ORIGINAL ARTICLE

Autistic traits, adolescence, and anti-social peer pressure

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BACKGROUND

The potential role of autism as a moderator of conformity has recently been investigated by a small number of studies. However, as yet, no consensus has emerged as to whether autism or autistic traits can moderate the degree to which people attend to and are influenced by social pressure, nor whether there are specific circumstances under which this might occur. The current study adds to this ambiguous literature by looking at whether autism and autistic traits are associated with conformity in the context of adolescent peer pressure.

PARTICIPANTS AND PROCEDURE

A sample of 12-16 year old students completed questionnaire measures of peer conformity (e.g., in relation to smoking, skipping school, etc.), resistance to peer influence, and autistic traits. Approximately half had an autism-related diagnosis, and none had an intellectual impairment.

RESULTS

Controlling for age, gender, and academic ability, we found that degree of autistic traits was associated with reduced peer conformity, while a diagnosis of autism was not. In contrast, neither autism nor autistic traits were related to resistance to peer influence.

CONCLUSIONS

These results are contextualised in terms of past research and positioned within a broader model of individual differences and conformity in which autistic traits moderate the degree to which a person perceives peer influence, while resistance to peer influence moderates the degree to which one conforms to peer influence. Possible future avenues of inquiry are suggested.

KEY WORDS

adolescence; conformity; peer pressure; autistic traits

BACKGROUND

Children begin to develop emotional autonomy from care-givers during adolescence. However, the desire for interdependence remains, and this is often when peer relations replace parental ones (Steinberg & Monahan, 2007). Integration into a peer group is an important process that builds a sense of belonging, while also supporting growth of the individual (Santor, Messervey, & Kusumakar, 2000). Adolescents given membership of a peer group may be rewarded with popularity but there is also a risk of exposure to peer pressure, which can have a deleterious effect on a student's well-being (Santor et al., 2000). For example, spending time with peers who encourage antisocial, risky, and/or unhealthy behaviours may make adolescents more likely to engage in such behaviours (Gardner & Steinberg, 2005). Peer pressure refers to the perceived encouragement by peers to behave in a particular way, while actually behaving in that way is referred to as conformity (Santor et al., 2000). Studies have generally shown that conformity to peer pressure increases across early and middle adolescence (10-14), while adolescents become increasingly resistant to peer influence between 14 and 18 (Steinberg & Monahan, 2007). There is also some evidence that adolescent females are less likely than males to conform to peer pressure to engage in antisocial activities (McCoy, Dimler, Samuels, & Natsuaki, 2019).

The degree to which adolescents conform to peer influence is moderated by a number of factors, including individual differences in personality. For example, Kerr, Van Zalk, and Stattin (2012) found that adolescents higher in psychopathy traits were less influenced by peers, while Stacy et al. (1992) found the same to be true of self-efficacy. Another potential moderator, though not yet one that has been studied in depth, is whether the individual is positioned on the autism spectrum. Autism spectrum disorders are definitionally associated with impairments in social processes, including an inability to understand peer relationships and share others' interests (American Psychiatric Association, 2013). At the same time, however, it must be recognised that social interaction requires at least two actors, and that any deficit may better be characterised as a mismatch in social-cognitive style rather than something intrinsic to autistic people (the double empathy hypothesis; Milton, 2012). This raises the possibility that autistic people might display fewer deficits when interacting with other autistic people, and evidence is starting to accumulate that this might be the case (Crompton & Fletcher-Watson, 2019). Whichever the case, this suggests that the influence of peers on behaviour may be attenuated in autistic individuals or those with higher levels of autistic traits (perhaps particularly when those autistic individuals are interacting with typically developing peers).

