, 2020), it is not always the case that increased knowledge is associated with decreased stigma (and vice versa). In fact, as evidenced by an ethnographic study by Yi & Siu, there exists groups of individuals who concurrently have low knowledge of and low stigma toward the ASD community (2021). These individuals mean well but have potential to harm the ASD community because of their lack of knowledge about the sensitivities of the disorder (e.g., limited understanding of the heterogeneity of the autism spectrum, stereotype that ASD individuals are highly solitary or very dependent; Yi & Siu. 2021). Therefore, it is important to examine what a low-knowledge-low-stigma cluster's association would be with indices of prosociality. In this exploratory study, I hypothesize that at least three meaningful clusters of knowledge and stigma would be created (low knowledge, low stigma; low knowledge, high stigma; and high knowledge, low stigma). I predict that among three clusters, the cluster characterized by low knowledge and high stigma would have the lower levels prosociality, and that the cluster characterized with high knowledge and low stigma would have higher levels of prosociality. Prosociality of individuals in the cluster with low knowledge and low stigma is exploratorily investigated, as the hybrid nature of their stigma and knowledge makes it difficult to formulate directional hypotheses.

The Present Study: Aims

Given the substantial role that television plays in our lives, especially in that of the younger generation's (a generation that, according to market research, believes in the

responsibility of media to be empowering through the increased representation of marginalized communities, such as those with disabilities; Fuse Media, 2021), it is important to investigate how the various content displayed on this medium is impacting our perception of significant topics, such as ASD, a developmental disorder that has steadily been increasing in prevalence in our society (Maenner et al., 2020). This study addresses gaps in the ASD literature by being the first study (to my knowledge) to both empirically examine the impact of scripted and non-scripted entertainment television portrayals of ASD on neurotypical individuals' perceptions, and the impact of clustered perceptions (i.e., knowledge and stigma) on prosociality toward the ASD community.

First, I utilize an experimental design to elucidate how alternate forms of entertainment television (i.e., scripted, non-scripted, control) may differentially impact our understanding of and attitudes toward ASD. For understanding, I hypothesize that participants in the non-scripted television condition will report significantly higher levels of understanding concerning ASD (e.g., higher knowledge of ASD, higher likelihood to report the non-scripted condition as more representative of the experience of ASD; **hypothesis 1a**). For attitudes, I also hypothesize that participants in the non-scripted condition will report significantly more enhanced attitudes concerning ASD (e.g., less stigma toward ASD, less negative feelings toward ASD; **hypothesis 1b**).

Additionally, I utilize a cluster analysis to determine the meaningful knowledge and stigma clusters associated with ASD, and measure if there are differences in these clusters in prosociality toward the ASD community. I hypothesize that at least three meaningful clusters will emerge from the cluster analysis, including a cluster that

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highlights low knowledge and low stigma **(hypothesis 2a)**. I also hypothesize that there

will be significant differences between clusters in prosociality toward the ASD

community **(hypothesis 2b)**. Specifically, I predict that that the low knowledge and high

stigma cluster will have lower levels of prosociality, and that the high knowledge and low

stigma cluster will have higher levels of prosociality. As the investigation of the low

knowledge and low stigma cluster is exploratory, no directional hypotheses are

formulated.

   With the intention of better supporting the ASD community, findings from this

study can be utilized to determine the best on-screen representations of ASD necessary to

increase understanding of and decrease stigma associated with the disorder, and to better

understand how varying perceptions about ASD can impact the likelihood of prosociality

toward the ASD community.

CHAPTER 2

Method

Participants

Recruitment

A total of 237 participants were recruited for this study through the University of California, Riverside (UCR) Psychology Department's online experiment management system (Sona Systems, Ltd.), after receiving approval from the university's institutional review board. 186 participants (85 male, 99 female, 2 non-binary; M_{age} = 19.61 years, SD_{age} = 1.39 years) remained for analysis after 51 participants were excluded due to exclusionary criteria (detailed below; n = 7), failure to comply with instructions (n = 36), and/or failure to correctly answer questions assessing attention to the study (detailed below; n = 8). Participants were undergraduate students who were enrolled in one or more of the university's introductory psychology courses at the time of data collection (3.8% psychology majors). These students participated in studies to receive credit towards the research requirement for their course(s). The sample was 42.5% Latino/Hispanic, 31.7% Asian, 7.5% White, 4.3% Black/African American, .5% Hawaiian/Other Pacific Islander, 9.7% Mixed-Race, and 3.8% Others, representing the general population at UCR (UCR Office of Diversity, Equity & Inclusion, 2021). The socioeconomic background of the participants was also diverse: 6.5% came from households making less than $15,000 per year, 10.8% $15,001 to $25,000 per year, 17.2% $25,001 to $40,000 per year, 14.0% $40,001 to $55,000 per year, 14.0% $55,001

to $70,000 per year, 18.8% $70,001 to $100,000 per year, 12.9% $100,001 to $200,000 per year, and 5.4% from more than $200,000 per year.

Exclusionary criteria

Participants were excluded from this study if they were not at least 18 years old (as this minimum age requirement allowed participants to self-consent to participating in studies conducted through the university's psychology department; n = 0), if their age did not qualify them as an adult member of Gen Z (born no earlier than 1997; n = 0), if they had been diagnosed with ASD (as this study is geared toward assessing neurotypical individuals' understanding of the representations of ASD in television; n = 4), and/or if they did not have the equipment/environment necessary to participate in this study (n = 3). Specifically, as this study was conducted virtually during the COVID-19 pandemic, participants were required to have laptops (so that they could complete the study on a device that most optimally displayed study questionnaires/videos), functioning cameras (so that research assistants could observe whether participants were paying attention to their screens), a stable internet connection (so as not to disrupt the online study tasks), and a quiet environment (so that they could focus on the tasks associated with the study).

Attention Check

Two items were embedded within the study to assess participants' attention level to the study. In an empathy scale (although not used for the purpose of main study analyses), participants were instructed to "Select '*Neither agree nor disagree*' for this item (response options were on a 5-point Likert scale ranging from *strongly disagree (1)* to *strongly agree (5)*)," and in the ASD prosociality scale, participants were instructed to

"Mark '7' on the scale for this item (the scale ranged from 1 to 9) ." This procedure

follows recommendations for enhancing data quality for online surveys (Berinsky et al.,

2014). If the participant did not get both questions correct, their data was excluded from

analysis for lack of attention.

Procedure

The experiment was conducted virtually via the Zoom platform (Zoom Video

Communications, Inc., 2020). The first author muted participants upon their entry to the

virtual lab and disabled their ability to unmute themselves (to prevent conversations

amongst participants and/or disruptions). Participants were then split into breakout rooms

(with no more than 20 individuals in each room, although typically much less), where the

research assistant assigned to each breakout room briefed participants about the study.

The research assistants had their cameras off and their names listed as "Researcher" to

reduce potential bias. After receiving instructions from their research assistant,

participants were given a Qualtrics link (Qualtrics, 2020), where they could find a

consent form, followed by a demographic questionnaire, and other questionnaires

assessing study variables. If participants were assigned to one of the experimental

conditions (i.e., scripted, non-scripted), they were then instructed to watch a video clip.

Following the video clip, participants completed additional questionnaires assessing their

perception of the video, and other relevant study variables (all study questionnaires can

be found in Appendices A-G). Finally, participants were debriefed about the purpose of

the study, and instructed to privately check in with the research assistant running the

breakout room via Zoom's chat feature before leaving the study. Participants in the

control condition had a similar procedure, except they did not receive a video clip to watch, or questions associated with their perceptions of said video clips. The research assistant in each breakout room was available to answer any questions the participants had via the Zoom chat feature.

Stimuli

Condition

Participants were randomly assigned to the *scripted (1), non-scripted (2), or control (3)* condition. Details about the two experimental conditions (i.e., scripted, non-scripted) are below:

Scripted. In the scripted condition, participants watched approximately the first 30 minutes of the first episode of *Atypical. Atypical* is a comedy-drama series that centers around the life of an autistic senior in high school named Sam Gardner. In this pilot episode, Sam's therapist notifies him that despite his beliefs of otherwise, individuals on the spectrum can date. Sam then looks into the idea of having a relationship, by researching online and inquiring with his family/friends about how to obtain a girlfriend. Afterwards, Sam goes on two dates, both of which were ultimately unsuccessful due to his difficulties with social communication and interaction. Throughout the episode, Sam also displays other traits associated with ASD, such as repetitive behaviors (e.g., repeating words several times in his head), sensitivity to sensory inputs (e.g., noise-cancelling headphones to cancel out noises in public areas), and highly specified, fixed interests (e.g., Antarctic penguins). The episode also highlights his family members, who discuss the difficulties they have encountered in raising an autistic child.

Non-scripted. In the non-scripted condition, participants watched approximately the first 30 minutes of *Life, Animated*. *Life, Animated* is a documentary that centers around the life of Owen Suskind, an autistic man in his early twenties. In this first segment of the documentary, it is revealed that Owen was diagnosed with autism at a young age. The associated difficulties with motor and language skills devastated his family as they were not able to communicate with him. However, through his love of Disney's animated movies, Owen was able to access his emotions, and put them into words (by repeating lines from Disney movies that were relevant to his emotions). This was a breakthrough, as it allowed his family to have an avenue to communicate with Owen. Throughout the documentary, we see Owen repeating lines from Disney movies as he is walking throughout the community, and attending a specialized school with other autistic students. At the school, there are a team of specialists who work to teach Owen and his classmates the skills (e.g., social, general life skills) necessary to integrate independently into the community. This first 30 minutes of the documentary also highlights Owen's family's experience in raising Owen, and Owen's relationship with his girlfriend from school, who is also on the spectrum.

