“They Think I’m Amazing but Won’t Talk with Me.” Neurotypical People Are More
Cognitively Than Behaviorally Positive Towards Their Autistic Friends

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Abstract

Negative stereotypes and ostracism of those on the autism spectrum persist, with consequences for autistic people including fewer friendships and smaller social networks. Recent work in the area has found that diagnosis disclosure can have a positive effect on autistic peer perceptions and that non-autistic people often decide whether or not to maintain relations with autistic individuals based on initial thin slice judgements. Participants ($N = 423$) in this study were randomly assigned to one of two conditions (disclosure of autism diagnosis or no disclosure) and read a fictional vignette depicting a social interaction with someone displaying behaviors characteristic of autism. They then answered questions regarding their affective, behavioral, and cognitive responses to the character. Results indicate that non-autistic people show positive cognitions, but less positive behavior, towards those on the spectrum, and that participants with autistic friends (regardless of diagnosis disclosure) showed more negativity to the vignette character than those participants without such friends. Implications are discussed in light of situational factors that may be present within these relationships.

“They Think I’m Amazing but Won’t Talk with Me.” Neurotypical People Are More Cognitively Than Behaviorally Positive Towards Their Autistic Friends

Study at the intersection of autism spectrum conditions and prejudicial attitudes has become increasingly popular as researchers and other scholars actively move from purely pathological models of the condition towards theoretical and practical views that both incorporate the views of autistic people and seek to provide actionable information to better their lives (e.g., Fletcher-Watson et al., 2018). Autism is not always the most stigmatized relative to other conditions such as conduct and bipolar disorders and schizophrenia (Durand-Zaleski et al., 2012; Obeid et al., 2020), but negative stereotypes and ostracism of those on the spectrum persist. Serious consequences for autistic people include fewer friendships and smaller social networks, fewer employment opportunities, and lower levels of life satisfaction (e.g., Graetz, 2010; Neville & White, 2011).

Furthermore, autistic children and adults both report higher degrees of loneliness than neurotypical people (Bauminger & Kasari, 2003; Locke et al., 2010; Mazurek, 2013), which has downstream, negative effects on wellbeing (Mazurek, 2013). Recent research also finds autistic people are multiply-marginalized, affected by racial stereotypes at the same time they are affected by negative perceptions of autism (Broder-Fingert et al., 2020; Obeid et al., 2020), and that non-autistic people often decide whether or not to maintain relations with autistic individuals based on initial thin slice judgements (Sasson et al., 2017). Additional negative consequences are often felt by the parents and caregivers of autistic people—especially with respect to children. Parents of people on the spectrum tend to feel ostracized, receive less social support, and are

often targeted by parental and other peers with avoidance behaviors, rejection, hostile staring in public, and rude and hurtful comments.¹

On the other hand, a more positive, emerging body of evidence shows that diagnosis disclosure can have a positive effect on autistic peer perceptions (Bolton & Ault, 2018; Brosnan & Mills, 2016; Huws & Jones, 2008; Matthews et al., 2015; McMahon et al., 2020; Sasson & Morrison, 2017) and that initial, first-impression social judgements of autistic individuals are more often influenced by the non-autistic person's pre-existing beliefs, biases, and expectations rather than the social presentation of the autistic person (Morrison et al., 2019). Thus, people on the spectrum can exert some level of control over the perceptions others have of them by deciding whether or not to disclose their condition, and can be confident knowing that much of the time, difficulties they experience in relationships are not solely, if at all, their fault.

This paper supplements the autism-prejudice literature and other work on friendship in autism (e.g., Acar et al., 2015; Chow et al., 2013; Ciarrochi et al., 2016; Clark & Ayers, 1993) by attempting to address questions that arose during a prior study on peer perceptions of those with autism (Bolton & Ault, 2018). Specifically, that work found an interaction of diagnosis disclosure and familiarity with autism such that participants' knowing one has autism, coupled with familiarity with the condition, promoted less negative responses to fictional acquaintances with autism in written vignettes. For those unfamiliar with the condition, however, knowing one had autism did not reduce negativity. Bolton and Ault (2018) suggested those familiar with autism would find the person depicted in the scenario less odd, especially when they knew the person was on the spectrum. It was unclear whether familiarity with autism alone, or other

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¹ See Gray, 1993, 2002; Graetz, 2010; Farrugia, 2009; Kinnear, Link, Ballan, & Fischbach, 2016; Mitter, Ali, & Scior, 2019; Papadopoulos, Lodder, Constantinou, & Randhawa, 2018; and Selman et al., 2018.

individual differences that might correlate with such familiarity, such as empathy, could explain the finding.