Several studies have shown that autistic people demonstrate a reduction in conformity in laboratory settings. Bowler and Worley (1994) compared adults with Asperger syndrome with typically developing adults and adults with mild learning difficulties matched for verbal IQ. Using the classic protocol of Asch (1952, 1956), they found that adults with Asperger syndrome conformed less than the other two groups. Similarly, Yafai, Verrier, and Reidy (2014) found that autistic children were much less likely to conform on a child-friendly version of the Asch task and that higher levels of autistic traits in the non-autism group were also associated with reduced conformity. Reputation management can also be considered to be a manifestation of social conformity processes, and it has been shown that autistic adults do not donate more to charity when observed (i.e., they show a lack of concern for social reputation; Cage, Pellicano, Shah, & Bird, 2013). However, there is also evidence that autistic people may engage in reputation management depending on their understanding and expectations of reciprocity (Cage et al., 2013; Cage, Bird, & Pellicano, 2016). Other studies have looked at the related construct of compliance, which refers to acquiescence to explicit instructions, and found mixed results. In contrast to what might be expected, given the above, North, Russell, and Gudjonsson (2008) found that autistic individuals were more likely to report themselves as compliant (in response to questions like "I give in easily when I am pressured"). However, Maras and Bowler (2012), using the same scale, found no such effect, while Chandler, Russell, and Maras (2019) did. Both papers attribute these fluctuating findings to sample characteristics (specifically greater anxiety and less self-esteem in more compliant samples). Chandler et al. (2019) also used an experimental investigation of compliance (the face in the door technique). They found that autistic participants were far more likely than typically developing participants to comply with an initial unreasonably onerous request, but also observed some evidence that typically developing participants were more likely to comply with a subsequent, more reasonable, request while autistic participants were most likely not to comply at all.

Van Hoorn, Van Dijk, Crone, Stockmann, and Rieffe (2017) looked specifically at the role of peer influence in autistic adolescents. In particular, they examined the impact of peer feedback on the donation behaviour of autistic and typically developing boys aged 11-17 years, all of whom had an IQ of at least 80. In one condition, participants were given praise by virtual spectators (peers) for prosocial behaviour (donating more); in another, they were given praise for antisocial behaviour (donating less). Both groups showed a similar tendency to respond in line with

the praise they were receiving (e.g., were more likely to donate more when praised for doing so). The authors take this as evidence that, in relation to donation behaviour, typically developing adolescents and autistic adolescents are similarly influenced by peers (regardless of whether that influence is supporting prosocial behaviour or antisocial). A further analysis by the authors used a continuous measure of autistic traits as a predictor of degree of peer influence. In contrast to the above, this found that higher levels of autistic traits were associated with less sensitivity to peer influence, but only when peers were praising antisocial behaviours. They suggest that this may be because those with higher levels of autistic traits are more entrained to follow the prosocial norms that are rigidly reinforced from a young age. Alternatively, it could be that people with higher levels of autistic traits are less vulnerable to feedback supporting antisocial behaviour because of a focus on the instrumental benefit of prosocial behaviour in this task (i.e., participants earned more money on the task if they and the group consistently displayed prosocial behaviour; Van Hoorn et al., 2017). This is in line with findings from Yafai et al. (2014), who concluded that autistic participants were better able to resist social pressure due to an enhanced focus on the factually correct aspects of the situation.

Another study that examined social influence and autism was carried out by Lazzaro et al. (2018). Autistic and typically developing adults were asked to encode a list of words, and were later shown another list of words and had to decide whether they had seen them before or not. In some conditions, participants were told how virtual peers had decided before they made their choice. This prior information was intended to exert social influence over participants and affect their subsequent responses. In contrast to the above studies, which showed mixed support for the notion that autistic traits might be associated with less conformity, both groups were equally likely to adjust their responses in line with this social influence. The authors suggest that age may explain this divergence, as older autistic participants, but not yet younger ones, may have acquired conformity as a social strategy.