Coding Considerations. *Atypical* and *Life, Animated* were chosen as the stimuli for this study in an attempt to best match existing scripted and non-scripted conditions based on their similarities (so as to reduce other influences that may impact participants' perceptions of the conditions). Sam and Owen were both high-functioning, heterosexual white males in their late teens to early twenties, from middle class families. The first 30 mins of the first episode of the scripted stimuli and the first 30 mins of the non-scripted

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stimuli were chosen as they provide introductory explanations of ASD, and the associated difficulties. Both stimuli also touch upon relationships with family and navigating the dating world. Before running the experiment, a coding analysis (adapted from the work of Stern & Barnes, 2019) was completed to assess whether both conditions contained similar amounts of information about ASD. First, the amount of time spent covering ASD was calculated for each video clip. The scripted stimuli spent approximately 20 minutes covering ASD, whereas the non-scripted stimuli spent approximately 24 minutes. Additionally, the stimuli were evaluated to determine the presence of content addressing aspects of the DSM-V criteria for ASD (APA, 2013). As Table 1 indicates, all criteria were covered in both conditions.

Measures[2]

ASD Representation

Participants in the experimental conditions (i.e., scripted, non-scripted) responded to one item that assessed the extent to which they agreed with the following statement: "The video clip you watched was a good representation of the experience of autism." Responses were assessed on a 5-point Likert scale ranging from *strongly disagree (-2)* to *strongly agree (2)*. Higher scores indicate increased feelings of ASD representation in the assigned video clip.

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[2] Unless specified as otherwise, it is to be assumed that each measure was given to participants across all conditions.

Table 1

Diagnostic (DSM-V) Criteria Presence in Experimental Conditions

Criteria	Scripted	Non-scripted
Criteria A		
Deficits in social communication and interaction across multiple contexts		
(1) Deficits in social–emotional reciprocity	X	X
(2) Deficits in nonverbal communication	X	X
(3) Deficits in relationships	X	X
Criteria B		
Restricted, repetitive patterns of behavior, interests, or activities		
(1) Stereotypes or repetitive motor movements, use of objects, or speech	X	X
(2) Insistence on sameness, inflexibility, or ritualized patterns of behavior	X	X
(3) Highly specific, fixed interests	X	X
(4) Hyper- or hyporeactivity to sensory input	X	X
Criteria C		
Symptoms present in early development	X	X
Criteria D		
Symptoms cause clinically significant impairment	X	X
Criteria E		
Disturbances not better explained by intellectual disability or developmental delay	X	X

Note. X = criteria was present in the condition.

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Negative Feelings toward ASD

Utilizing a measure created by Kapp et al. (2013), participants were asked, "how do you think you would feel about being autistic?" and instructed to select as many response choices as was applicable to them. Choices included a variety of emotions, so as not to bias participants (i.e., *happy, overwhelmed, sad, proud, frustrated, angry, content, indifferent, bored, confused, ashamed, excited, don't know*). The five choices centered around negative feelings toward ASD (i.e., *overwhelmed, sad, frustrated, angry, ashamed)* were each evaluated separately to see whether participants experienced that emotion in relation to ASD.

ASD Knowledge

Knowledge about ASD was assessed using an adapted version of an already adapted measure of autism knowledge (original - Stone, 1987; adapted - Gillespie-Lynch et al., 2021). In this study, Gillespie-Lynch et al.'s version was further adapted by excluding questions on the scale that may not have been sensitive to media content. Each of the 21 items on this version is on a 5-point Likert scale, ranging from *strongly disagree (-2)* to *strongly agree (2).* Items include "autistic children grow up to be autistic adults" and "autistic children do not develop attachments, even to parents/caregivers." Items were recoded and summed such that higher scores indicate higher levels of knowledge of ASD. The internal consistency of this scale is .82.

ASD Stigma

Stigma toward ASD was measured using an adapted 14-item version of the already adapted Social Distance Scale (original - Bogardus, 1933; adapted - Gillespie-

Lynch et al., 2021). In this study, Gillespie-Lynch et al.'s most recent 10-item version was adapted to include 4 items from prior adapted versions, thus creating a more comprehensive assessment of stigma. Participants reported on their agreement with a series of statements, each on a 5-point Likert scale ranging from *strongly disagree (-2)* to *strongly agree (2)*. Items include "I would be willing to spend an evening socializing with an autistic person" and "I would NOT be willing to have an autistic person marry into my family." Items were recoded and summed such that higher scores indicate higher levels of stigma against autistic individuals. The scale has an internal consistency of .92, which is higher than Gillespie-Lynch et al's 10-item measure (= .90).

ASD Prosociality

Prosociality was measured using a series of subscales assessing sympathy, hopefulness, supportive behavioral beliefs, and donation likelihood toward ASD individuals (original - Corrigan, 2000; adapted - Farrell, 2014). In this study, Farrell's version was slightly adjusted to increase understanding and have the language aligned with current discussions about ASD (e.g., terminology was changed from "people with ASD" to "autistic people" to make the language more person-centered (Gernsbacher, 2017; Kenny et al., 2016; Sinclair, 1999). Participants reported on their agreement with a series of statements, each on a 9-point Likert scale ranging from *strongly disagree (1)* to *strongly agree (9)*. Items were coded and summed such that higher scores indicate higher levels of prosociality toward ASD individuals. More detailed information about each subscale can be found below:

ASD Sympathy. This 3-item subscale includes items such as "I feel sympathy toward autistic people" and "I feel concern toward autistic people (α = .79)." One item (about feeling pity for autistic people) from Farrell's adapted 4-item subscale was removed for analysis to increase reliability.

ASD Hopefulness. This 3-item subscale includes items such as "I feel optimistic for autistic people" and "I feel encouragement for autistic people (α = .94)." One item (about feeling "solace" for autistic people) from Farrell's 4-item subscale was removed as pilot evaluations showed that individuals in the typical participant demographic were not familiar with the word "solace."

ASD Supportive Behavioral Beliefs. This 4-item subscale includes items such as "autistic people need us to give them our support" and "autistic people need us to give them our time (α = .92)."

ASD Donation. This 1-item subscale includes the item "I am likely to donate to a cause associated with autism." This was a new item added by the author of this study.

Covariates

We included the following covariates in the study's analyses. First, experience with ASD individuals (*ASD Experience*) was considered because extant literature shows that neurotypical individuals who personally know members of the ASD community are more likely to be knowledgeable about, less stigmatic toward, and more prosocial toward the disorder (Gillespie-Lynch et al., 2015; Cook et al., 2019). Second, interest in ASD as a topic (*ASD Interest*) may bias participants' responses to questions about knowledge, stigma, and prosociality (Stern & Barnes, 2019). Third, familiarity with media that

discusses topics relevant to ASD (*ASD Media Familiarity*) was added as a covariate to control for prior exposure that gives more familiar participants more knowledge. Fourth, social desirability (*Social Desirability*) was included because individuals who aim to be socially desirable may not respond accurately to measures of stigma and prosociality (Gillespie-Lynch et al., 2015). Fifth, participant demographics, like parental education levels (*Parent Education*), can influence knowledge and stigma, thus parental education levels were included as a covariate (Rowe et al., 2016). Sixth, because gender (*Gender*) is often linked to prosociality, such that females are more prosocial, this variable was controlled for as well (D'Attoma et al., 2020).

Given theoretical relations to main study variables, other variables were considered (e.g., race/ethnicity, household income, parents' employment status, socioeconomic status, and amount of family members with ASD), but they were ultimately not used in study analyses due to their lack of correlation with main study variables, lack of variability, and/or small sample size.

ASD Experience

Participants were instructed to "select as many of the following types of relationships as you have had with ASD individuals: yourself, your child, your parent, your sibling, your romantic partner, your extended family member, your friend, your coworker, your student, your fellow classmate, your acquaintance, other (Gillespie-Lynch et al., 2015)." Wording for this item was slightly altered from the wording in Gillespie-Lynch et al. (2015). To be specific: Gillespie-Lynch et al. said "spouse," whereas I used "romantic partner;" Gillespie-Lynch et al said "your fellow student" whereas I used "your

fellow classmate." These changes were made after discussing optimal wording for understanding with college students who piloted the survey. The selected categories were summed to create values for the ASD experience variable. Higher scores indicate more experience with ASD.

ASD Interest

Participants were asked how interested they were in learning more about ASD. The response options for this one item spanned a 3-point Likert scale ranging from *not interested (1)* to *very interested (3*; Stern & Barnes, 2019). Higher scores indicate more interest in learning about ASD.

ASD Media Familiarity

One item was utilized for participants to report how familiar they were in general with shows/movies about ASD. This item was on a 5-point Likert scale, ranging from *not very familiar (1)* to *very familiar (5)*. Higher scores indicate more familiarity with ASD shows/movies.

Social Desirability

Social desirability was assessed using the 33-item Marlowe-Crowne Social Desirability scale (Crowne & Marlowe, 1960). Participants responded *true (1)* or *false (2)* to each statement. Items include "There have been times when I was quite jealous of the good fortune of others." and "I am always courteous, even to people who are disagreeable." Items were recoded and summed such that higher scores indicate higher tendency toward socially desirable behaviors. The scale has an internal consistency of .78.

Parent Education

Participants reported their mother's and father's highest level of education. Response options included *less than high school (1), some high school (no diploma; 2), high school graduate/diploma/equivalent (e.g., GED; 3), some college credit (no degree; 4), associate's degree (5), bachelor's degree (6), master's degree (7), doctoral degree (8), trade/technical/vocational training (9),* and *other (10).* For this analysis, the highest education level of the two parents was taken as each participant's value on the parent education variable. For the purposes of this study, trade/technical/vocational training was considered one level above *some college credit (no degree)* and one level below *associate's degree* when comparing the highest level of education amongst parents.

Gender

Participants reported their gender identity. Response options included *male (1), female (2), non-binary (3),* and *other (4)*.