This finding and two others, which were not reported in final publication due to their relation to a tertiary hypothesis, prompted the conceptual replication and extension reported here. These were 1) that religiosity correlated with fewer negative behaviors aimed at those on the spectrum, and 2) that self-reported importance of religiosity correlated with less affective and behavioral negativity. In addition to the ethical commandment commonly known as the “Golden Rule,”² which is a core precept of prosociality and has been integrated in some form into many religions (Topel, 1998; Tullberg, 2012), research has linked, albeit inconclusively, empathy and religiosity to helping behavior (e. g., Batson et al., 1993; Tsang et al., 2015). We thus surmised religiosity and spirituality would explain additional variance in friendship-oriented positive affect, behavior, and cognition towards those on the spectrum, especially since being a person’s friend entails a certain innate acceptance of them.

We were interested in conceptually expanding the scope of our original research in a few ways: From investigating perceptions of autistic people considered acquaintances to investigating perceptions of those considered friends; to measure the relationship between empathy and autistic friend acceptance; and to investigate more thoroughly and formally the potential relationship between religiosity, spirituality, and acceptance of autistic friends. We derived two hypotheses (H1/2 hereafter) from these aims: 1), that people who considered an autistic person a friend would be more accepting of them, regardless of diagnosis disclosure but especially when their diagnosis was known; and 2), that religiosity and spirituality would both

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² The Biblical passages Matthew 7:12 and Luke 6:31, for example, state essentially that one should do to others as he or she would have others do to him or her.

predict positive peer acceptance (or at least fewer negative responses) across the domains of affect, behavior, and cognition.

Method

Participants

There were 423 participants in this study ($n = 239$ women; $n = 168$ men; $n = 16$ nonbinary people). They were current college students ($n = 154$; 107 undergraduate-level, 36 graduate-level) and non-student adults. Of the non-students, 94 (22%) had graduated with a bachelor's degree; 63 reported having some, but not a degree's worth of, college education; 55 had completed a master's degree; 48 had a pre-college education level; and 7 had completed a doctorate. Crucial to this study, 117 participants – only 27.7% – identified as religious;³ while 164 people (38.8%) considered themselves personally spiritual. The participants were European-American ($n = 348$; 82.3%), Asian ($n = 22$), African-American ($n = 11$), Hispanic ($n = 10$), Latino/a ($n = 6$), bi- or multi-racial ($n = 18$), or considered themselves in another grouping ($n = 8$). The mean age of those participants who provided theirs ($n = 399$) was 28.77 ($SD = 11.64$, range 18-80).

Procedure

Participants were recruited for an online, Qualtrics-hosted survey through in-class announcements at Saint Leo University and via social media (e.g., Facebook, Reddit). Upon reading the implied consent form and agreeing to take part, they were directed to fill out, in the order that follows, simple demographic items (age, gender identity, race, education level, student status, and questions about their stances on religion and spirituality) and several measures

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³ This aligns with recent survey data finding that “nones,” those reporting no religious affiliation, now are as populous in the United States as evangelicals and Catholics (Jenkins, 2019).

pertaining to the following: 1) Their tendencies for religious and spiritual belief (the Centrality of Religiosity Scale; CRS; and the Intrinsic Spirituality Scale; ISS; by Huber & Huber, 2012, and Hodge, 2003, respectively), 2) autism spectrum traits (Autism-Spectrum Quotient, 10-item; AQ-10, Allison et al., 2012), 3) empathic display (the Empathy Components Questionnaire; ECQ, Batchelder et al., 2017), and 4) social values (Short Schwartz's Values Survey; Lindeman & Verkasalo, 2005). However, because the present study did not include a specific values-related hypothesis, the SVS data were ultimately not included in our analyses and are available archivally.

Following this, participants were randomly assigned to one of two conditions and directed to read a fictional vignette depicting a social interaction with someone displaying behaviors characteristic of autism (a label condition which disclosed an autism diagnosis for the character, or one that did not; $n = 211$ and 212 , respectively). They then answered questions (the Multidimensional Attitudes Towards Persons with Disabilities Scale; MAS, Findler et al, 2007) regarding their affective, behavioral, and cognitive responses to the character. Finally, participants completed the Autism Symptomology Questionnaire (ASQ; McMahon et al., 2020) to assess their autism knowledge, and filled out several items pertaining to their real-life experiences with people on the spectrum. All materials, including data in SPSS and .csv format and R code for our regression, are available via the Open Science Framework (<https://osf.io/275bx/>).