None of the above-mentioned studies that looked at social influence and autism explicitly investigated the kind of antisocial behaviours that are typically associated with adolescent peer conformity. This is a widely researched area that has important applied ramifications (e.g., in relation to adolescent alcohol consumption; Iwamoto & Smiler, 2013). There are a number of ways in which social influence might operate in this context. People might be influenced by the behaviour of peers (descriptive norms), the attitudes of peers (injunctive norms), or by active, direct encouragement by peers to engage in a particular activity (peer pressure; van de Bongardt,

Reitz, Sandfort, & Deković, 2015). Whether people conform will also be affected by their expectations (e.g., in terms of social reward) about the outcome of the behaviour. In this regard, peer pressure might be considered separately from descriptive and injunctive norms, which, unlike peer pressure, will indirectly affect behaviours, perhaps due to a more general desire for popularity (Santor et al., 2000). The type of behaviour in question is also highly relevant (e.g., prosocial vs antisocial; Farrell, Thompson, & Mehari, 2017), and, of course, there are a number of moderators that might also have an influence, including age, gender, peer type and socio-cultural context (McCoy et al., 2019; van de Bongardt et al., 2015; Steinberg & Monahan, 2007). Many papers refer to the "perception" of this socially transmitted information. For example, Santor et al. (2000) use the term in relation to peer pressure, van de Bongardt et al. (2015) use the term in relation to descriptive and injunctive norms, and Farrell et al. (2017) use the term in relation to peer behaviour and expectations of how peers will respond to one's own behaviour. Given that the presence of autistic traits is associated with reduced perception of social information (at least in some contexts), it might be expected that autistic people will be less prone to conform in response to peer pressure simply because they are less aware of that pressure.

The present study looks at the responses of typically developing participants and autistic participants to vignettes that relate specifically to peer conformity (e.g., skipping school or smoking a cigarette). In line with past findings that have identified a possible insensitivity to social influence, we hypothesise that autistic adolescents will show less conformity. We also look at a related construct: the degree to which adolescents demonstrate resistance to peer influence. Given that this is an individual difference that operates only in the presence of perceived peer influence, we do not hypothesise that autistic adolescents will show reduced resistance to peer influence. Previous studies have shown distinct patterns of findings when they have looked at autistic and typically developing participants compared to when they have looked at associations with continuous autistic traits (e.g., Yafai et al., 2014; Van Hoorn et al., 2017). Accordingly, as well as looking at the diagnostic group we will also include autistic traits in our analysis.

PARTICIPANTS AND PROCEDURE

PARTICIPANTS

Participants for this study were recruited from three secondary schools in the North of England. A small additional number were accessed via local autism

support groups. In total there were 132 participants: 65 had a diagnosis of autism (44 males, 21 females) and 67 did not (30 males, 37 females). None of the autistic participants had an intellectual disability according to school records (see results for further details regarding academic ability). Participants had to be aged between 12 and 16. The average age for autistic participants (M = 14.66, SD = 0.99) was almost exactly the same as for typically developing participants (M = 14.61, SD = 1.45); age differences across gender were similarly slight. The study was granted ethical approval by the research ethics working group of the Department of Psychology, Sociology, and Politics at Sheffield Hallam University.

MATERIALS AND PROCEDURE

Following Head Teacher approval, we sent letters home to parents including a lay-friendly information sheet and a consent form. By returning this form, parents could choose to opt out of the study on their child's behalf. On the day of the study, participants were given an information sheet with an age-appropriate summary of what the study entailed and subsequently provided written informed consent on their own behalf. Participants provided their age and gender and completed each of the below measures in a classroom setting, after which they were debriefed. Additional information about the presence or otherwise of a diagnosis of autism and relative academic ability (below average, average, or above average for their age) was provided by the school.

Resistance to Peer Influence Scale. The Resistance to Peer Influence Scale (RPI; Steinberg & Monahan, 2007) is a 10-item self-report instrument designed to measure susceptibility to peer pressure separately from willingness to engage in antisocial behaviour. Each item presents two alternative choices which are comparable in terms of social desirability. For example, "Some people think it's more important to be an individual than to fit in with the crowd but other people think it is more important to fit in with the crowd than to stand out as an individual". Participants must choose which of these is a better description of themselves, and then further choose whether the description is *sort of true for me* or *really true for me* (i.e., each item has a four-point response scale: *really true* [peer influenced], *sort of true* [peer influenced], *sort of true* [peer resistant], *really true* [peer resistant]). A higher score indicates greater resistance to peer influence. Steinberg and Monahan (2007) found internal reliability for the scale to be .70-.76, but the internal reliability in the current study was less impressive (.53).