Missing Data

The range of missingness for study variables was from 0.54% to 2.69%, with the highest missingness coming from ASD knowledge. To determine whether there was a meaningful pattern of missingness, Little's X^2 test of Missing Completely at Random (MCAR; Little, 1988) was conducted. Results indicated that the data were missing completely at random ($X^2_{(956)} = 942.81$, $p = .294$). Therefore, the expectation-maximization (EM) algorithm was used to deal with missingness (Dempster et al., 1977).

Analytic Approach

I analyzed all data utilizing SPSS Statistics 27.0 (IBM Corp., 2020). I began by conducting baseline analyses via a one-way MANOVA and a chi-square test of independence to examine whether conditions (i.e., scripted, non-scripted, control) differed on demographic variables. I also calculated descriptives for study variables (e.g., means, standard deviations, and correlations). To evaluate how media type impacts understanding of and attitudes toward ASD (*Hypothesis 1a, 1b*), I performed a t-test to examine differences between the two experimental conditions in ASD representation,[3] a series of chi-square tests of independence to compare negative feelings toward ASD (i.e., overwhelmed, sad, frustrated, angry, ashamed) amongst all three conditions, and a one-way MANCOVA to compare performance across all conditions on ASD knowledge and ASD stigma. To probe knowledge/stigma clusters and examine their impact on ASD prosociality (*Hypothesis 2a, 2b*), I utilized a K-means cluster analysis, and a one-way MANCOVA with an independent measure of clusters and dependent measures of ASD prosociality (i.e., ASD sympathy, ASD hopefulness, ASD supportive behavioral beliefs, and ASD donation).

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[3] This comparison for ASD representation took place exclusively between experimental conditions/groups (i.e., scripted and non-scripted) as the relevant dependent variables were directly associated with watching ASD videos (which the control group did not participate in).

CHAPTER 3

Results

Baseline Analysis: Demographics

Table 2 provides a comparison of participant demographics across the scripted, non-scripted, and control conditions. As evidenced by a one-way MANOVA, participants in the three conditions did not significantly differ on age, ASD media familiarity, household income, GPA, or empathy. However, a 3 (condition) x 2 (gender)[4] chi-square test of independence indicated that there was a significant association between condition and gender, χ^2 (2, $N = 184$) = 9.78, $p = .008$. Bonferroni-adjusted post hoc comparisons (with an alpha level of .017 for three comparisons) revealed that there were significantly more males in the control condition, when comparing scripted v control and non-scripted v control (χ^2 (1, $N = 119$) = 6.26, $p = .012$; χ^2 (1, $N = 120$) = 8.51, $p = .004$, respectively). No significant associations were found between the scripted and non-scripted conditions on gender (χ^2 (1, $N = 129$) = .186, $p = .666$). Overall, the significant findings contributed to gender being controlled for in main study analyses involving all three conditions.

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[4] In this analysis, only male and female categories were used for gender, as there were only two non-binary participants in the study.

Table 2

Participant Demographics and Baseline Analysis

Measure	Condition			Statistical comparison
	Scripted (S)	Non-scripted (NS)	Control (C)	
Gender [N males/females]	26/38	24/41	35/20	$\chi^2(2, N = 184) = 9.78, p = .008$
				S vs NS: $\chi^2(1, N = 129) = .186, p = .666$
				S vs C: $\chi^2(1, N = 119) = 6.26, p = .012$
				NS vs C: $\chi^2(1, N = 120) = 8.51, p = .004$
Age [M (SD)]	19.40 (1.39)	19.62 (1.38)	19.85 (1.38)	$F(2, 183) = 1.61, p = .202$
ASD Media Familiarity [M (SD)]	1.80 (0.89)	1.91 (1.08)	2.13 (1.23)	$F(2, 183) = 1.44, p = .241$
Household Income [M (SD)]	4.42 (2.16)	4.38 (1.80)	4.87 (1.87)	$F(2, 183) = 1.15, p = .318$
GPA [M (SD)]	3.22 (0.48)	3.26 (0.44)	3.21 (0.40)	$F(2, 183) = 0.17, p = .846$
Empathy [M (SD)]	76.40 (11.34)	75.79 (9.34)	74.77 (8.34)	$F(2, 183) = 0.42, p = .660$

Note. The Gender N was 184 (instead of 186) as two non-binary participants who were excluded from this chi-square test due to small sample size. Household income coded as 1 = Less than \$15,000, 2 = \$15,001-\$25,000, 3 = \$25,001-\$40,000, 4 = \$40,001-\$55,000, 5 = \$55,001-\$70,000, 6 = \$70,001-\$100,000, 7 = \$100,001-\$200,000, 8 = More than \$200,000.

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Descriptive Statistics

Means and standard deviations (overall, and by condition) of ASD representation,

ASD knowledge, ASD stigma, and negative feelings toward ASD (i.e., overwhelmed,

sad, frustrated, angry, ashamed) are provided in Table 3. Correlations among main study

variables are shared in Table 4.

Table 3
Means (Standard Deviations) of Hypothesis 1 Key Measures – Organized Overall and by Condition

Measure	Overall ($n = 186$)	Scripted ($n = 65$)	Non-scripted ($n = 66$)	Control ($n = 55$)
ASD Representation	1.05 (0.73)	0.88 (0.78)	1.21 (0.65)	-
Negative Feelings				
Overwhelmed	Yes (71.80%)	Yes (76.90%)	Yes (75.80%)	Yes (58.20%)
Sad	Yes (26.90%)	Yes (24.60%)	Yes (34.80%)	Yes (20.00%)
Frustrated	Yes (61.30%)	Yes (75.40%)	Yes (59.10%)	Yes (47.30%)
Angry	Yes (21.00%)	Yes (16.90%)	Yes (28.80%)	Yes (16.40%)
Ashamed	Yes (22.60%)	Yes (21.50%)	Yes (21.20%)	Yes (25.50%)
ASD Knowledge	21.67 (7.29)	21.02 (7.99)	22.38 (7.34)	21.58 (6.36)
ASD Stigma	-18.59 (8.63)	-19.35 (9.39)	-16.98 (8.35)	-19.62 (7.86)

Note. ASD Representation means and standard deviations are not calculated for control condition, as this question was not administered to the control condition. Negative Feelings stands for Negative Feelings toward ASD. Percentages are reported for the dichotomous Negative Feelings toward ASD variables.

Table 4

Correlations among Main Study Variables and Covariates

	1	2	3	4	5	6	7	8	9	10	11
1. ASD Representation	-	.10	.09	.20*	.07	.01	.03	-.01	.04	-.04	.09
2. ASD Knowledge		-	-.40**	.08	.39**	.18*	.28**	.11	.26**	.11	-.04
3. ASD Stigma			-	.10	-.49**	-.11	-.46**	-.17*	-.39**	-.13	-.25**
4. ASD Sympathy				-	.19*	.27**	.18*	.02	-.01	.06	-.02
5. ASD Hopefulness					-	.26**	.45**	-.04	.31**	.03	.30**
6. ASD Support						-	.48**	-.10	.13	-.01	.14
7. ASD Donation							-	.02	.46**	.03	.26**
8. ASD Experience								-	.15*	.13	-.04
9. ASD Interest									-	.23**	.25**
10. ASD Media Familiarity										-	.05
11. Social Desirability											-

Note. ASD Support stands for ASD Supportive Behavioral Beliefs. Categorical variable like Condition, Negative Feelings toward ASD, Clusters, Gender and Parent Education are not included in this table.

*p < .05 **p < .001

Hypothesis 1: Impact of Media on Understanding of and Attitudes toward ASD

1a: Understanding

       ASD Representation. After meeting all required assumptions, an independent samples t-test was conducted to determine whether there was a significant difference between experimental conditions (scripted vs. non-scripted) in ASD representation. Analyses revealed that, as hypothesized, participants in the non-scripted condition ($M = 1.21$, $SD = 0.65$) were significantly more likely to agree that the video clip they watched was a good representation of the experience of autism than participants in the scripted condition ($M = 0.88$, $SD = 0.78$; $t(129) = -2.68$, $p = .008$).

1b: Attitudes

       Negative Feelings toward ASD. A series of 3 (the condition: scripted vs. non-scripted vs. control) x 2 (yes vs. no (for each feeling)) chi square tests of independence were run for each of the negative feelings toward ASD (i.e., *overwhelmed, sad, frustrated, angry, ashamed*). Results indicated that there was a significant association found between condition and the negative feeling toward ASD of overwhelmed (overwhelmed, not overwhelmed), χ^2 (2, $N = 186$) = 6.22, $p = .045$ (Table 5). Yet, despite this significance at the omnibus level, none of the follow up Bonferroni-adjusted post hoc comparisons (with an alpha level of .017 for three comparisons) revealed significant differences between groups (scripted v control: χ^2 (1, $N = 120$) = 4.84, $p = .028$; non-scripted v control: χ^2 (1, $N = 121$) = 4.24, $p = .039$; scripted v non-scripted: χ^2 (1, $N = 131$) = 0.03, $p = .875$).

Table 5

Hypothesis 2: Chi-Square Tests with Condition and Negative Feelings toward ASD

Negative Feeling	χ^2	df	N	p	Follow up
Overwhelmed	6.22	2	186	*.045	Revealed no significant differences
Sad	3.63	2	186	.163	-
Frustrated	10.13	2	186	*.006	*S > C
Angry	3.78	2	186	.151	-
Ashamed	0.37	2	186	.831	-

Note. S = Scripted, N = Non-scripted, C = Control.
Alpha level for omnibus tests set at *p < .05, **p < .001. Alpha level for follow up tests set at *p < .017.

There was also a significant association found between condition and the negative feeling toward ASD feeling of frustrated (frustrated, not frustrated), χ^2 (2, N = 186) = 10.13, p = .006. Bonferroni-adjusted post hoc comparisons (with an alpha level of .017 for three comparisons) revealed that there were significantly more individuals in the scripted condition (rather than the control condition) who stated they would feel frustrated if they had ASD, χ^2 (1, N = 120) = 10.05, p = .002. No significant differences were found between the scripted v non-scripted conditions and non-scripted v control conditions (χ^2 (1, N = 131) = 3.94, p = .047; χ^2 (1, N = 121) = 1.69, p = .194, respectively).