Description of Measures

Centrality of Religiosity Scale (CRS). The 15-item CRS⁴ measures the centrality, importance, and personal salience of religious meanings to individuals across the five domains of intellect, ideology, public and private practice, and experience. It was constructed so as to be widely applicable to people across myriad religious belief systems. Items (e.g., “How often do you think about religious issues?”) are scored on a 5-point Likert scale from 1-5, with answers ranging from “not at all” to “very much so” and “never” to “always.” The CRS had a Cronbach’s alpha of 0.96.

Intrinsic Spirituality Scale (ISS). The 6-item ISS measures the personal saliency of spirituality to an individual. Items (e.g., “In terms of the questions I have about my life, my spirituality answers: No questions – Absolutely all my questions) are scored on an 11-point Likert scale from 0-10. Cronbach’s alpha for the ISS was 0.98.

Autism-Spectrum Quotient, Ten-item (AQ-10). The AQ-10 was constructed from the more popular, but longer (50-item) Autism-Spectrum Quotient (Baron-Cohen, Wheelwright, Skinner, Martin, & Clubley, 2001), as a measure of the traits characteristic of autism. Items (e.g., “I often notice small sounds when others do not.”) are scored on a 5-point agreement-based Likert scale. The AQ was marginally reliable with an alpha of 0.59, unsurprising given the demographic makeup of our sample (majority participants identifying as female and a subset as nonbinary). Murray and colleagues (Murray, Allison, et al., 2017; Murray, Booth, et al., 2017; also see Agelink van Rentergem et al., 2019) suggest a degree of diagnostic bias in the AQ, and that the AQ reflects “maleness” in autism, introducing inconsistency among female and

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⁴ Which was here 14 items due to a Qualtrics error.

nonbinary respondents. Agelink van Rentergem et al. (2019) suggested, as well, that the AQ items function differently for different groups of people, and other emerging, psychometric research indicates poor reliabilities are common with various versions of the AQ (Jia et al., 2019; Taylor et al., 2020). We included the AQ-10 in the final manuscript out of an abundance of transparency, since this sheds further light on its psychometric qualities and since our relatively large sample size and pattern of replicated results allow us to be confident in its use within this study.

Empathy Components Questionnaire (ECQ). The ECQ is a 27-item, Likert-based measure of empathy across four domains: Cognitive drive and ability, and affective drive and reactivity. Items (e.g., “I am not very good at helping others deal with their feelings”) are scored from 1-4 on an agreement-based Likert scale. The ECQ had a Cronbach’s alpha score of 0.91. The ECQ Total variable was used in our hypothesis testing.

Multidimensional Attitudes Towards Persons with Disabilities Scale (MAS). The MAS measures affective, behavioral, and cognitive attitudes towards a vignette character (see Appendix A) representing a group or disability chosen by the researchers, with which participants are instructed to imagine in a hypothetical social situation. Sixteen affect-oriented questions include such feelings as tension, serenity, and shyness. The behavior-oriented items, modified for this study’s vignette (Appendix B), ask how likely respondents would be to engage in eight different behaviors, while the cognition-oriented subscale inquires about participant likelihood to experience 10 thoughts during the interaction. Sample cognitions include “We may get along really well” and “Why not get to know him/her better?” Items are scored on a scale from 1 (not at all) to 5 (very much). Positive items are reverse-scored, and items for each subscale averaged, resulting in three outcome variables for affective, behavioral, and cognitive

response. Lower mean scores indicate more positive acceptance of the vignette character. Average MAS scores were 2.63 (affect; $SD = 0.57$), 2.08 (behavior; $SD = 0.66$), and 2.88 (cognition; $SD = 0.69$).

Cronbach's alpha reliabilities across the three subscales were 0.75 (affect), 0.41 (behavior), and 0.88 (cognition). The behavior subscale's low internal consistency was initially surprising. However, we do not believe this is a sign of poor reliability but rather a tip-off to a real but subtle finding. Items 2 and 4, having to do with positive peer support and commitment—initiating and maintaining conversation, possibly in spite of communicative difficulties—were inversely related to the remaining items, all of which concerned negative actions one would take to remove themselves from the situation. Removing these yielded a second, reliable ($\alpha = 0.78$) behavior variable. We used both (henceforth B1/2) in our analyses, and our findings are discussed in light of this, in an exploratory context.