Peer Conformity Scale. The Peer Conformity Scale (Santor et al., 2000) was developed to specifically assess peer conformity (a behavioural disposition) in adolescents rather than peer pressure (a subjective experience of feeling pressured to do something). It consists of 10 brief vignettes, which describe two competing courses of action (e.g., in the evening before an examination, studying at home versus going to a concert with a friend). For each vignette, participants must choose one course of action or the other. This dichotomous response scale was chosen by the authors for ease of completion by young people. A higher score indicates greater self-reported peer conformity. Santor et al. (2000) found internal reliability for this measure to be .69 and it was .73 in the current study.

Autism Spectrum Quotient. The adolescent, ten-item version of the Autism Spectrum Quotient (AQ-10; Allison, Auyeung, & Baron-Cohen, 2012) was created by selecting two items from each of the five subscales of the 50-item Autism Spectrum Quotient (Baron-Cohen, Wheelwright, Skinner, Martin, & Clubley, 2001). Items were chosen based on which had the best discriminatory power in an adolescent sample (i.e., were best able to discriminate between someone with and without a diagnosis of autism). The adolescent version is typically completed by a parent, but was reworded in this study so that it could be completed by the participants themselves in this study. Every version of the AQ uses a four-point response scale ranging from strongly disagree to strongly agree. While this is frequently scored dichotomously (i.e., scoring both *strongly agree* and *slightly agree* as 1) Likert scoring (where items are scored from 1 to 4) is also used (Stevenson & Hart, 2017), and this was done in the present study. In general, the AQ-10 has excellent inter-item reliability (Allison et al., 2012; Cronbach's α = .89), but it was found to be less impressive here (.57).

DATA ANALYSIS

We hypothesised that autism would be a predictor of peer conformity, but may not be a predictor of the related concept of resistance to peer influence. In line with those hypotheses, data will be analysed via two separate regression models. Each will include autism status and autistic traits along with gender, age, and academic ability as predictors. Peer conformity will be the criterion variable in one regression, while resistance to peer influence will be the criterion variable in the other.

RESULTS

There were just three missing responses from participants, which were replaced with imputed scores based on the mean of the participant's responses to

other items on that scale. Descriptive statistics for age, autistic traits, resistance to peer influence, and likelihood to conform are reported in Table 1, while Pearson correlations between these variables can be found in Table 2. Prior to analysis, participants were graded by their schools as below average, average, or above average academic ability (AA) for their age group. This was a categorical judgement made by teachers based on their own experience of how well students of a particular age would typically be expected to perform. A chi square test showed that autistic and typically developing participants were unequally distributed across these categories, $\chi^2(2, N = 132) = 25.75$, $p < .001$, Cramer's $V = .44$. Autistic participants were more likely to be rated as below average and less likely to be rated as above average. While all participants had the intellectual capacity to complete the self-report measures used in the study, this finding raises the possibility that intellectual ability may confound any effect of autism on response to peer pressure. As such, AA was included alongside autism in subsequent analyses.In order to evaluate the possible role of autism in predicting resistance to peer influence and propensity to conform, two multiple regressions were carried out including autism diagnosis status and AQ score, alongside age, sex, and academic ability (dummy coded into low and average ability with high ability as the reference value) as predictor variables (see Table 3). As some variables were correlated, we checked for multicollinearity. However, multicollinearity did not seem to be a major issue in this instance. The highest variance inflation factor (VIF) was 2.5, and no variable had a tolerance value below .2 (O'Brien, 2007). Looking further at the collinearity diagnostics, the two variables with the most shared variance were the dummy-coded variables for academic ability. A degree of multicollinearity is to be expected with variables like these, as one is dependent on the other (i.e., more people with average academic ability is likely to mean fewer people with low academic ability).

The overall regression model for RPI was significant, $F(6, 125) = 2.36$, $p = .034$, $R^2_{adj} = .06$. The two independently significant predictors were gender and AA. Being a woman was associated with a greater ability to resist peer influence. On the other hand, having low academic ability, relative to high academic ability, was associated with poorer ability to resist peer influence. Neither autism diagnosis nor autistic traits were associated with RPI.