1a (Understanding) and 1b (Attitudes) continued: *ASD Knowledge & ASD Stigma*

In the main analysis associated with hypothesis 1, a one-way MANCOVA was conducted to examine differences between all three conditions (i.e., scripted, non-scripted, control) in ASD knowledge and ASD stigma, controlling for ASD experience, ASD interest, ASD media familiarity, social desirability, parent education, and gender. Given the dependent variables' (i.e., ASD knowledge, ASD stigma) moderate correlation with each other (r = -.40, p < .001; refer to Table 4), the appropriateness of a multivariate

analysis is substantiated. A Box's M test confirmed the equality of covariance matrices (*Box's M* = 6.67, *p* = .363). The MANCOVA revealed a significant effect of condition on dependent variables (*F*(2, 183) = 3.09, *p* = .016, Wilk's λ = .93, η² = .03), with condition explaining 3% of the variance in the measures of ASD knowledge and stigma. Before conducting the follow up ANCOVAs, the homogeneity of various was tested with ASD knowledge and ASD stigma. The assumption was satisfied (Levene's F tests: ASD knowledge - *p* = .362; ASD stigma - *p* = .381).

Findings for each of the ANCOVAs, and applicable Bonferroni-adjusted post hocs are as follows:

ASD Knowledge. No significant differences were observed across conditions in ASD knowledge (*F*(2, 183) = 0.51, *p* = .603, η² = .006).

ASD Stigma. While there was a significant difference found in ASD stigma across conditions (*F*(2, 183) = 3.95, *p* = .021, η² = .043), it was participants in the non-scripted condition (*M* = -16.99, *SD* = 8.35) who were more likely to display stigma against the ASD community than the control condition (*M* = -19.62, *SD* = 7.86; *p* < .05).

Transition: Hypothesis 1 to Hypothesis 2

Hypothesis 1 focused on examining differences between experimental conditions (i.e., scripted, non-scripted, control) on understanding of and attitudes toward ASD. In the main analysis associated with this hypothesis, we saw that while there were differences present between experimental groups in ASD stigma, there were no meaningful relationships highlighted between these groups and ASD knowledge, indicating mixed effects of the experimental stimuli. In hypothesis 2, I transition away

from the media framework to now highlight ASD knowledge and ASD stigma as my

independent variables, and examine how distinct profiles of these two components can

impact prosociality toward the ASD community, a very important factor in supporting

ASD individuals. As I am utilizing the same sample from hypothesis 1, I will be

controlling for the effect of condition in the main hypothesis 2 analysis.

Hypothesis 2: Impact of Cluster Membership on ASD Prosociality

Forming Clusters

To probe which meaningful clusters would be elucidated from the data, a K-

means cluster analysis was conducted with standardized versions of the ASD knowledge

and ASD stigma variables. The decision on the numbers of clusters should be made with

both statistical and theoretical foundations in mind (Henry et al., 2005). Further, there is

need to show that the clusters are stable, and that they are of value to the field of study

(Clatworthy et al., 2005). Given that my theoretical backing indicates the presence of at

least three meaningful clusters, I compared two-, three-, and four-cluster models. One of

the most common methods of assessing cluster stability is to split the study sample into

two halves and repeat the cluster analysis on each half, and evaluate if similar cluster

structures can be found in both halves (Clatworthy et al., 2005). The two-cluster solution

was also stable, but did not produce the low knowledge/low stigma group that was

theorized. The four-cluster solution produced this theoretical group, but was not stable

when attempting to recreate the clusters with smaller samples.

As an additional method to examine the validity of three clusters, the silhouette

coefficient, a popular measure of both cohesion (assessing whether elements within a

cluster are similar) and separation (assessing whether the clusters are quite different from each other), was calculated using a two-step cluster algorithm (Norusis, 2012). The silhouette measure ranges from -1 to 1, and in a good solution, the within-cluster distance is small, and the between-cluster distance is large, thus resulting in a silhouette coefficient closer to 1 (Norusis, 2012). The three-cluster solution resulted in a silhouette measure of .5, indicating good cluster quality in terms of cohesion and separation. The two-cluster solution and the four-cluster solution had similar silhouette measures of .6 and .5, respectively, but the three-cluster structure was ultimately chosen considering the prior assessments of stability and theory.

A closer examination of the three-cluster solution produced by the K-means cluster algorithm (Figure 1) indicated the low knowledge/low stigma group, labeled as the "well-intentioned" cluster ($n = 77$; this study's theoretical anchor point) to be the largest cluster. The high knowledge/low stigma group, labeled as the "ideal" cluster, was the second largest cluster ($n = 62$). Finally, the low knowledge/high stigma group, labeled as the "unideal" cluster, was the smallest cluster ($n = 47$). The determination of "low" or "high" for both variables (i.e., knowledge, stigma) was based on whether they were each below or above the standardized mean (zero) in their cluster (e.g., knowledge mean below zero and stigma mean below zero indicates a low knowledge, low stigma cluster).

Figure 1

Knowledge and Stigma Clusters
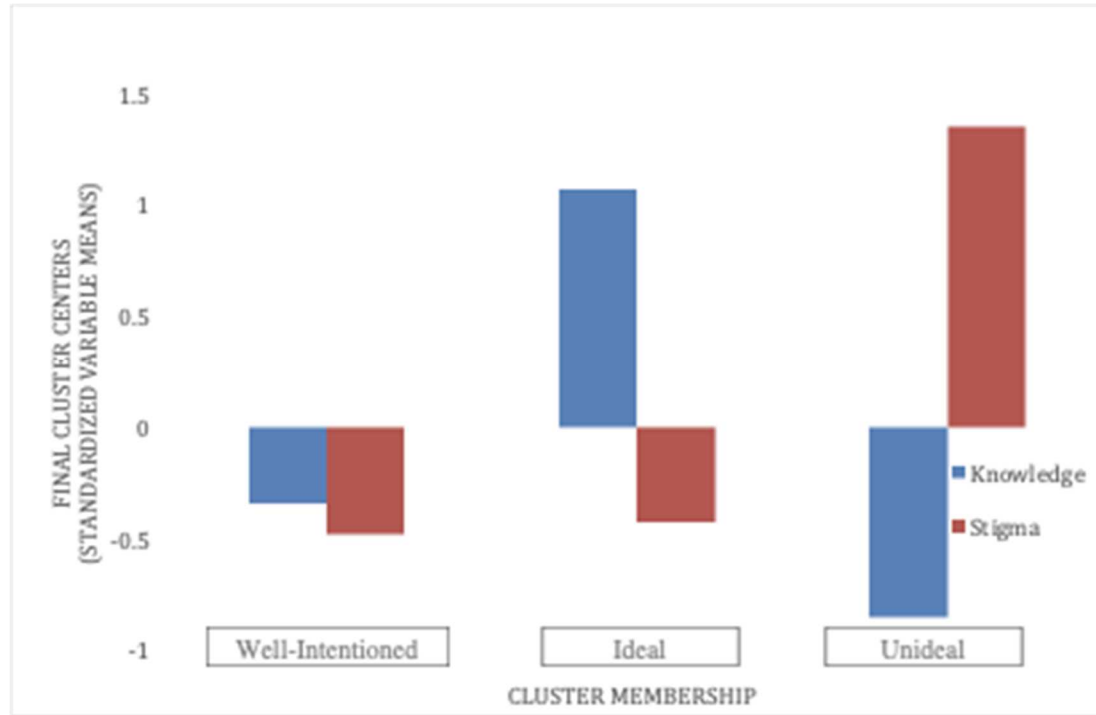
As a method of cluster validation which evidences value to the field of study (by comparing groups on associated variables that were not included in the clustering process; Clatworthy et al., 2005), I considered the theoretically associated variable of vertical orientation. Vertical orientation is defined as the level of acceptance and comfortability that individuals have with inequalities in society (Gillespie-Lynch et al., 2019; Triandis & Gelfand, 1998). Previous work has linked vertical orientation to stigma toward mental illness (Gillespie-Lynch et al., 2020). In this study, self-reported vertical orientation was negatively associated with ASD knowledge ($r = -.25, p < .001$) and positively associated with ASD stigma ($r = .37, p < .001$). When comparing mean levels of vertical orientation between the three clusters, it was found that, as one would suspect,

the highest levels of vertical orientation were evident in the unideal cluster (well-intentioned: $M = -9.92$, $SD = 10.04$; ideal: $M = -12.44$, $SD = 8.59$; unideal: $M = -4.01$, $SD = 9.27$; higher means indicate higher vertical orientation). Further, a one-way ANOVA displayed that the difference between groups was significant ($F(2, 183) = 11.09$, $p < .001$; Bonferroni-adjusted post hocs: unideal > well-intentioned at $p = .002$; unideal > ideal at $p < .001$; well-intentioned and ideal were not significantly different), thus supporting the validity of the clusters.

Differences by Clusters in ASD Prosociality

Means and standard deviations (by cluster membership) of the ASD prosociality subscales of ASD sympathy, ASD hopefulness, ASD supportive behavioral beliefs, and ASD donation are provided in Table 6.

