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International Journal of Autism & Related Disabilities

Burkett OC, et al. Int J Autism & Relat Disabil: IJARD-141.

DOI: 10.29011/2642-3227.000041

Research Article

An International Study on the Acceptability of Three Interventions for Common Behavioral Challenges Experienced by Children with Autism Spectrum Disorder: Caregivers' Perspectives

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Citation: Burkett OC, Roberts JG, Sheridan RT (2020) An International Study on the Acceptability of Three Interventions for Common Behavioral Challenges Experienced by Children with Autism Spectrum Disorder: Caregivers' Perspectives. Int J Autism & Relat Disabil: IJARD-141. DOI: 10.29011/2642-3227.000041

Received Date: 01 October 2020; **Accepted Date:** 26 November, 2020; **Published Date:** 03 December, 2020

Abstract

Caregivers of children with Autism Spectrum Disorder (ASD) have the potential to become change agents in the behavior of those whom they serve; thus, the aforementioned caregivers' acceptability of interventions for ASD is paramount in importance. Participants in this study were 842 caregivers of children with ASD from various regions in North America, South America, Europe, Asia, Africa and Australia. This study examined the acceptability of three interventions (i.e., behavioral programing, medication, social/communication training) for three different challenging behaviors (i.e., extreme distress at small changes, strong attachment to/preoccupation with unusual objects, and absence of interest in peers) commonly experienced by children with ASD. This study utilized two different modalities (i.e., written scenario vs video clip scenario). Results indicate that caregivers demonstrated capabilities to differentially rated acceptability of the three interventions. Although caregivers' acceptability ratings varied depending on the type of challenging behavior in question, overall, social/communication training received the highest acceptability rating. Behavioral programming received the second highest rating. Medication received scores deemed least acceptable by caregivers.

Keywords: Acceptability; Autism spectrum disorder; Caregivers; Perception; Treatment

Introduction

Recent reports regarding the prevalence rates of Autism Spectrum Disorder (ASD) worldwide suggest that 1 in 160 children are diagnosable [1]. Since 2000, the reported prevalence rates of autism in the United States have risen by 150% [2]. The factors attributable to this increase in prevalence are a frequent subject for debate and controversy. What is less debatable is that the professional and public awareness and understanding of ASD has increased tremendously since Swiss Psychiatrist Eugen Bleuler first coined the term 'autism' in 1911 [3]. Bleuler characterized autism as a form of psychosis and the term was widely used with this understanding until around 1950 [4]. Dr. Leo Kanner was the first to describe autism as a social and emotional disorder in 1943 [5]. Dr. Kanner's description led himself and other psychoanalytic theorists to assert that a combination of biological factors and cold, distant parenting were causal factors responsible for autism. Dr. Bruno Bettelheim disagreed with Kanner in that he dismissed biological factors and believed that the cold parenting by the mother was primarily responsible [5,6]. This came to be known as the refrigerator mother theory [7-9] and led to a treatment called parentectomy in which autistic children were separated from their parents for a long period of time [9]. The 1970's brought about mainstream aversive punishment treatments for autism that included the squeeze machine (Temple Grandin), and shock therapy [9]. The 1980's and 1990's brought about recognition of clinical criteria for autism in the various editions of the Diagnostic and Statistical Manual of Mental Disorders (DSM III, DSM III-R, and DSM IV).

The use of pharmaceuticals to treat autism symptoms began in the late 1970's and grew in the 1980's and 1990's. Currently, ASD is characterized in mental health domains as a neurodevelopmental disorder that presents differently depending upon symptom severity and developmental level [10]. This growth in awareness and understanding has led to numerous innovations in providing interventions to those with ASD [11]. The most