Autism Symptomology Questionnaire. The ASQ is a 25-item measure of autism knowledge, constructed in a true/false format using the DSM-5 (American Psychiatric Association, 2013) as a reference point. It is interspersed with statements (e.g., “Difficulties adjusting behavior to suit various social contexts” that directly reference the DSM autism criteria and other conditions within the DSM. Participants are asked to indicate whether each is indicative of an autism spectrum condition. Responses indicative of an autistic trait score 1 point.

Results

Analyses of Variance

Testing H1 using a 2 (diagnosis label, no-label) x 2 (has-autistic-friend: Yes/No) multiple analysis of variance (MANOVA) revealed some surprising findings in partial confirmation of H1

(see Tables 1 and 2, next). First, there were main effects of having an autistic friend on affective responses, $F(1, 383) = 5.71$ ($M_{\text{Friend}}=2.26$; $M_{\text{NoFriend}}=2.39$), $p = 0.017$, $\eta^2 = 0.02$, power = 0.66; and for cognitions, $F(1, 383) = 8.49$ ($M_{\text{Friend}}=2.77$,; $M_{\text{NoFriend}}=3.07$), $p < 0.001$, $\eta^2 = 0.05$, power = 0.99.

Table 1. Means and Standard Deviations for Two-Way Multiple Analysis of Variance

						Condition Total			
		Autistic Friend		No Friend		Friend		No Friend	
		<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
ASC Disclosure	Affect	2.23	(0.54)	2.33	(0.56)	2.26	(0.57)	2.39	(0.54)
	Behavior 1	2.92	(0.25)	2.90	(0.25)	2.93	(0.24)	2.88	(0.24)
	Behavior 2	2.59	(0.27)	2.67	(0.33)	2.60	(0.29)	2.66	(0.31)
	Cognition	2.69	(0.58)	2.95	(0.71)	2.77	(0.65)	3.07	(0.68)
No Disclosure	Affect	2.29	(0.59)	2.45	(0.52)				
	Behavior 1	2.95	(0.23)	2.86	(0.23)				
	Behavior 2	2.62	(0.31)	2.66	(0.28)				
	Cognition	2.86	(0.70)	3.19	(0.64)				

Note. ASC = autism spectrum condition. Data shown are means and standard deviations for participants with and without friends on the spectrum, by label/no-label (left) and totaled by condition (right insert). Lower scores indicate greater attitudinal positivity.

Table 2. *Multivariate Analysis of Variance Summary Statistics*

	<i>df</i>	SS	MS	<i>F</i>	<i>p</i>	Power	η^2
Disclosure							
Affect	1	0.791	0.791	2.59	.11	.36	.006
Behavior 1	1	0.005	0.005	0.08	.77	.06	0
Behavior 2	1	0.01	0.01	0.15	.70	.07	0
Cognition	1	4.00	4.00	9.18	.003*	.86	.02
Friends							
Affect	1	1.75	1.75	5.71	.02*	.66	.02
Behavior 1	1	0.27	0.27	4.72	.03*	.58	.01
Behavior 2	1	0.34	0.34	3.90	.05*	.50	.01
Cognition	1	8.49	8.49	19.51	< .001***	.99	.05
Disclosure x Friends							
Affect	1	0.09	0.09	0.30	.58	.09	0
Behavior 1	1	0.10	0.10	1.84	.18	.27	.004
Behavior 2	1	0.04	0.04	0.43	.51	.10	.001
Cognition	1	0.09	0.09	0.20	.66	.07	0
Error							
Affect	383	117.00	0.31				
Behavior 1	383	21.59	0.06				
Behavior 2	383	33.82	0.09				
Cognition	383	166.72	0.44				

Total		
Affect	387	2,215.43
Behavior 1	387	3,287.33
Behavior 2	387	2,723.99
Cognition	387	3,505.89

Note. * $p < .05$. *** $p < 0.001$. Sections bolded for easier reading.