Table 6

Means (Standard Deviations) of Hypothesis 2 Key Measures - Organized Overall and by Cluster Membership

Measure	Overall (*n* = 186)	Well-Intentioned (*n* = 77)	Ideal (*n* = 62)	Unideal (*n* = 47)
ASD Prosociality				
ASD Sympathy	21.18 (4.35)	20.48 (4.32)	22.80 (3.66)	20.19 (4.68)
ASD Hopefulness	22.81 (4.21)	23.55 (3.16)	24.34 (3.80)	19.58 (4.59)
ASD Supportive Behavioral Beliefs	30.27 (5.86)	29.93 (6.30)	31.27 (6.10)	29.51 (4.59)
ASD Donation	7.30 (1.86)	7.39 (1.88)	7.97 (1.40)	6.26 (1.93)

Note. Well-Intentioned = Low Knowledge/Low Stigma; Ideal = High Knowledge/Low Stigma;
Unideal = Low Knowledge/High Stigma

A one-way MANCOVA was conducted to compare performance across the three clusters on the four dependent measures of ASD prosociality, controlling for ASD experience, ASD interest, social desirability, condition, and gender. Given that the indices of prosociality had a moderate to strong correlation with each other (significant rs ranging from .19 to .48; refer to Table 4), it is appropriate to conduct this multivariate analysis. However, Box's M was significant (*Box's M* = 56.60, *p* < .001), signaling a lack of equality in the covariance matrices. In this case, Pillai's trace was used as a more robust estimate for the MANCOVA (Olson, 1974). It revealed a significant effect of cluster membership on dependent variables ($F(2, 183) = 5.57$, *p* < .001, Pillai's Trace = .23, $\eta^2 = .11$), with cluster membership explaining 11% of the variance in the measures of ASD prosociality. Prior to conducting the follow up ANCOVAs, the homogeneity of various was tested with each of the ASD prosociality scales. The assumption was ultimately considered satisfied, even though ASD hopefulness and ASD donation had significant Levene's F tests (*p* = .030, *p* = .007, respectively), as an examination of standard deviations (by cluster membership; see Table 6) indicated that none of the largest standard deviations for ASD hopefulness and ASD donation were more than four times the size of the corresponding smallest. This finding suggests that the ANCOVAs would be robust in this case (Howell, 2007). Findings for each of the ANCOVAs, and Bonferroni-adjusted post hocs (when relevant) are as follows:

ASD Sympathy. Results indicated a significant difference across cluster membership in ASD sympathy ($F(2, 183) = 5.75$, *p* = .004, $\eta^2 = .06$). The well-intentioned group (*M* = 20.48, *SD* = 4.32) was less likely to sympathize with the ASD

community than the ideal group ($M = 22.80$, $SD = 3.66$; $p = .007$). Additionally, the unideal group ($M = 20.19$, $SD = 4.68$) also had significantly lower sympathy than the ideal group ($M = 22.80$, $SD = 3.66$; $p = .024$).

ASD Hopefulness. There were significant differences found in ASD hopefulness across clusters ($F(2, 183) = 17.33$, $p < .001$, $\eta^2 = .16$). Namely, the well-intentioned group ($M = 23.55$, $SD = 3.16$) was more likely to be hopeful for the ASD community than the unideal group ($M = 19.58$, $SD = 4.59$; $p < .001$). The ideal group ($M = 24.34$, $SD = 3.80$) also indicated significantly higher hopefulness than the unideal group ($M = 19.58$, $SD = 4.59$; $p < .001$).

ASD Supportive Behavioral Beliefs. No significant differences were observed across cluster membership in ASD support behavior ($F(2, 183) = 1.01$, $p = .368$, $\eta^2 = .01$).

ASD Donation. There was a significant difference in levels of donation based on cluster membership ($F(2, 183) = 5.61$, $p = .004$, $\eta^2 = .06$). Specifically, the ideal group ($M = 7.97$, $SD = 1.40$) was more likely to donate to the ASD cause than the unideal group ($M = 6.26$, $SD = 1.93$; $p = .003$).

CHAPTER 4

Discussion

Despite the rates of ASD increasing over the last several years, many individuals have not yet directly interacted with this community, sometimes due to lack of personal relationships, or lack of organic encounters (as a result of issues of inaccessibility for disabled individuals in larger society; Maenner et al., 2020). In fact, many neurotypical individuals' perceptions of ASD may primarily be formed by depictions in the various forms of media that they spend substantial time with, such as entertainment television (Cloverdale et al., 2001). While the portrayals in entertainment television (primarily carried out through scripted shows) are bringing awareness to the disorder, the often skewed representations have perpetuated a misconceptualization of ASD (Nordahl-Hansen et al., 2018b).

To elucidate cognitions, attitudes, and intentions toward the ASD community, this current study was designed with two primary aims. First, I evaluated the effect of entertainment television depictions of ASD on understanding of and attitudes toward the disorder, with special attention to the types of portrayals (i.e., scripted and non-scripted depictions). Second, as support toward the ASD community is one of the primary goals of raising awareness about the disorder (Kapp, 2020), I investigated how different perception profiles of ASD have differing associations with prosociality toward the ASD community. Overall, results indicated that exposure (or lack thereof) to entertainment television -- scripted, non-scripted, control -- had mixed effects on Gen Z participants' understanding of and attitudes toward ASD: (1) there were no differences across

conditions in knowledge toward ASD; however, (2) participants in the non-scripted condition were significantly more likely (than individuals in the scripted condition) to report that their video clip was representative of the ASD experience; (3) there were differences among conditions in stigma toward ASD, such that individuals in the non-scripted condition had more stigma toward the ASD community than those in the control condition; (4) there were minor findings across conditions in negative feelings toward ASD, such that individuals in the scripted condition were significantly more likely to be frustrated (than the control condition) if they were to have ASD. Furthermore, results indicated that there was heterogeneity in the perception profiles of individuals' knowledge of and stigma toward ASD, with 3 distinct clusters identified (well-intentioned, ideal, unideal). Interestingly, these cluster memberships had differing impacts on prosociality toward the ASD community, with the well-intentioned group being less sympathetic toward the ASD community (than the ideal group), and more hopeful (than the unideal group), and the ideal group being more sympathetic, hopeful, and likely to donate than the unideal group.

Entertainment Television and ASD Perception

Based on the literature highlighting the role of media in the formation of knowledge and stigma about unknown and unfamiliar constructs, including psychological disorders (e.g., ASD; Stern & Barnes, 2018), I hypothesized that individuals in the non-scripted condition would display significantly higher rates of understanding and lower rates of negative attitudes than those in the scripted and control conditions.

Television and Understanding

As evidenced by the results of the analysis associated with hypothesis 1, there were no differences between the scripted, non-scripted, and control conditions in knowledge of ASD. Although the absence of a significant effect in the null hypothesis testing paradigm does not provide any confirmatory evidence of a nil effect (i.e., no effect; Cohen, 1990), a closer look at the small effect size suggests proximity to a nil effect, which implies no meaningful association between television condition and knowledge about ASD. However, null findings, even with small effect sizes, do not provide definitive evidence of the nil effect, and thus interpretation remains speculative.

Still, given the lack of findings across all conditions, it is important to consider plausible reasons why there might not be differences between scripted, non-scripted, and control conditions. One potential rationale for the lack of distinction between the control and experimental conditions is the possibility that the experimental stimuli (i.e., scripted or non-scripted) did not provide any further information about ASD than what the Gen Z participants may have already had access to via other forms of media or information dissemination. Specifically, while Gen Z does engage substantially with entertainment television, recent market research indicates that as the first generation of true digital natives, this cohort also engages heavily with online videos (via YouTube), video games, and social media platforms like TikTok (Social Media Today, 2020). Thus, also taking into consideration this generation's interest in socially conscious content, it is possible that they have already viewed platforms outside of entertainment television that provide a

level of knowledge about ASD that is comparable to the pilot episode of a Netflix show or the first 30 minutes of a documentary.

Aside from generally exploring why the control condition produced similar rates of knowledge to both experimental conditions, it is also important to investigate alternative explanations as to why there may not have been meaningful differences in knowledge, specifically between the two experimental conditions (i.e., scripted and non-scripted). Prior literature evaluating ASD representation has found that the large majority of characters on scripted entertainment television have obtained a high score against DSM-5 criteria for ASD (Nordahl-Hansen et al., 2018b). While meeting all diagnostic criteria does not necessarily mean that the characters are accurate depictions (Nordahl-Hansen et al., 2018b), it does indicate that content creators do often reference evaluation tools from the psychological and medical study of ASD when creating their on-screen portrayals of the disorder. This can be tied to potential positive implications for knowledge regarding ASD. Additionally, having these portrayals cognizant of diagnostic criteria may make it closer in representation to non-scripted portrayals, where ASD individuals are likely to exhibit these criteria as well, due to the more realistic nature of non-scripted content. In sum, both scripted and non-scripted entertainment television portrayals of ASD depicting ASD diagnostic criteria (in addition to their shared goal of entertaining), may lead to similarities in the level of knowledge communicated about ASD.

Despite the lack of differences between the two experimental conditions in knowledge, it should be noted however, that in line with hypothesis 1, participants in the

non-scripted condition were more likely to report (than the scripted condition) that the stimuli they watched was representative of the experience of ASD. This finding is in line with research indicating that viewers are at least cognitively aware that scripted portrayals are dramatizations of reality (Papacharissi & Mendelson, 2007). This basic understanding is necessary in combating some of the misinformation that may be perpetuated by scripted content.

Television and Attitudes

While there was an indication of differences between conditions in stigma toward ASD, the results were in an unexpected direction. Specifically, findings indicated that participants in the non-scripted condition were more likely to have stigma toward the ASD community than participants in the control condition (there were no differences between the scripted and non-scripted conditions, or the scripted and control conditions). One explanation for this surprising finding could be the underlying implicit negative attitudes toward individuals with disabilities that may have been elicited by exposure to the 30 min non-scripted stimuli (Aube et al., 2020). In non-scripted ASD content, viewers are seeing a more authentic experience of ASD, which may evoke stigma (e.g., stereotypes, prejudice, discrimination; Corrigan & Watson, 2002). One explanation that may contribute to this stigma is the incongruence between the absence of apparent physical differences and atypical behaviors in ASD individuals (Gray 1993, 2002; Lilley 2013). Specifically, individuals with ASD often physically resemble neurotypical individuals, thus leading to a societal expectation for "typical" behavior. The contrast between how these individuals "should" act and how their behaviors actually manifest

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can lead to negative attitudes about ASD from neurotypical individuals (Corrigan & Watson, 2002).