common types of interventions to address the challenges of ASD include behavioral approaches, developmental approaches, naturalistic developmental behavioral interventions, sensory-based interventions, animal-assisted interventions, and technology-based interventions [11]. Currently, the most prominent questions concerning ASD focus upon which interventions are best suited for a growing ASD population. The purpose of this study is to assess caregivers' acceptance of three different proven interventions for the treatment of common behavioral challenges experienced by children with ASD. Caregivers are a vital component in the effective implementation of childhood interventions. This study seeks to prioritize the perspective of the caregiver in regards to their perception of the effectiveness, fairness, and applicability of three proven interventions. The three intervention categories that will be rated by caregivers include social/communication training interventions, medication interventions, and behavioral programming interventions. Social/Communication training interventions are recognized as imperative due to the fact that communication and socialization are key deficits of ASD [12]. Interventions that fall under this category focus upon verbal and nonverbal means of communication. It includes a focus on areas such as initiating/maintaining social interaction, body positioning, perspective taking, development of humor, and emotional regulation [13]. Balestro, J.I. and Fernandes, F.D.M (2019) [14] recently produced a study related to social/communication training. The study focused upon producing positive changes in the perceptions of parents of ASD children to perceive communication from their children. The study had 62 participants who were divided into three treatment groups. The study confirmed the hypothesis that each group of participants showed improved detection of the functionality of their children's communication [14]. Medication interventions are provided to alleviate common symptoms and behaviors that are associated with ASD. Medication interventions do not remedy core symptoms of ASD [15]. Some of the ASD symptoms that medications have been shown to improve include overactivity, sleep disturbances, tension, and stereotyped behaviors [5]. Medication interventions are widely used in the United States. Roughly half of the kids and adolescents diagnosed with ASD in the United States receive medication for ASD symptoms [16]. Behavioral programming interventions primarily include the use of applied behavioral analysis (ABA). The premise of ABA is that it "uses positive reinforcement to encourage desired behaviors in communication, play, and social interaction" [17]. In 2016 a study in the United States found that rural families who have a child with ASD are most commonly recommended to behavioral support services. The study also found that rural families had to travel further to access these services, and rated behavioral intervention services with lower levels of effectiveness [18].

The professional literature has seen an increase in studies seeking to understand caregivers of ASD children overall perspective, stress-levels, and view of ASD treatment saliency in the last several years [19-24]. In regards to this current study, the [19] study is significant because it examined how parents provide treatment and their perspectives regarding effectiveness of various treatments. The Becerra, T.A., et al (2017) [19] had a large sample size (n= 1155), but data collection was limited to two US states (California and Georgia) [19].

This study includes a cross-cultural perspective in that the caregiver participants are located across the world. Participant caregivers in this study come from every continent (excluding Antarctica). The role of culture is a notable factor upon mental health care and treatment. Cultural beliefs about mental illness influence the type of treatment that is sought, provided, and managed [25]. As Gopalkrishnan (2018:2) [26] suggests, cultural diversity across the world has significant impacts on the many aspects of mental health, ranging from the ways in which health and illness are perceived, health seeking behavior, attitudes of the consumer as well as the practitioners and mental health systems.

In regards to ASD, studies have seemed to indicate that ethnic differences in the causal beliefs for ASD may affect treatment choices [27,28]. This study sought to address four questions related to caregivers' perceptions of ASD care. Those questions include:

1. Will acceptability differ as a function of treatments (i.e., medication, behavioral programming, and social communication training)?
2. Will acceptability differ as a function of modality of presentation (i.e., written vs. video)?
3. Will acceptability differ as a function of presenting behavioral problem (i.e., absence of interest in peers, extreme distress at small changes, and strong attachment to or preoccupation with unusual objects)?
4. Will an interaction(s) effect(s) exist among any combination of variables (i.e., treatment, problem, and modality)?

This study aims to contribute to a wider understanding of how mental health interventions are perceived across various cultures.

Methods

Acceptability Measure

The modified version of the Treatment Evaluation Inventory [29] measures the perceived acceptability of behavioral treatments in this study. The modified version of the TEI consist of 13 of the 15 items from the original version, deleting items two (i.e., willingness to use) and four (consent). Additionally, there were language changes made to indicate the specific type of treatment as opposed to treatment in general. The original version of the TEI uses the word "treatment." For the purpose of this study, types of treatments such as "behavioral programming", "medication" or

"social/communication training" replaced the word "treatment." See Appendices B, C, and D. Like the original version of the TEI, items were arranged in a 7-point Likert-type format and could be rated from 1 to 7.