The overall model for conformity was also significant, $F(6, 125) = 5.47$, $p < .001$, $R^2_{adj} = .17$. Being a woman was associated with less propensity to conform, as was being younger. This is unsurprising, as some of these responses involve relatively mature behaviours (e.g., smoking and drinking). A higher score on the AQ-10, but not a diagnosis of autism,

was associated with being less likely to condone conforming responses to the vignettes. That is, autistic traits seem to protect against undesirable social influence in this context.

Table 1

Summary of descriptive statistics for key variables

	Autistic participants		Typically developing participants	
	M	*SD*	*M*	*SD*
1. Age (12-16)	14.66	0.99	14.61	1.45
2. AQ-10 (10-40)	25.22	4.93	22.57	4.14
3. RPI (1-5)	2.74	0.43	2.73	0.44
4. Conformity (0-1)	0.19	0.23	0.21	0.18

Note. Possible ranges for variables (actual range for age) are in parentheses. RPI – Resistance to Peer Influence Scale; AQ-10 – 10-item Autism Quotient; Conformity – Peer Conformity Scale.

Table 2

Pearson correlations between key variables for autistic participants and typically developing participants

	Age	AQ-10	RPI	Conformity
1. Age (12-16)	–	−.06	.21	.26*
2. AQ-10 (10-40)	.08	–	.10	−.36*
3. RPI (1-5)	−.13	.06	–	−.10
4. Conformity (0-1)	.03	−.18	−.20	–

Note. Correlations for typically developing participants are above the diagonal; correlations for autistic participants are below the diagonal. Possible ranges for variables (actual range for age) are in parentheses. RPI – Resistance to Peer Influence Scale; AQ-10 – 10-item Autism Quotient; Conformity – Peer Conformity Scale; *$p < .05$.

Table 3

Predictors of resistance to peer influence (RPI) and peer conformity vignettes responses

	RPI		Conformity	
	β	*t*	β	*t*
Gender	.22	2.41*	−.36	4.32***
Age	.06	0.66	.16	2.01*
Low AA	−.34	2.50*	.01	0.08
Average AA	−.14	1.12	.11	0.90
Autism status	.15	1.51	−.05	0.50
AQ-10	.04	0.44	−.20*	2.34*

Note. AA – academic ability; AQ-10 – 10-item Autism Quotient; *$p < .05$, ***$p < .001$.

DISCUSSION

This study used a vignette approach to ascertain whether autism or autistic traits are associated with a reduced likelihood to conform in situations typically associated with adolescent peer pressure. Controlling for age and gender, which are important predictors of conformity (Steinberg & Monahan, 2017; McCoy et al., 2019), we found that a continuous measure of autistic traits, but not a diagnosis of autism, was associated with less peer conformity. This result matches well with the findings of Yafai et al. (2014). Using a version of the classic Asch (1952, 1956) conformity paradigm, they also found that a higher AQ score was correlated with less conformity. The findings are also in line with Van Hoorn et al. (2017). Like the current study, they did not find any autism-related group differences, but did find a negative association between a continuous measure of autistic traits and likelihood to conform when there was pressure to conform in an antisocial direction. The antisocial component of this finding is particularly relevant here as the conformity vignettes used in the current study specifically pertain to antisocial behaviour. The findings are not in line with those of Lazzaro et al. (2018), who did not observe any association between conformity (on a word memory task) and continuous autistic traits.

The study also failed to show any association between autistic traits and a measure of resistance to peer influence. This finding is consistent with data from Van Hoorn et al. (2017), who also found no association between the two. Superficially, this result may be thought of as surprising, as it seems there should be substantial overlap between the degree to which people conform and the degree to which they resist peer influence. However, if we assume a model of social influence as illustrated in Figure 1, it is possible to see how these two constructs are separate from one another.