There were further significant main effects of having a friend, on both behavior variables: B1, $F(1, 383) = 4.72$, ($M_{\text{Friend}}=2.93$; $M_{\text{NoFriend}}=2.88$), $p = 0.030$, $\eta^2 = 0.01$, power = 0.58; and B2, $F(1, 383) = 3.90$ ($M_{\text{Friend}}=2.60$; $M_{\text{NoFriend}}=2.66$), $p = 0.049$, $\eta^2 = 0.01$, power = 0.50. Finally, there was a main effect of diagnosis disclosure on cognitions, $F(1, 383) = 9.18$, $p = .003$ ($M_{\text{Disclosure}} = 2.82$; $M_{\text{NoDisclosure}} = 3.03$). Counter to prior findings (Bolton & Ault, 2018), there were no interactions.⁵ A one-way ANOVA testing student-non-student differences was nonsignificant (all $ps > 0.10$).

Multivariate Multiple Regression

H2 was tested with a multivariate multiple regression (MMR; Datallo, 2013; to properly account for Type I errors that would be incurred using several multiple linear regressions) conducted in R (R Core Team, 2013; IVs were religiosity, spirituality, and empathy; DVs were the mean scores for affect, behavior, and cognition). Both behavior variables, with and without the two items pertaining to initiating and continuing a conversation with the vignette character (i.e., friendship commitment in the face of communication challenges), were entered. MMR results also were in partial confirmation of our predictions. Centrality of religiosity did not

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⁵ And as can be seen via our open data, the results persisted, though B2 lost significance ($p = 0.10$), when removing the study's 23 participants who self-reported themselves as being on the autism spectrum.

predict acceptance of autistic peers on any variable, $F(4, 378) = 1.83, p > .05$. However, as is shown in Table 3, spirituality was predictive of behavioral positivity on the B2 variable (friendship excluding supportive/approach behavior), and empathy was predictive of acceptance across all three domains— affect, both behavior variables, and cognitions. Spirituality and empathy both explained significant portions of variance (spirituality $R^2 = 0.10$; empathy $R^2 = 0.21$).

Table 3. *Summary of Multivariate Multiple Regression with Three Predictors.*

Variable	CRS		ISS		ECQ	
	β	SE	β	SE	β	SE
Affect	0.04	0.81	0.41	2.40	5.52**	8.59
Behavior 1	-0.14	0.37	5.22	0.31	12.55*	3.93
Behavior 2	-0.11	0.30	-2.74**	1.09	-18.55**	3.21
Cognitions	-0.20	0.11	-0.19	0.31	-3.84**	1.12
R^2		0.02		0.10		0.21
Adj. R^2		0.009		0.09		0.20
F		1.83		10.64**		25.47**

Note. * $p < 0.05$. ** $p < 0.001$

Correlational Analyses

We further predicted that autism knowledge and exposure, and cognitive similarity (operationalized via autistic traits), would be positively related to acceptance. Finally, we examined the relationships between age, religiosity, and peer acceptance, in order to test the

prediction that older individuals would be more accepting due to a greater number of life experiences (and as was found previously; Bolton & Ault, 2018).

Contrary to H2, autism knowledge was negatively correlated with affective responses, $r(380) = -.11, p = 0.03$, and both behavioral response variables and age were negligibly correlated with acceptance (both $ps > 0.10$). Autism knowledge was not significantly correlated with cognitions ($p > 0.80$), but autistic traits were—positively, $r(389) = .14, p = .007$. Intriguingly, self-reported autistic traits among participants were not related to acceptance of B1 behaviors, but were positively and significantly correlated with B2 behavioral, $r(389) = .12, p = 0.02$, and cognitive acceptance, $r(389) = .14, p = 0.007$.

Discussion

This study was the first to integrate religiosity and spirituality into the study of autistic peer perceptions and prejudices, yielding partial hypothesis support. H1 predicted that those with an autistic friend would be more accepting, regardless of diagnosis disclosure but especially when the individual's diagnosis was known; H2 predicted that religiosity and spirituality would both predict positive peer acceptance across the domains of affect, behavior, and cognition.

What do our results mean in practical terms? First, in support of H1, participants who considered an autistic person their friend expressed significantly higher levels of affective and cognitive positivity towards the vignette character; and participants who received the diagnosis label information were more cognitively positive towards the vignette character. For B1, involving commitment to the relationship amidst communication challenges, people who both considered an autistic person their friend and received diagnosis information actually responded significantly *less* positively than those in the no-diagnosis condition who *did not consider* an autistic person their friend. In fact, people in both label condition groups who reported having an

autistic friend scored essentially the same (the no-label, with-friend group was most negative), while the no-label, no-friend participants exhibited the most behavioral positivity (suggesting this last group, with no knowledge or interaction experience, was not subject to activation of stereotypes when reading the vignette). Results for B2 aligned with our prediction: Participants with a friend on the spectrum were slightly more positive in their total behavioral score, while there was no difference for those in the no-label condition.