Written Case Description Packets

The cover page consisted of a request for demographic information **(See Appendix H**). A written case scenario described a seven-year-old male named Tristen who exhibited one of three behavior problems (i.e., absence of interest in peers, extreme distress at small changes, and strong attachment to or preoccupation with objects (See Appendices E, F and G). Three copies of the modified version of the Treatment Evaluation Inventory (TEI) were included to evaluate acceptability of behavioral programming, medication and social/communication training as treatments **(See Appendices B, C and D)**.

Video Case Description Packets

The cover page consisted of a request for demographic information **(See Appendix H)**. Unlike the written group, participants viewed a short video research clip of a seven-year-old male named Tristen who exhibited one of three behavior problems (i.e., absence of interest in peers, extreme distress at small changes and strong attachment to or preoccupation with objects). Three copies of the modified version of the Treatment Evaluation Inventory (TEI) were included to evaluate acceptability of behavioral programming, medication and social/communication training as treatments **(See Appendices B, C and D)**.

Variables and Research Design

The independent variables of interest were (a) treatment (behavioral programming, medication, and social/communication training), (b) behavior problems (absence of interest in peers, extreme distress at small changes or strong attachment to or preoccupation with objects), and (c) modality (written vs. video). Of the 842 participants, 421 were assigned randomly to the written condition and 421 to the video condition. Within each of these conditions, one-third of the participants received one of three behavior problems (i.e., absence of interest in peers, extreme distress at small changes, or strong attachment to or preoccupation with objects). All participants in each of the resulting six groups rated all three treatments. The order of presentation of the treatments was counterbalanced.

Procedure

First, the researcher was granted permission from her university's Institutional Review Board to conduct the research. The experiment spanned across various settings (i.e., conference rooms, auditoriums, gymnasiums, personal offices, mental health clinics, hospitals, and classrooms) across the world. After a brief oral presentation and explanation of the procedure **(See Appendix A)**, packets were distributed. Each participant received a packet containing a demographic questionnaire, a written or video scenario of a child with a behavioral problem, and three copies of the modified TEI to rate behavioral programming, medication and social communication training as a possible treatment. Each participant completed the demographic questionnaire and read a case description or viewed a video of a case description. Participants rated each treatment prior to reading the next treatment. To enhance participants' understanding of how to complete the rating scale, a display on an overhead projector in conjunction with a verbal explanation was available for this experiment. The entire procedure for each participant required approximately 20-30 minutes.

Results

Data were collected from 842 participants in eight different countries spanning six continents: Dubai, Mexico, Sweden, Jordan, Brazil, South Africa, Australia; and the states of Mississippi, Michigan, Indiana, Texas and Hawaii in the USA.

Participants represented a broad range of ages from 18 – 20 years to 70+ years. The majority of respondents were between the ages of 21 – 39 years. Most of the respondents were female (n = 725, 86.1%). The majority of respondents were African American (n = 513, 60.9 %), and the majority were from the United States of America. See (Table 1) for demographic information.

Demographic	N	%
Age of Participants		
18-20 years	4	0.5
21-29 years	198	23.5
30-39 years	244	29
40-49 years	183	21.7
50-59 years	147	17.5
60 - 69	61	7.2
70+ years	5	0.6
Gender		
Male	116	13.8
Female	725	86.2
Ethnicity		
Asian	25	3
Arab	28	3.3
African American	513	60.9
Caucasian	151	17.9
Hispanic	9	1.1
Indian	24	2.9
Mexican	25	3
Swedish	17	2
Brazilian	44	5.2
Other	6	0.7
Location		
Dubai	51	6.1
United States	614	73

Mexico	19	2.3
Sweden	19	2.3
Jordan	10	1.2
Brazil	44	5.2
South Africa	78	9.2
Australia	7	0.8

Table 1: Demographics of Participants.