This model separates an internally generated desire for popularity as a socially situated determinant of behaviour from pressure actively exerted by peers (e.g., Santor et al., 2000). It also separates perceived peer pressure as a socio-emotional response from peer conformity, which is a behavioural outcome (e.g. Brown, Clasen, Eicher, & Scarr, 1986). These behavioural outcomes can be socially desirable, undesirable, or neither (Brown, 2004). In this model, we propose that autistic traits moderate the perception of active social pressure, attenuating the degree to which people perceive or attend to social information that would otherwise guide their behaviour. In contrast, other individual differences, such as resistance to peer influence, might accentuate or attenuate the impact of perceived information on behaviour (i.e., conformity).

The study does suffer from a number of limitations. For example, the reliance on school records for ascertaining the status of students in terms of autism diagnostic information and intellectual disability may undermine the validity of the findings. In addition, all of the measures used were self-report and all measures were taken at a single time point, which makes it impossible to make firm causal conclusions. The use of vignettes is also questionable as respondents may not be able to accurately imagine what they would do in these hypothetical situations. However, Santor et al. (2000) found that 21-80% of 16-18 year old high school students had experience with each of the conforming behaviours, suggesting that there is a good basis for valid responses.

Future research should seek to explicitly measure more of the aspects of the model described above. For example, the current study includes a measure of conformity, but does not include a measure of desire for popularity, and while it includes a measure of resistance to peer influence, it does not explicitly include a measure of peer pressure (e.g., Santor et al., 2000). Further, the measure of conformity is limited
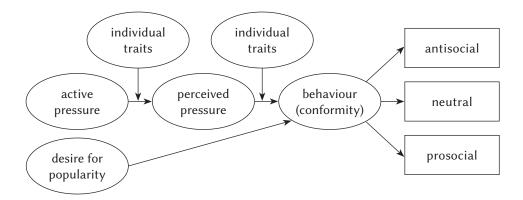

Figure 1. Integrative model of peer conformity.

in that it only includes behaviours that are socially undesirable. Future research might also wish to include positive and neutral behaviours alongside antisocial ones. Comparing the results of this study with those of Van Hoorn et al. (2017) and Lazzaro et al. (2018), it may be the case that autism is related to resistance to conformity when peers are promoting antisocial behaviours, but not neutral or prosocial ones. This is not certain, however, as other studies have demonstrated autism to be related to resistance to conformity in neutral contexts (e.g., Yafai et al., 2014; Bowler & Worley, 1994).

The literature has called for more research with autistic girls (Van Hoorn et al., 2017) as autistic girls (and women) are under-represented in the literature. Van Hoorn et al. (2017) purposefully excluded girls from their sample, but one of the goals of this research was to include as high a proportion of autistic girls as possible. Ultimately, a third of the autism group were girls, substantially higher than the reported proportion of three autistic boys to one girl (Loomes, Hull, & Mandy, 2017). Gender seems like a particularly relevant variable in this context, as autistic girls have been shown to be better at imitating social behaviour (Tierney, Burns, & Kilbey, 2016), and their friendship motivations are qualitatively distinct from those of boys (Sedgewick, Hill, & Pellicano, 2019). In our analysis we controlled for gender, which suggests that our findings in relation to reduced conformity cannot be accounted for by the gender of participants, but we also did separate exploratory analyses to assess whether gender moderated the association between autistic traits and conformity. For example, it could have been the case that higher levels of autistic traits were associated with less conformity in boys but not in girls. While we did not find any indication of a moderation effect, future studies in this area should consider including sufficient girls to test for such effects.

In sum, this study has shown that autistic traits are associated with a reduction in adolescents' self-reported likelihood to conform to peer pressure in situations characterised by antisocial behaviour. This effect is in addition to the variance accounted for by gender and age, both of which are important predictors of peer conformity. Given the lack of association with a measure of resistance to peer influence, we have theorised that this effect is due to a reduced perception of peer influence (or of the importance of peer influence) rather than an enhanced ability to resist perceived peer influence. Peer influence on antisocial behaviour is a major concern for those involved in the education and guardianship of adolescents, and the issues associated with this are equally relevant to autistic adolescents. As such, the current findings may have relevance for those involved in designing or implementing interventions intended to reduce the risk of antisocial behaviours in this population.

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