As a corollary point, the lack of difference between the scripted and control condition may have resulted from the fact that the ASD character in the scripted portrayal was played by a neurotypical individual, thus not fully manifesting the authentic behaviors associated with ASD. Given that one brief exposure may not be effective in combatting stigma toward ASD, future research should probe whether this stigma would be sustained after multiple exposures to non-scripted content. As posited by Gordon Allport's contact hypothesis, stigma reduction toward individuals who are perceived as being different can result from sustained interaction with these individuals (1954). This method of interaction (through multiple media exposures) is worth further exploration as it may be one of the more easily accessible methods to reduce stigma (i.e., not everyone is placed in situations of sustained live, physical interactions with ASD individuals).

Additionally, when assessing the five negative feelings toward ASD (i.e., *overwhelmed, sad, frustrated, angry, ashamed)*, I found that the only feeling that produced significant differences between groups was the feeling of "frustrated." Specifically, when participants across all conditions were asked if they would feel frustrated if they were to have ASD, individuals in the scripted condition were more likely to do so than individuals in the control condition. It is noteworthy that the scripted condition had significantly more individuals experiencing this feeling. Again, given that in the literature, scripted television is typically known for its overly positive representations of ASD (which are as a result, less likely to produce negative feelings),

this is an unexpected finding (Nordahl-Hansen et al., 2018a). Further research is necessary to elucidate if this finding replicates in other studies, and if so, what its implications are.

ASD Perception and Prosociality toward the ASD Community

Profile Heterogeneity

To identify heterogeneity in the profiles of knowledge and stigma, I hypothesized that there would be at least three theoretically and statistically meaningful groups created from a cluster analysis, one of which would be a group that has low levels of stigma and low levels of knowledge (Yi & Siu, 2021; hypothesis 2a). This hypothesis was largely supported. I found a well-intentioned group (low knowledge/low stigma), an ideal group (high knowledge/low stigma), and an unideal group (low knowledge/high stigma), with the well-intentioned group being the largest (41.4%). Given the emphasis in the literature on the inverse relationships between knowledge and stigma (Yu & Stronach, 2020), it is an interesting finding worth further probing that the well-intentioned group is the largest. This supports the idea that stigma is not completely dependent on knowledge (Simmons et al., 2016), and that there exists a large number of individuals who do not display high levels of stigma but also have little knowledge about ASD.

Impact by Cluster on Prosociality

In examining associations between cluster membership and prosociality, I hypothesized that the ideal group would have higher levels of prosociality and that the unideal would have lower levels of prosociality. The well-intentioned group was exploratorily investigated. As expected, the ideal group was found to be significantly

more sympathetic, more hopeful, and more likely to donate to ASD-related causes than the unideal group. This is not surprising given that both the high knowledge and low stigma indicators of the ideal cluster are tied to increased prosociality (Gardner & Iarocci, 2013; Mavropoulou & Sideridis, 2014).

Most notable findings indicate that the group of well-intentioned individuals were less likely to be sympathetic than the ideal group and more likely to be hopeful than the unideal group. These findings may be tied to the seriousness which these neurotypical individuals place on ASD. More specifically, if an individual is not as knowledgeable about the disorder, then they are less likely to understand the diversity of its manifestations, and the day-to-day difficulties that are associated with it (Yi & Siu, 2021). Therein, the logic proceeds that this lack of seriousness placed on the disorder leads to less likelihood to be prosocial toward the group, despite having low levels of stigma. Thus, the well-intentioned group (i.e., low levels of stigma but low levels of knowledge) is less sympathetic given their cognitive misunderstanding of how serious of a disorder ASD can be. This lack of understanding may also be associated with how individuals in the well-intentioned group are more hopeful (or optimistic) for ASD individuals' life outcomes. However, it is important to note that it might not be surprising that the well-intentioned group scored significantly lower on sympathy than the ideal group and significantly higher on hopefulness than the unideal group given that the ideal group has two indicators of high prosociality, and the unideal group has two indicators of low prosociality, respectively. Given that the association with seriousness placed on ASD has not been empirically tested in the ASD domain, future research should aim to

determine the mechanisms responsible for the relationship between these knowledge and stigma clusters, and prosociality toward the ASD community.

Limitations and Future Directions

This study presents several limitations and opportunities for further investigation. To begin with, data collection was conducted on a virtual platform during the COVID-19 pandemic - a global event that has placed several constraints on empirical research (Peyton et al., 2021). In order to enhance the quality of the data, I put measures in place to increase the likelihood of participant engagement while the experimental stimuli were playing (e.g., having research assistants monitor via Zoom that participants were focusing on their screens). However, it cannot be guaranteed that the participants in the experimental conditions were fully attentive to the scripted or non-scripted stimuli, as the research team lacked the ability to monitor the activity on the participants' personal computers (e.g., they may have been distracted by other content on their screens while their assigned video clip was playing). Different findings may emerge from a more-controlled, in-person study environment.

Other potential limitations exist in the form of this study's measures and analyses. For example, while the ASD knowledge measure used in this task has a more decent internal consistency than prior versions of the scale, and other scales assessing knowledge in related studies (Gillespie-Lynch et al., 2021; Stern & Barnes, 2019), it was not made specifically for experiments involving exposure to ASD media. Thus, even though I further adapted the scale to exclude questions that may not have been sensitive to media content, an ASD scale that was made specifically for such parameters may have

yielded different results. Such a scale remains to be made. Additionally, there were other

dependent variables utilized in this study that were one-item measures (e.g., ASD

representation, Negative feelings toward ASD [i.e., *overwhelmed, sad, frustrated, angry,*

ashamed] and ASD donation), further signifying that stronger assessment tools could

provide a better understanding of the relationships examined. Additionally, it should be

noted that the design of this experiment involved a control condition that contained no

stimuli at all. Specifically, in the current study, the participants in the control condition

had no exposure to any media content. Given that there is conversation in the field about

what classifies as an optimal method of control (e.g., no intervention vs alternative

intervention; Rebok, 2016), there would be value in exploring alternative forms of control

condition(s). For example, it may have been useful to include scripted and non-scripted

neutral stimuli (i.e., stimuli of content not relevant to ASD) as the control conditions.

This could have enhanced the study by holding more factors consistent between the

control and experimental conditions (Rebok, 2016). Other media studies have employed

this method of control conditions with neutral stimuli (e.g., Ashikali et al., 2014). As it

concerns analyses, the results mentioned that the labels of "low" and "high" for each

cluster group were determined based on association to the standardized means (i.e.,

"high" = all values above the mean, "low" = all values below the mean). However, the

two clusters that contained low knowledge (i.e., well-intentioned, unideal; Figure 1) and

the two clusters that contained low stigma (i.e., well-intentioned, ideal; Figure 1) were

not equivalent on those variables in terms of cluster means. This leads to some variability

in the definitions of "low." It should also be noted that as this data was collected with a

sample of current Gen Z college students, they had relatively lower levels of stigma and higher levels of knowledge (as consistent with the literature; Yu & Stronach, 2020). Similar studies with a more varied sample (from the general population) should be conducted to examine whether the results hold.

Along with the theme of generalizability, another consideration is that in this study, the two experimental conditions were matched in terms of the sociodemographic characteristics of the individuals displaying ASD symptoms (i.e., they were both late-adolescent to early adulthood-aged, white, heterosexual, high-functioning, males from middle-class backgrounds). This matching design aimed to maximally control for the character effect, but it limited the ability to conduct similar comparisons across scripted and non-scripted conditions with other sets of ASD characters/individuals who were matched on other demographic features (e.g., age, race/ethnicity, gender, sexual orientation, place on the ASD spectrum, SES). This inability to generalize speaks to the lack of diversity in representation of ASD in both scripted and non-scripted entertainment television (Nordahl-Hansen et al., 2018b).

There are multiple avenues worth exploring for future research. For one, while this study was not able to examine potential differences between various ethnicities in perception of and prosociality toward the ASD community due to small sample size, future studies with larger, more diverse samples can investigate whether there are differences between ethnic groups in the impact that scripted and non-scripted ASD entertainment television content have on concepts such as stigma, knowledge, and prosociality. Given prior literature indicating cross-cultural differences in these categories

(e.g., South Koreans report more ASD stigma than Americans due to factors such as cultural tightness (i.e., higher emphasis on social norms; Kim et al., 2021), extending these findings to the context of television will be useful in tailoring future content to enhance ASD understanding, attitudes, and behaviors in the various communities.

In this study, prosociality toward the ASD community was assessed via sympathy, hopefulness, supportive behavioral beliefs, and donation likelihood. While these measures assess prosocial feelings, and prosocial intentions, there would be great value added in also assessing prosocial behaviors, as the ASD community seeks support and advocacy from the neurotypical community (Kapp, 2020). Specifically, future studies should utilize experimental designs to elucidate whether neurotypical individuals with differing perception profiles would participate in behaviors supporting the ASD community.

While this study exclusively focused on the media presentation of ASD, future studies should also evaluate the generalizability of current findings to other mental illnesses and individual characteristics that are often stigmatized. However, when doing so, it is important to consider the unique context (e.g., cultural) underlying each characteristic of individual differences. For instance, unlike the media on ASD, the movie portrayal of individuals with schizophrenia is often negative, highlighting positive symptoms (e.g., hallucinations and delusions) and violence (Owen, 2012). Thus, it is important to keep in mind that different marginalized groups are at varied levels of representation and authenticity on entertainment television at this time, and that may influence results of similar studies.

Finally, according to Bandura's social learning theory, individuals may model the behaviors that they see in their environment (e.g., Bandura's classic Bobo Doll study; Bandura et al., 1961). In the context of ASD, future studies can analyze how neurotypical viewers may be influenced by the ways in which neurotypical characters in ASD entertainment television content treat the ASD character/individual, as these behaviors modeled on television may function as a foundation for the actions of neurotypical individuals when they personally encounter ASD individuals.