Before beginning data analysis to answer the research questions, reliability tests were done using Chronbach's Alpha for each of the modalities and interventions. A random sample of 25 from each condition was analyzed, and all Chronbach's alpha results were greater than .9, with the exception of Video modality with Social/Communication intervention, which was still very strong at .895. Based on these results, the instrument was considered to produce reliable ratings for this research. See Table 2 for the reliability results.

	Written		**Video**	
Intervention	N	Alpha	n	Alpha
Behavioral Programming	25	0.907	25	0.936
Medication	25	0.973	25	0.927
Social Communication	25	0.965	25	0.895

Table 2: Reliability Results for Intervention By Modality Type.

To answer the first two research questions, analysis was conducted to test for statistically significant differences within each modality across the different interventions. For the written modality, results for the different interventions (psychotropic medications, behavioral programming, and social/communication training) were tested using a repeated-measures general linear model. Sphericity could not be assumed so the Huynh-Feldt correction was used because the epsilon values were greater that 0.75. The results were statistically significant, $F(1.803, 744.812) = 141.36$, $p < .001$ *partial eta*-squared = .255. The results indicated statistically significant linear and quadratic trends ($p < .001$ for both). The mean ($M = 55.86$, $SD = 16.70$) for the medication intervention was the cause of the statistically significant linear and quadratic trends. See (Figure 1).

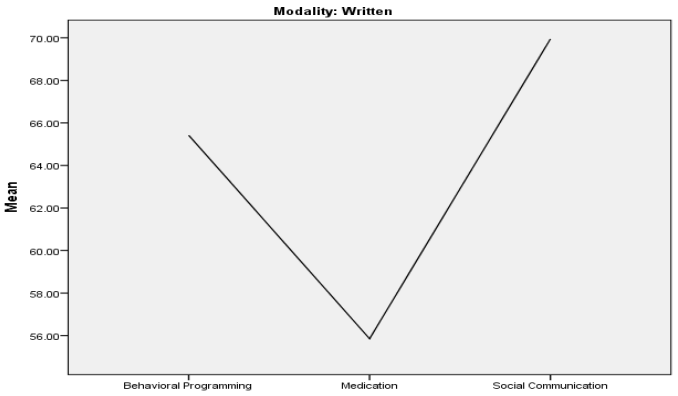

Figure 1: Modality: Written.

For the video modality, results for the different interventions (psychotropic medications, behavioral programming, and social/communication training) were tested using a repeated-measures general linear model. Sphericity could not be assumed so the Huynh-Feldt correction was used because the epsilon values were greater than 0.75. The results were statistically significant, $F(1.615, 689.748) = 229.656$, $p < .001$ partial eta-squared = .350. The results indicated statistically significant linear and quadratic trends ($p < .001$ for both). The mean ($M = 55.18$, $SD = 15.85$) for the medication intervention was the cause of the statistically significant linear and quadratic trends see (Figure 2).

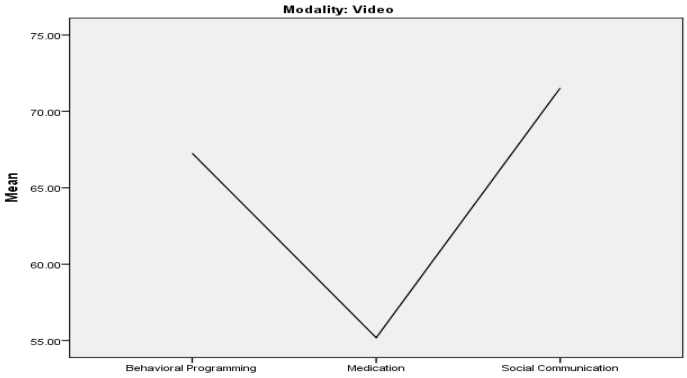

Figure 2: Modality: video.