With respect to the supposedly socially-unitive aspects of religiosity and spirituality (H2), these findings suggest, contrary to our prediction, that religiosity is not a marker of peer acceptance and that spirituality only predicts context-dependent behavioral positivity. Empathy, in contrast, predicted positivity across all three domains. There is a substantial body of research suggesting that empathy and other temperamental traits, in a variety of contexts, are important to friendship formation and maintenance (e.g., Acar et al., 2015; Chow et al., 2013; Ciarrochi et al., 2016; Clark & Ayers, 1993; Dunn & Cutting, 2001; Lopes et al., 2003; Lopes et al., 2004; Lopes et al., 2005; Meuwese et al., 2016; Schlenker & Britt, 2001; O'Meara, 1989; van den Bedem et al., 2018). This includes those with learning disabilities (e.g., Zetlin & Murtaugh, 1988), developmental language disorders (van den Bedem et al., 2018), attention-deficit/hyperactivity disorder (Cordier et al., 2010; Mikami, 2010), autism (e.g., Jami et al., 2017; Moriwaki et al., 2011) and Klinefelter Syndrome, a genetic condition with social effects similar to those observed in autism that occurs in biological males with an additional X chromosome (van Rijn et al., 2014). Adding our findings to this literature, it would seem empathy and other internal traits are better supporters of friendship than social norms.

Interestingly, in two studies, at least (Acar et al., 2015; Rose, 2015), empathy and the amount of attention paid to the other individual in the relationship were both predictors of

friendship quality. This suggests that empathy involves a certain attentional factor as well as taking one's perspective into account and responding to their mental state. Our findings could also be a result of the way religions mandate believers' dogmatic exclusivity—adherence to their one, specific religion. That is, despite the Golden Rule and core precept of acceptance for all, community-related dogma might trigger an in-group/out-group, autism-as-threat response or other stereotype just as it does for specific religious orientations towards others (e.g., Johnson et al., 2012). One perspective on this matter is that inter-religion prejudices are perpetrated because the out-group religion is seen as values-violating by the in-group religion (e.g., Johnson et al., 2012; LaBouff et al., 2012; for example, with respect to ideological divides within any one particular religion, or between two different religions). This relates, as well, to cognitive and affective aspects of negative intergroup contact portending perceived threat by the out-group (Aberson, 2015; Blaschovich et al., 2001; Stangor et al., 1991; Paolini et al., 2007). It would seem a similar effect of selective intolerance as is extended to homosexual individuals and racial minorities (Rowatt et al., 2009), immigrants (Rowatt, 2019), and non-Christians (LaBouff et al., 2012) by religious people—who may be, but are not necessarily Protestant or Catholic—is also extended to people on the autism spectrum. Future research illuminating the nature of this dynamic and contexts in which it might occur would be a useful addition to the overarching research literature.

Spirituality may predict affective positivity in this sample because the cognitive search at the heart of religiosity and spirituality (Fisher, 2013), and desire to connect with an Ultimate reality, or that which is sacred to the individual, is mediated by affective processes (e.g., Hill, 1995; Hood, 1995; Hill & Hood, 1999). Spiritual individuals, then, being more internally and individually-focused, may be more attuned not only to their own affective states, but also those

of the autistic individual with whom they are interacting. This would allow them concomitant cognitive attunement as well.

Our correlational findings related to knowledge are contradictory to previous research relating autism knowledge to acceptance. This could be due to a number of factors. First, whereas other autism knowledge tests frame knowledge in terms of myths and stereotypes of the condition, our assessment was stringently based on presenting features taken from the 5th edition of the Diagnostic and Statistical Manual, with which participants may have been unfamiliar. Second, recent research (Sasson & Morrison, 2017) suggests the higher number of negative affective responses for those with greater knowledge could reflect personal biases and traits of the respondents more than the characteristics of the autistic persons with whom they interact. They also could be a holdover of negative first impressions the respondents first had upon meeting their autistic friends (Sasson et al., 2017), since first impressions tend to entrench and persist (Ambady & Rosenthal, 1992).