Implications & Conclusion

The current investigation elucidates no differences across conditions in knowledge of ASD, and a difference across conditions in stigma toward ASD, such that individuals in the non-scripted condition are more likely to express feelings of stigma toward the ASD community than individuals in the control condition. Given that entertainment television (whether scripted or non-scripted) is an element of our immediate environment that has the potential for positive influences on our perceptions of psychological disorders (such as ASD), these findings highlight the need for an intervention with the entertainment television industry. Content creators of scripted and non-scripted entertainment pertinent to ASD must enhance their relationships with scientists in relevant research areas (e.g., ASD, media), and members of the autistic community. These three parties can work together to craft both scripted and non-scripted entertainment television that is better-informed by on-going research and the current lived experience. Policymakers can also assist in preventing misconceptions of ASD on-screen by advocating for regulations that require content creators of ASD entertainment

television to provide disclaimers and links to online resources (while episodes are airing) with accurate information about ASD when there are heavily inaccurate or harmful depictions of ASD on entertainment television. More authentic portrayals can then be studied with cohorts like Gen Z to examine whether these depictions increase their knowledge and enhance their attitudes.

The finding regarding increased stigma in the non-scripted condition contributes to the complexity of societal conversations surrounding combatting stigma toward ASD. Some may wonder if, given the historically lower levels of stigma associated with scripted entertainment television representations of ASD (where there are most likely neurotypical individuals imitating the experience of ASD, rather than authentic manifestations), we should continue to primarily watch scripted ASD roles, and have them played by neurotypical actors. However, it should be remembered that this lack of stigma is also associated with a skewed understanding of the disorder and its varied manifestations, which then can lead to issues in how neurotypical individuals treat ASD individuals they encounter in person who are not higher-functioning and/or savants. Despite the uneasiness that neurotypical individuals may face upon first exposure to real ASD individuals in non-scripted entertainment content, it is important to continue sustained exposure to these authentic media representations, in order to increase knowledge and decrease stigma surrounding the disorder over time, which may then lead to increased support for this community (Gardner & Iarocci, 2013; Mavropoulou & Sideridis, 2014). Additionally, given that nearly all ASD characters on scripted television are played by neurotypical individuals, it is important to increase the authenticity of ASD

representations on scripted television as well by having more ASD individuals play the roles (such as Kayla Cromer, the first ASD individual in a leading role on a scripted television show [*Everything's Gonna Be Okay*]).

Results of this study also highlighted the existence of a "well-intentioned" group (low knowledge/low stigma), which was significantly less sympathetic toward the ASD community than the ideal group (high knowledge/low stigma). Thus, it is assumed that to become more "ideal" (and thus, more sympathetic) in their treatment of the ASD community, this group of individuals should engage in activities that increase their knowledge about ASD. This enhanced understanding could lead to more prosocial intentions and behaviors within this group of individuals.

Notable strengths of this study include its novelty in empirically comparing scripted and non-scripted entertainment television portrayals, its emphasis of a person-oriented approach (rather than variable-oriented) in examining the association of knowledge and stigma with prosociality, and its status as one of the first studies looking into prosociality specifically toward the ASD community.

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Demographic Questionnaire

Please complete each of the following demographic items to the best of your ability.

1. What is your age?
    a. 18 years old
    b. 19 years old
    c. 20 years old
    d. 21 years old
    e. 22 years old
    f. 23 years old
    g. 24 years old
    h. Other, please specify:_____
2. What is your gender?
    a. Male
    b. Female
    c. Non-binary
    d. Other, please specify: _____
3. Which of the following best describes your ethnicity/race? Select all that apply.
    a. American Indian/Alaska Native
    b. Asian
    c. Black/African American
    d. Hawaiian/Other Pacific Islander
    e. Latino/Hispanic
    f. White
    g. Other, please specify:_____
4. Were you born in the United States?
    a. Yes
    b. No
5. How old were you (in years) when you first moved to the United States?
    a. _____
6. In which country were you born?
    a. _____
7. What is your primary language?
    a. _____
8. On a scale from 1-10, how religious are you? (1=Not at all religious; 10=Highly religious)

9. Please specify your religion
    a. No religion
    b. Christianity
    c. Islam
    d. Judaism
    e. Buddhism
    f. Hinduism
    g. Sikhism
    h. Atheism
    i. Other, please specify:_____
10. What is the annual income range of your household?
    a. Less than $15,000
    b. $15,001-$25,000
    c. $25,001-$40,000
    d. $40,001 – $55,000
    e. $55,001 – $70,000
    f. $70,001 – $100,000
    g. $100,001 - $200,000
    h. More than $200,000
11. Imagine this ladder pictures how the United States society is set up.

    At the top of the ladder are the people who are best off – they have the most money, the highest amount of schooling, and the jobs that bring the most respect.

    At the bottom are people who are worst off – they have the least money, the least amount of schooling, and the jobs that bring the least respect.

    Now think about your family. Please tell us where you think your family would be on this ladder.
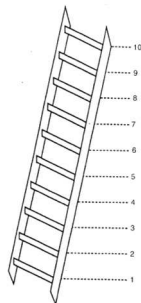
    Select the number that best represents where your family would be on this ladder.

Page Break-

12. Please select as many of the following types of relationships as you have had with people with **mental illness**:
    a. Yourself
    b. Your child
    c. Your parent
    d. Your sibling
    e. Your romantic partner
    f. Your extended family member
    g. Your friend
    h. Your coworker
    i. Your student
    j. Your fellow classmate
    k. Your acquaintance
    l. Other: _____

13. Do you have any formally diagnosed conditions or disabilities that significantly affect your experience as a student, including how you learn or perform academically, interact with others, or access the college campus? Please select all that apply.
    a. I do not have any disabilities or conditions
    b. Physical disability or condition (e.g., mobility limitation, sensory condition)
    c. Learning disability or condition (e.g., dyslexia, speech disorder)
    d. Neurodevelopmental/cognitive disability or condition (e.g., autism, attention-deficit/hyperactivity disorder, brain injury)
    e. Emotional or mental health concern or condition (e.g., depression, anxiety, post-traumatic stress disorder)
    f. Chronic health condition (e.g., cancer, diabetes, arthritis, sickle cell anemia)
    g. Other disability or condition, please specify: _____

14. What is the highest level of education you have attained?
    a. Less than high school
    b. Some high school, no diploma
    c. High school graduate, diploma, or the equivalent (for example: GED)
    d. Some college credit, no degree
    e. Associate's degree
    f. Bachelor's degree

g. Master's degree

h. Doctoral degree

i. Trade/technical/vocational training

j. Other, please specify: _____

15. What is the highest level of education your mother has attained?

a. Less than high school

b. Some high school, no diploma

c. High school graduate, diploma, or the equivalent (for example: GED)

d. Some college credit, no degree

e. Associate's degree

f. Bachelor's degree

g. Master's degree

h. Doctoral degree

i. Trade/technical/vocational training

j. Other, please specify: _____

16. What is the highest level of education your father has attained?

a. Less than high school

b. Some high school, no diploma

c. High school graduate, diploma, or the equivalent (for example: GED)

d. Some college credit, no degree

e. Associate's degree

f. Bachelor's degree

g. Master's degree

h. Doctoral degree

i. Trade/technical/vocational training

j. Other, please specify: _____

17. What is your mother's occupation?

a. _____

18. What is your mother's employment status?

a. Full-time

b. Part-time

c. Retired

d. Not employed

e. Student

f. Homemaker

g. Other, please specify:_____

19. What is your father's occupation?

a. _____

20. What is your father's employment status?
   a. Full-time
   b. Part-time
   c. Retired
   d. Not employed
   e. Student
   f. Homemaker
   g. Other, please specify:_____
21. What year of your undergraduate studies are you currently in?
   a. 1st year
   b. 2nd year
   c. 3rd year
   d. 4th year
   e. 5th year
   f. 6th year
   g. Other: _____
22. What is/are your major(s)?
   a. _____
23. What is your GPA?
   a. _____
24. What is your political affiliation?
   a. Republican Party
   b. Democratic Party
   c. Independent Party
   d. Libertarian Party
   e. Green Party
   f. Constitution Party
   g. No party preference
   h. Other, please specify:_____
25. What is your sexual orientation?
   a. Heterosexual or straight
   b. Gay
   c. Lesbian
   d. Bisexual
   e. Other, please specify:_____
26. What is your marital status?
   a. Single
   b. In a romantic relationship, but not married or in a domestic partnership

c. Married or in a domestic partnership
d. Widowed
e. Divorced
f. Separated
g. Other, please specify:_____

-Page Break-

Before continuing to other portions of the survey, we would like to clarify that ASD stands for Autism Spectrum Disorder (commonly known as autism).