Therefore, based on these results, it was concluded that acceptability ratings of caregivers do change as a result of intervention, as the medication intervention was statistically

significantly lower than behavioral programming and social communication. However, this difference was not due to the modality (written or video). See (Table 3) for the means and standard deviations of acceptability ratings for each modality type.

	Written			Video		
Intervention	n	Mean	Std. Deviation	n	Mean	Std. Deviation
Behavioral Programming	414	65.42	14.57	428	67.26	14.46
Medication	414	55.86	16.7	428	55.18	15.85
Social Communication	414	69.95	14.48	428	71.53	14.63

Table 3: Means and Standard Deviations for Intervention by Modality Type.

To answer the third research question, a MANOVA (multivariate analysis of variance) test was conducted to test for statistically significant differences in the acceptability ratings based on scenario type (Strong Attachment, Absence of Interests, and Extreme Distress). The result was statistically significant, Wilks' Lambda = .982, $F(6, 1674)$, $p = .016$, partial eta-squared = .009. Follow-up univariate tests revealed statistically significant findings for Behavioral Programming, $F(2, 839) = 5.362$, $p = .005$, partial eta-squared = .013, and for Social Communication, $F(2, 839) = 4.242$, $p = .015$, partial eta-squared = .010. Levene's test of Equality of Variances showed that equal variances should not be assumed, so the Games-Howell post-hoc test was used for further testing. For the Behavioral Programming acceptability rating, statistically significant differences were found between the Strong Attachment and Extreme Distress scenarios (Mean Difference = 3.29, $p = .011$) and the Extreme Distress and Absence of Interests scenarios (Mean Difference = 3.66, $p = .009$). See (Figure 3).

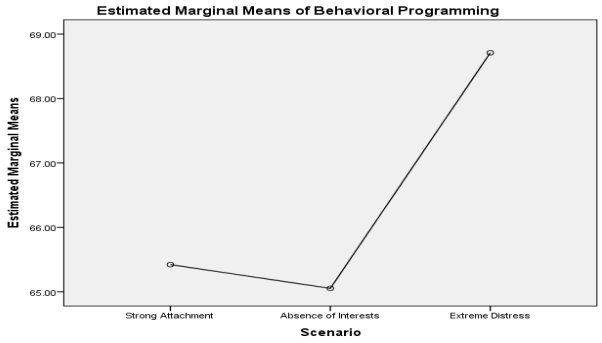

Figure 3: Estimated marginal means of behavioral programming.

For the Social Communication acceptability rating, statistically significant differences were found between the Strong Attachment and Extreme Distress scenarios (Mean Difference = 3.57, $p = .005$). No other statistically significant findings were detected. See (Figure 4).

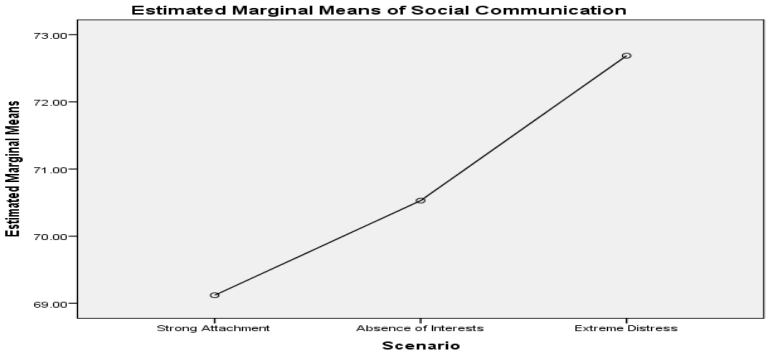

Figure 4: Estimated marginal means of social communication.

Therefore, based on these results, it was concluded that acceptability ratings of caregivers do statistically significantly differ as a function of presenting behavioral problem, as was determined for the Behavioral Programming and Social Communication acceptability ratings. There was no statistically significant result for the Medication acceptability rating. See (Table 4) for the means and standard deviations of acceptability ratings for each scenario type.