Another, alternate explanation is that autism knowledge does not necessarily mediate positive attitudes (McManus et al., 2011; White et al., 2016). Instead, acceptance is predicted by the quality of an individual's contact (Allport, 1954; May, 2012; Bolis et al., 2020). Bolis et al. (2020) recently showed that interpersonal similarity—specifically, the between-persons quality of autistic traits—is directly related to the quality of friendships held by autistic people. Thus, it may be that cognitive similarity is related to one's ability to integrate others within one's own self-structure (Aron et al., 2004; Smith, 1999). We can also look to work on affective ties, which involve feelings of intergroup comfort and liking, in cross-group relationships (Tropp & Pettigrew, 2005). Emotional identification (Pettigrew, 1997), feelings of closeness (Wright et al., 2002; Wright & Van der Zande, 1999), as well as time spent and level of self-disclosure (Davies

et al., 2011) with outgroup members appear to be strong predictors of acceptance. The positive correlation between self-reported autistic traits and cognitions replicates the finding from our previous study (Bolton & Ault, 2018) and other work (e.g., Matthews et al., 2015; Nevill & White, 2011), in which participants with greater cognitive similarity were also more cognitively accepting.

In line with work on contact theory (e.g., Crisp & Turner, 2009; Hewstone & Swart, 2011; Husnu & Crisp, 2010; Pettigrew, 1998; Pettigrew & Tropp, 2006; Pettigrew & Tropp, 2008; Turner et al., 2007), we believe this might be due to a cognitive empathy channel, developed between individuals through interpersonal contact, fostering heightened understanding and acceptance. The non-correlation between AQ score and B1, however, suggests that even people higher in autistic traits may be weary to commit to autistic individuals in the face of communication challenges. This warrants further investigation, since emerging research (e.g., Heasman & Gillespie, 2019) suggests relationships between individuals on the spectrum tend to fair better than those between autistic people and neurotypical individuals.

Given the work that has recently come out of related research questions pertaining to the reciprocity process of neurotypical-autistic social interactions (the “double empathy problem;” e.g., Milton, 2012; Heasman & Gillespie, 2018) such a hypothesis is an important step in understanding the nature of social interaction both within and outside of autism. Our results, in need of more detailed study, indicate cognitive similarity relates to positive behavior towards autistic friends only when the neurotypical individual in the relationship is not asked to provide supportive, commitment-indicating behavior.

Limitations of the Present Study

The present study is not without limitations. First, the nature of self-report always brings about concern for participants' potential dishonesty, response bias, misunderstanding, self-presentation concerns, or inattentive responding (e.g., Robins et al., 2007). Some of these features may have interacted with individual differences to produce low scale reliability for the AQ, although we specifically used the AQ-10 in an effort to avoid these complications (Agelink van Rentergem et al., 2019). Reliability was also low for the MAS behavior sub-scale, one of our major dependent variables. We attempted to explain the inconsistency in the behavioral outcome and created two separate measures of behavioral response to reflect what we perceive to be important distinctions based on the commitment items. It would be preferable to have a solidly reliable measure in the first place, but the crux of these findings suggest that behavioral responses differ when someone is asked to commit time and effort to a relationship, which is not something we anticipated.

Further, our scenario described an individual whose odd behavior may have appeared more functionally-inhibited than we intended. It is possible that the difference in behavioral response to a committed or noncommittal relationship was based, in part, on those familiar with autism honestly assessing their ability to invest effort in a friendship that may be high maintenance. A follow-up study might use a subtler description of the character's qualities, as it is possible our results are restricted to people with more overt autistic traits.

One issue was that centrality of religiosity was confounded with empathy and community-based pressure to stay within one's religious community. Some for whom religiosity holds a central degree of life-importance may stay true to the "accept everybody" message received from their religious institution, but others might break from these when faced with

situations requiring acceptance. For example, Christianity simultaneously mandates its God as the one, true, divine Ruler, but that its adherents practice acceptance for all people (and by extension, all belief systems). Within the context of socialization and prejudice, this may induce cognitive dissonance, or incongruity between belief and expressed behavior, which leads to some combination of either behavioral or cognitive negativity towards autistic people.

Conclusions and Implications for Future Work

This study examined responses to an individual appearing to be on the autism spectrum based on whether participants were aware that the person was diagnosed with autism, and whether the participants had one or more friends on the spectrum. We also examined the extent to which several individual differences predicted responses to a person appearing to be on the autism spectrum.