-Page Break-

27. Please select as many of the following types of relationships as you have had with people with **Autism Spectrum Disorder (ASD)**.
(WORDING FOR PAGE WITH MORE QUESTIONS ABOUT EACH RELATIONSHIP: On this page, you will answer more questions about the individual(s) with ASD whom you have indicated you have relationships with. If you have had relationships with multiple people in each category, think of the individual in that category whom you are closest to).
    a. Yourself
        i. What is your level of impairment? (Scale: 1 low impairment to 5 high impairment)
    b. Your child
        i. What is their level of impairment? (Scale: 1 low impairment to 5 high impairment)
        ii. How close of a relationship do you have with this individual? (Scale: 1 not very close to 5 very close)
    c. Your parent
        i. What is their level of impairment? (Scale: 1 low impairment to 5 high impairment)
        ii. How close of a relationship do you have with this individual? (Scale: 1 not very close to 5 very close)
    d. Your sibling
        i. What is their level of impairment? (Scale: 1 low impairment to 5 high impairment)
        ii. How close of a relationship do you have with this individual? (Scale: 1 not very close to 5 very close)

e. Your romantic partner
    i. What is their level of impairment? (Scale: 1 low impairment to 5 high impairment)
    ii. How close of a relationship do you have with this individual? (Scale: 1 not very close to 5 very close)
f. Your extended family member
    i. What is their level of impairment? (Scale: 1 low impairment to 5 high impairment)
    ii. How close of a relationship do you have with this individual? (Scale: 1 not very close to 5 very close)
g. Your friend
    i. What is their level of impairment? (Scale: 1 low impairment to 5 high impairment)
    ii. How close of a relationship do you have with this individual? (Scale: 1 not very close to 5 very close)
h. Your coworker
    i. What is their level of impairment? (Scale: 1 low impairment to 5 high impairment)
    ii. How close of a relationship do you have with this individual? (Scale: 1 not very close to 5 very close)
i. Your student
    i. What is their level of impairment? (Scale: 1 low impairment to 5 high impairment)
    ii. How close of a relationship do you have with this individual? (Scale: 1 not very close to 5 very close)
j. Your fellow classmate
    i. What is their level of impairment? (Scale: 1 low impairment to 5 high impairment)
    ii. How close of a relationship do you have with this individual? (Scale: 1 not very close to 5 very close)
k. Your acquaintance
    i. What is their level of impairment? (Scale: 1 low impairment to 5 high impairment)
    ii. How close of a relationship do you have with this individual? (Scale: 1 not very close to 5 very close)
l. Other: _____
    i. What is their level of impairment? (1 low impairment to 5 high impairment)

      ii.   How close of a relationship do you have with this individual?
            (Scale: 1 not very close to 5 very close)

-Page Break-

1. How well do you understand ASD?
    a. Scale: 1 - not well, slightly well, moderately well, very well, 5 - extremely well
2. How well do you understand what it would be like to have ASD?
    a. Scale: 1 - not well, slightly well, moderately well, very well, 5 - extremely well
3. How interested are you in learning more about ASD?
    a. Scale: 1 - not interested, somewhat interested, 3 - very interested
4. How familiar are you in general with shows/movies about ASD?
    a. Scale: 1 – not very familiar to 5 – very familiar
5. How familiar are you with the documentary *Life, Animated*?
    a. Scale: 1 – not very familiar to 5 – very familiar
6. How familiar are you with the show *Atypical*?
    a. Scale: 1 – not very familiar to 5 – very familiar

Appendix B

Social Desirability Questionnaire

Listed below are a number of statements concerning personal attitudes and traits. Read each item and decide whether the statement is true or false as it pertains to you.

Scale: true (1), false (2)

1. Before voting I thoroughly investigate the qualifications of all the candidates.
2. I never hesitate to go out of my way to help someone in trouble.
3. It is sometimes hard for me to go on with my work if I am not encouraged.
4. I have never intensely disliked anyone.
5. On occasion I have had doubts about my ability to succeed in life.
6. I sometimes feel resentful when I don't get my way.
7. I am always careful about my manner of dress.
8. My table manners at home are as good as when I eat out in a restaurant.
9. If I could get into a movie without paying and be sure I was not seen, I would probably do it.
10. On a few occasions, I have given up something because I thought too little of my ability.
11. I like to gossip at times.
12. There have been times when I felt like rebelling against people in authority even though I knew they were right.
13. No matter who I'm talking to, I'm always a good listener.
14. I can remember "playing sick" to get out of something.
15. There have been occasions when I took advantage of someone.
16. I'm always willing to admit it when I make a mistake.
17. I always try to practice what I preach.
18. I don't find it particularly difficult to get along with loud-mouthed, obnoxious people.
19. I sometimes try to get even rather than forgive and forget.
20. When I don't know something I don't mind at all admitting it.
21. I am always courteous, even to people who are disagreeable.
22. At times I have really insisted on having things my own way.
23. There have been occasions when I felt like smashing things.
24. I would never think of letting someone else be punished for my wrongdoings.

25. I never resent being asked to return a favor.
26. I have never been irked when people expressed ideas very different from my own.
27. I never make a long trip without checking the safety of my car.
28. There have been times when I was quite jealous of the good fortune of others.
29. I have almost never felt the urge to tell someone off.
30. I am sometimes irritated by people who ask favors of me.
31. I have never felt that I was punished without cause.
32. I sometimes think when people have a misfortune they only got what they deserved.
33. I have never deliberately said something that hurt someone's feelings.

Appendix C

Video Opinion Questionnaire

1. To what extent do you agree with this statement: The video clip you watched was a good representation of the experience of autism.
     a. Choices: strongly disagree, somewhat disagree, neither agree nor disagree, somewhat agree, strongly agree.
2. Explain your reasoning for your answer to the question above.

Appendix D

ASD Stigma Questionnaire

Please respond to each of the following questions below by selecting one of the items on the rating scale:

Scale: strongly disagree (−2), somewhat disagree (−1), neither agree nor disagree (0), somewhat agree (1), strongly agree (2)

1. **I would be willing to have lunch with an autistic person.**
2. I would NOT be willing to work with an autistic co-worker.
3. **I would be willing to spend an evening socializing with an autistic person.**
4. I would NOT be willing to take a class with an autistic person.
5. **I would be willing to start a collaborative project with an autistic person.**
6. I would NOT be willing to make friends with an autistic person.
7. **I would be willing to hire an autistic employee.**
8. I would NOT be willing to have an autistic person marry into my family.
9. **I would be willing to marry or date an autistic person.**
10. I would NOT be willing to have an autistic boss.

Appendix E

ASD Prosociality Questionnaire

Please indicate your level of agreement with the following statements.

Scale: strongly disagree (1) to strongly agree (9)

1. I feel empathy toward autistic people.
2. I feel concern toward autistic people.
3. I feel sympathy toward autistic people.
4. I feel pity toward autistic people.
5. I feel annoyed that people have to deal with autism.
6. I feel bothered that people have to live with this condition of autism.
7. I feel irritated the condition of autism exists.
8. I am irked that individuals have to tolerate their condition of autism.
9. *Mark "7" on the scale for this item.*
10. I feel sad for autistic people.
11. I feel depressed for autistic people.
12. I feel downhearted for autistic people.
13. I feel optimistic for autistic people.
14. I feel encouragement toward autistic people.
15. I feel hopeful for autistic people.
16. Autism is a serious disorder.
17. Autistic people need us to give them our support.
18. Autistic people need us to give them our help.
19. Autistic people need us to give them our time.
20. Autistic people need us to give them resources.
21. I am likely to donate to a cause associated with autism.
22. With autism, there is a wide variation in the type and severity of symptoms people experience.
23. How do you (think you would) feel about being autistic? Select as many choices as you want (If you are autistic, answer how you feel about being autistic).
    a. Choices: Happy, overwhelmed, sad, proud, frustrated, angry, content, indifferent, bored, confused, ashamed, excited, don't know, other (please specify_____)

ASD Knowledge Questionnaire

Please respond to each of the following items below by selecting one of the options on the rating scale:

*Italicized items are the items used for the final ASD knowledge scale used in this study.

Scale: strongly disagree (−2), disagree (−1), neither agree nor disagree (0), agree (1), strongly agree (2)

1. *Autism is more frequently diagnosed in males than females.*
2. ***Autistic children do not develop attachments, even to parents/caregivers.***
3. Richer people are only more likely to be diagnosed with autism in countries where everyone does not have equal access to health care.
4. ***Autistic people are deliberately uncooperative/bad mannered.***
5. *Autistic children can grow up to go to college.*
6. *Autistic children can grow up to have successful romantic relationships.*
7. Autistic people can grow up to be loving parents.
8. ***There is one intervention that works for all autistic people.***
9. *Autism can be diagnosed as early as 18 months of age.*
10. ***With the proper intervention, most children diagnosed with autism eventually outgrow autism.***
11. *Autistic people show affection.*
12. **Most autistic people have low intelligence.**
13. *Autistic children grow up to be autistic adults.*
14. ***Autistic people are generally disinterested in making friends.***
15. *Autistic people have empathy (feel for other people).*
16. *Autistic people tend to be good at recognizing patterns.*
17. *Many autistic people have trouble tolerating loud noises or certain types of touch.*
18. *Many autistic people show the need for routines and consistency (sameness).*
19. The number of diagnosed cases of autism has increased over the past 10 years.
20. *Autistic people tend to become particularly knowledgeable about topics they are interested in.*
21. *Autistic people often notice details that people without autism miss.*
22. **We now have treatments that can cure autism.**
23. **Vaccinations cause autism.**

24. There is currently no brain scan or blood test to diagnose autism.

25. ***Autism is due to cold, rejecting parents.***

26. *Interventions for autistic people should build from their interests.*

27. *Autistic people can lead successful and satisfying lives.*

28. Autistic girls and women tend to be diagnosed later than autistic boys and men are.

29. Autistic people who hide their autism symptoms are more likely to experience mental health challenges than those who are comfortable with their autism.

Appendix G

Vertical Orientation Questionnaire

Please complete each of the following items to the best of your ability:

Scale: never or definitely no (1) to always or definitely yes (9)

1. I'd rather depend on myself than others.
2. It is important that I do my job better than others.
3. If a coworker gets a prize, I would feel proud.
4. Parents and children must stay together as much as possible.
5. I rely on myself most of the time; I rarely rely on others.
6. Winning is everything.
7. The well-being of my coworkers is important to me.
8. It is my duty to take care of my family, even when I have to sacrifice what I want.
9. I often do "my own thing."
10. Competition is the law of nature.
11. To me, pleasure is spending time with others.
12. Family members should stick together, no matter what sacrifices are required.
13. My personal identity, independent of others, is very important to me.
14. When another person does better than I do, I get tense and aroused.
15. I feel good when I cooperate with others.
16. It is important to me that I respect the decisions made by my groups.