	Strong Attachment			Absence Of Interests			Extreme Distress		
	n	M	SD	n	M	SD	n	M	SD
Behavioral Programming	283	65.42	13.27	287	65.05	16.77	272	68.71	12.93
Medication	283	55.89	14.21	287	54.74	18.2	272	55.94	16.14
Social Communication	283	69.12	13.07	287	70.53	16.37	272	72.69	13.84

Table 4: Acceptability Ratings by Scenario Type for Each Intervention

To answer the final research question, analysis was conducted to test for statistically significant interactions in modalities across the three scenarios (Strong Attachment, Absence of Interests, and Extreme Distress) for each of the interventions (psychotropic medications, behavioral programming, and social/communication training). For the psychotropic medications intervention, there was not a statistically significant interaction between the independent variables of modality (written or video) and scenario type, $F(5, 836) = .334$, $p = .893$, partial eta-squared = .002. However, there was a statistically significant interaction of modality (written or video) and scenario type on the intervention of behavioral programming, $F(5, 836) = 3.007$, $p = .011$, *partial eta-squared* = .011. Means for the Strong Attachment and Extreme Distress scenarios were similar for both modalities, but were significantly different for the Absence of Interest scenario ($M = 63.47$, $SD = 17.96$ for written modality and $M = 66.69$, $SD = 15.34$ for video modality). See (Figure 5).

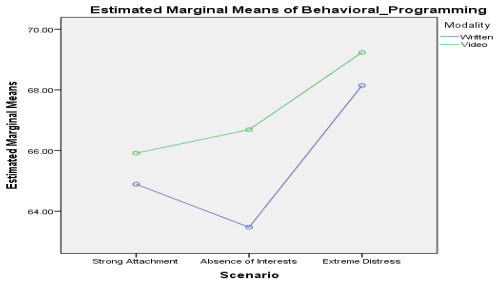

Figure 5: Estimated marginal means of behavioral programming.

Additionally, there was a statistically significant interaction of modality (written or video) and scenario type on the intervention of social/communication training, $F(5, 836) = 2.697$, $p = .020$, *partial eta-squared* = .016. Means for the Strong Attachment and Absence of Interests were similar for both modalities, but were significantly different for the Extreme Distress scenario ($M = 70.68$, $SD = 14.38$ for written modality and $M = 74.55$, $SD = 13.09$ for video modality). See (Figure 6).

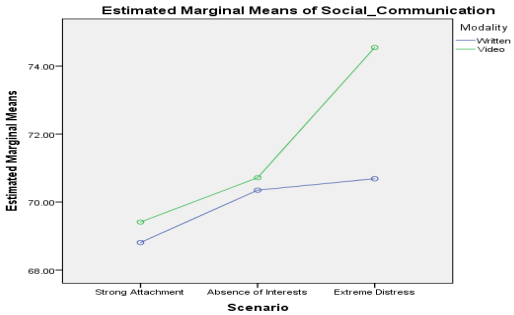

Figure 6: Estimated marginal means of social communication.

Therefore, based on these results, it was concluded that statistically significant interactions do exist among the independent variables (type of modality and scenario) on the acceptability ratings of Behavioral Programming and Social Communication acceptability ratings. See Table 5 for means and standard deviations for the interaction tests.

Written Modality									
	Strong Attachment			**Absence Of Interests**			**Extreme Distress**		
	n	M	SD	n	M	SD	n	M	SD
Behavioral Programming	137	64.89	11.52	146	63.47	17.96	131	68.15	12.78
Medication	137	56.63	13.45	146	54.72	18.63	131	56.31	17.55
Social Communication	137	68.81	11.83	146	70.35	16.69	131	70.68	14.38
Video Modality									
	n	M	SD	n	M	SD	n	M	SD
Behavioral Programming	146	65.92	14.75	141	66.69	15.34	141	69.23	13.09
Medication	146	55.2	14.91	141	54.75	17.81	141	55.6	14.78
Social Communication	146	69.41	14.17	141	70.72	16.08	141	74.55	13.09

Table 5: Comparison of Modalities by Scenario Type for Each Intervention.