Empathy served as the best predictor of positive affective, behavioral, and cognitive responses to the character in the vignette. Both behavioral outcomes were significantly predicted by empathy, supporting prior findings regarding empathy and altruism (e. g., Batson et al., 1993). Empathy appears to be an important individual difference and might be further explored in regard to responses to other stigmatized or otherwise marginalized groups. Spirituality significantly predicted B2, or behavioral responses when there was no requirement to commit to the relationship, but none of the other responses. Replication is needed before we can reliably conclude that spirituality is unrelated to responses to stigmatized groups. In this study, it plays a less important role in explaining positive responses than predicted, yet also a more important role than religiosity. Religiosity was unrelated to any of the peer responses and should be further investigated to replicate and explain this finding with respect to friendship.

With respect to the study's vignette character, participants with autistic friends were predicted to respond more positively than those without such friends. This hypothesis was supported, but only for the B2 variable in which the behavioral responses did not include the aforementioned commitment component. One might interpret this as a result of "fair weather friends" who reject autistic people when it comes to committing to a lengthy relationship or one in which the autistic person requires more support. Our interpretation, however, is that those with friends on the spectrum are aware of the degree of effort it might take to maintain close relationships with such friends, and that some people, when presented with situations in which the autistic person needs support, make a decision to cut the relationship short rather than commit and let the person down through a long, drawn out avoidance (even though this does, indeed, let the person down).

Given that the vignette character had numerous autistic traits (and thus appeared less functionally able), participants with friends on the spectrum may have been responding realistically, with knowledge that they could not invest extra time and effort. Knowing they could not commit to the relationship's success, perhaps they wanted to avoid providing "false hope" to the vignette character. Further examination of neurotypical familiarity with autism and cross-neurotype friendships is warranted, including a replication of this study using a vignette character demonstrating less overt autistic traits (and thus portraying a potentially less time- and effort-intensive relationship). Research should examine cross-neurotype friendships more fully across all aspects of relationships, including but not limited to communication, reciprocity, conflict and the prospect of maintaining a friendship that incurs difficulties in communication, and shared interests.

We predicted that people who shared traits with those on the spectrum would respond more positively and this hypothesis was partially supported based on our splitting of the behavioral response variable. That is, autistic trait similarity was not correlated with acceptance of B1 behaviors involving commitment to the relationship through difficulties, but was significantly correlated with acceptance of B2 behaviors, not requiring commitment through difficulty, and cognitive acceptance. Finally, counter to our predictions, those knowledgeable about autism not only failed to be more positive; they were actually more affectively negative. We do not have an explanation for this outcome and hope future studies can shed light on it.

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Appendix A: MAS Vignette (adapted from Bolton & Ault, 2018)

You have recently moved into a new neighborhood and have only met a few neighbors. You like to take long walks and are doing so when you meet one of your neighbors, Casey, for the first time. You introduce yourself and Casey, who is the same age as you and wearing jeans and a blue t-shirt, responds with a rather stiff "Hi. I'm Casey." Noticing the odd tone, you invite Casey along on your walk and start a conversation, which seems to take more effort to maintain than when you talk to others. Casey is quiet and fidgets frequently, as if uncomfortable to be talking with you, and it is sometimes hard to tell if Casey is understanding you or interested in the conversation. Casey takes a noticeably long time to respond and seems to take a great deal of care in doing so, choosing words carefully. Casey seems attentive to you but then, alternatingly, preoccupied. Casey has difficulty understanding social cues and, as you talk, has a tendency to abruptly change the subject and to interject and talk over you, launching into excessive detail about various personal interests, and then returning to these frequently in the course of conversation. Casey, however, appears very knowledgeable about these topics and is excited to share them with you. You later find out that Casey is on the autism spectrum and of slightly above-average intelligence. Individuals on the autism spectrum sometimes demonstrate difficulty with social interactions and appropriate communication, but are often quite knowledgeable about things for which they hold interest. (this diagnosis disclosure and brief information statement only included in the label condition)

Appendix B: Modified MAS Behavior Items

How likely would you be to do each of the following during your interaction with Casey?

1. Find an excuse to leave.
2. Try to talk with Casey about his/her interests.
3. Ignore Casey by playing games or browsing social media on your cellphone.
4. Continue talking with Casey in general.
5. Act disinterested in what Casey is saying because Casey seems disinterested in what you have to say.
6. Act “put out” because Casey seems inconsiderate in conversation.
7. Decide that Casey isn’t worth talking to and walk in silence until Casey catches on and leaves you alone.
8. Introduce Casey to other neighbors you see along your walk, and then make an excuse to get away, leaving Casey with them.

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