Discussion

The present study examined the acceptability of three interventions as a function of three behavior problems and two modalities. The results of this study are discussed in relation to the research questions.

Research Question 1

The present study investigated whether caregivers would differentiate (in terms of acceptability) among interventions for common behavioral challenges experienced by children with ASD. Caregivers demonstrated their capabilities to differentially rate the acceptability of behavioral programming, medication and social communication training for common behavioral challenges experienced by children with ASD. A large number of the caregivers were professionals (i.e., teachers, social workers, psychologists, therapists, nurses etc.) and this could possibly affect how they differentially rated the interventions in this study. For an example, teachers generally receive classroom management training for behavioral problems. This type training normally includes behavioral programming techniques that possibly includes a reward system. Social workers and psychologists are both familiar with behavioral programming as well as social skills training. Unlike nonmedical professionals, some nurses are required to administer psychotropic medications in behavioral health centers when prescribed by the attending physician. Thus, some nurses may have observed how some medications can ameliorate behavioral challenges (i.e., self-injury and aggressive behaviors) experienced by children with ASD. To that end, it is possible that caregivers' will show acceptance for interventions of their area of expertise because they are more likely to understand how that intervention works.

Notwithstanding, the present findings are commensurate with an existing large body of research in regards to the effectiveness of medications for treating ASD [5,15,30,31]. Caregivers in the present study rated medication as the least acceptable intervention for children experiencing challenging behaviors associated with ASD. Although there is no known cure for ASD, the aim is to minimize the symptoms to allow the child with ASD to focus on learning and communication. Research shows that medication is most effective when used in conjunction with behavioral therapies [32]. The U.S. Food and Drug Administration (FDA) has approved the use of some antipsychotic drugs, such as Risperidone and Aripripazole for treating irritability associated with ASD in children of certain ages.

Research Question 2

The present study purported to ascertain if acceptability differs as a function of modality (i.e., written conditions vs. video conditions). Modality did not affect acceptability ratings of treatments in this study. Overall, caregivers that watched the videos as well as those who read the scenarios rated social communication as the most acceptable intervention and behavioral programming as the second most acceptable intervention for children experiencing challenging behaviors associated with ASD. This finding supports other findings that social/communication training interventions are recognized as imperative due to the fact that communication and socialization are key deficits of ASD [12]. One can only speculate as to why modality (i.e. by video or written conditions) did not affect caregivers' perception of what is more or less acceptable as a form of treatment for ASD.

Research Question 3

The present study examined acceptability ratings as a function of presenting problems (i.e., absence of interest in peers, extreme distress at small changes, and strong attachment to or preoccupation with unusual objects). Caregivers' acceptability evaluations varied depending on the type of challenging behavior in question. Caregivers rated behavioral programming significantly more acceptable as a treatment for a child experiencing extreme

distress at small changes in his daily routine. Extreme distress at small changes in routine is a functional consequence of ASD. In this study, the child with ASD experienced extreme distress when asked to walk in a different direction to place paper in the trashcan. According to the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5), insistence on routines and aversion to change may also interfere with eating and sleeping and make routine care (i.e., haircuts, dental work) extremely difficult. Extreme difficulties in planning, organization, and coping with change tends to have a negative impact on academic achievement, even for students with above-average intelligence.

Caregivers' ratings for behavioral programming were less acceptable for a child who demonstrated a strong attachment to- or preoccupation with unusual objects, and a child who demonstrated an absence of interest in his peers. A strong attachment to- or preoccupation with unusual objects as well as an absence of interest in peers are both considered functional consequences of ASD. In the present study, a child with ASD showed a strong attachment to- and preoccupation with paper clips. The child with ASD continuously arranged and rearranged the paper clips. When interrupted, the child became very aggressive. This finding correlates with the findings from Siu, Q. et al. (2019) that a primary source of stress in parenting ASD children "was not the severity of autism spectrum symptoms but externalizing problem behaviors" [24]. According to the DSM-5, highly restricted, fixated interests in children with ASD tend to be abnormal in intensity and focus. Additionally, in this study, a child with ASD demonstrated a lack of interest in peers when approached by another child attempting to engage him in play. The child with ASD did not make eye contact with his peer, nor did he reciprocate on social interactions. Instead, the child with ASD engaged in self-injurious behavior and fell to the floor.

Caregivers rated social communication training as significantly more acceptable as an intervention for a child who displays extreme distress at small changes in his daily routine as opposed to a child who has strong attachment to or preoccupation with unusual objects and one who has an absence of interest in his peers. This finding correlates with the findings of Becerra, T.A., et al., (2017) [19] in which most parents in that study perceived support services to be helpful (specifically individualized education plans, occupational therapy services, and speech therapy services) [19].

Research Question 4

Lastly, the present study purported to ascertain if an interaction effect(s) existed among the variables. As previously stated, results indicated there was not a statistically significant interaction between the treatment (medication), modality types (written and video) and challenging behaviors (i.e., absence of interest in peers, strong attachment to or preoccupation with unusual objects, and extreme distress at small changes) experienced by children with ASD. However, with regard to behavioral programming, caregivers' ratings of acceptability resulted in a statistically significant interaction of modality and the behavior absence of interest in peers. The video condition reflected significantly higher levels of acceptance for behavioral programming as an intervention for the behavior absence of interest in peers than the written condition. In essence, caregivers who watched the video of a child with ASD who showed no interest in his peers rated behavioral programming more acceptable as an intervention than the caregivers who read a scenario of this same behavior. This would seem to highlight that top-down processing is notable in effecting the caregiver's perception of which treatment is needed. Top-down processing refers to a person's observational goals, prior expectations, and prejudicial attitudes as the lens through which they interpret data that they observe [33]. With regard to social communication training, caregivers' ratings of acceptability resulted in a statistically significant interaction of modality and the behavior extreme distress at small changes. The video condition reflected significantly higher levels of acceptance for social communication training as an intervention for extreme distress at small changes. Caregivers that watched the video of a child experiencing extreme distress at small changes in his daily routine rated social communication training more acceptable than caregivers who read the scenario of a child experiencing the same.

Limitations and Strengths of the Present Study

A possible limitation of the present study is that the methodology was analogue in nature. Such a limitation could raise the question of generalization across settings (i.e., home, school, mental health settings) where caregivers provide services for children with ASD-to the possibility of a lack of correspondence between caregivers' responses in a hypothetical situation (i.e., analogue studies) and an actual situation in which the caregivers' perceptions may be influenced by their responsible involvement. Nevertheless, much useful information has been obtained through analogue studies as they allow for the systematic control and manipulation of variables not afforded by field studies. Future researchers should consider studies to assess the relationship between analogue and naturalistic ratings of acceptability.

The present study differs from a majority of the previous investigations on this topic in that caregivers' (for children with ASD) provided acceptability ratings for assessment. Secondly, this study offers a cross-cultural perspective of acceptability of interventions for children with ASD as caregivers were from North America, South America, Europe, Asia, Africa and Australia. Additionally, this study included caregivers who provided services in an array of settings to include homes, schools, hospitals, clinics, mental health centers, and private practices.

It would behoove researchers to continue international studies on ASD and include caregivers as participants. Caregivers have the potential to become great change agents ameliorating challenging behaviors seen in children with ASD that would otherwise prevent them from reaching their fullest potential in life. Increasing caregivers' understanding of interventions for ASD will likely increase their acceptance of the intervention as well, thus, increasing the likelihood that they will implement the interventions as prescribed with consistency and integrity. When caregivers achieve treatment acceptability, and adhere to treatment consistency and integrity, some children with ASD around the world may become successful adults who are lawyers, doctors, scientists, teachers, business owners, artists, and musicians just to name a few. Caregivers' acceptance of treatment is paramount in importance in order to facilitate the growth and success of children with ASD around the world.

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