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Compliance in autism: Self-report in action

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Abstract

Previous research indicates that autistic individuals are more likely to be bullied, and that they experience heightened anxiety and diminished self-esteem. These factors are known to predict heightened compliance, which is the tendency to agree with or carry out the requests and demands of others. This has a range of potentially serious consequences, particularly for an autistic person. The present study utilised self-report (the Gudjonsson Compliance Scale, GCS) and behavioural measures of compliance (the Door-in-the-Face task, DITF) with 26 autistic and 26 typically developing (TD) adults. Participants also completed measures of early life bullying experiences, anxiety and self-esteem. Autistic participants were more compliant on both self-report and experimental tasks, and they reported more bullying experiences, higher anxiety and reduced self-esteem. Looking at both groups, bullying, anxiety and self-esteem were all correlated with self-reported compliance on the GCS, yet only self-esteem was a unique predictor. None of these predictor variables related to behavioural compliance on the DITF; nor did GCS scores predict DITF performance, which may be better explained by situational and motivational factors. Findings have important implications for a range of real-life settings including requests made in the context of research, schools, the criminal justice system, and the workplace.

Key words: Autism; compliance; social vulnerability; victimisation; bullying; exploitation; criminal justice system.

Compliance in autism: Self-report in action

Compliance is the tendency of an individual to go along with propositions or carry out the requests or demands of others (Gudjonsson, 1989). It has been linked to a range of negative outcomes, from coercion by others to engage in criminal behaviours (Gudjonsson & Sigurdsson, 2004, 2007) to making false confessions when under interrogative questioning (Gudjonsson & Mackeith, 1990; Sigurdsson & Gudjonsson, 1996; but see Horselenberg et al., 2006). Compliance is suggested to be underpinned by factors such as diminished self-esteem and heightened anxiety (Carter-Sowell, Chen, & Williams, 2008; Gudjonsson, Sigurdsson, Brynjólfsdóttir, & Hreinsdóttir, 2002) and difficulties in social understanding (Gudjonsson, Sigurdsson, Bragason, Newton, & Einarsson, 2008). Negative early life experiences such as bullying and victimisation can have a negative impact on one's social-emotional outcomes, reducing self-esteem and increasing anxiety (Hawker, & Boulton, 2000; Mayes, Gorman, Hillwig-Garcia, & Syed, 2013; Rosbrook & Whittingham, 2010; Ung et al., 2016; Zablotsky, Bradshaw, Anderson, & Law, 2013), which in turn can further heighten compliance (e.g., Carter-Sowell et al., 2008; Gudjonsson, 1988, 1989; Gudjonsson & Sigurdsson, 2003). According to the need-threat model of ostracism (Williams, 2009), victimised individuals may be more likely to comply with requests that are made of them in order to regain a sense of self-esteem, and improve their social standing and sense of belonging (Williams, 2009).

Individuals with autism spectrum disorder (henceforth, autism) experience qualitative impairments in communication and reciprocal social interaction and a pattern of restricted, repetitive interests and behaviours (American Psychiatric Association, 2013). High rates of co-occurring mental health problems such as anxiety are also reported alongside an autism diagnosis (Russell et al., 2016; Simonoff et al., 2008) and autistic individuals are more vulnerable to low self-esteem (Cooper, Smith, & Russell, 2017) and depression (see Wigham, Barton, Parr, & Rodgers, 2017 for a review). Furthermore, high rates of bullying and peer victimisation have been reported in autistic children (Cappadocia, Weiss, & Pepler, 2012; Fink, Olthof, Goossens, van der Meijden, & Begeer, 2017; Fisher, Moskowitz, & Hodapp, 2012; Hebron, Oldfield, & Humphrey, 2017; Little, 2001; Wainscot et al.,

2008; Zablotsky, Bradshaw, Anderson, & Law, 2014) and adults (e.g., National Autistic Society, 2012; Shtayermman, 2007).

The autistic population is then vulnerable in the sense of having several of the 'risk factors' for heightened compliance, which is pertinent across a range of real-life contexts. For example, heightened compliance can be significant for susceptibility to initial involvement in the criminal justice system (CJS) in the first instance but then also to procedures such as interviews once within it (e.g., Gudjonsson & Mackeith, 1990; Gudjonsson & Sigurdsson, 2004, 2007). Although there are no official figures, research suggests that autistic individuals are more likely to come into contact with the CJS than typically developing (TD) individuals (Barry-Walsh & Mullen, 2004; Rava, Shattuck, Rast, & Roux, 2017; Turcotte, Shea, & Mandell, 2017; Vohra, Madhaven, & Sambamoorthi, 2016), and it has been suggested that they may be more vulnerable to exploitation to become accomplices in criminal activity (Allen et al., 2008; Hare et al., 1999). Many autistic individuals feel socially alienated yet eager to seek friendship and receive peer approval (Humphrey & Lewis, 2008; Jones, Zahl, & Huws, 2001), which can be particuarly perilous when coupled with dimished social insight and 'theory of mind' difficulties (Senju, Southgate, White, & Frith, 2009). These factors may limit their ability to detect suspicious behaviour and mal-intent by others (Brewer, Ying, Young, & Nah, 2017), which could further heighten their risk of undue influence and manipulation by others (Sofronoff, Dark, & Stone, 2011). There is also some evidence that autistic individuals are more likely to confess once in an interrogative interview (Helverschou et al., 2015), which is also worrisome given the high reported prevalence of autism within forensic settings (Fazio, Pietz, & Denney, 2012; Hare, Gould, Mills & Wing, 1999; Robinson et al., 2012; Scragg & Shah, 1994; Siponmaa, Kristiansson, Jonson, Nydén, & Gillberg, 2001; Soderstrom, 2005).

Despite several theoretical bases on which to predict that autistic individuals will show heighted compliance, empirical tests of this notion are scarce and inconclusive, with just two studies to date. Using an informant-reported version of a standardised measure of compliance – the Gudjonsson Compliance Scale (GCS, Gudjonsson, 1997), North, Russell, and Gudjonsson (2008) reported that autistic individuals were more compliant than TD adults. However, using a self-report

version of the same scale, Maras and Bowler (2012) reported no difference between autistic and TD participants. Given that a tendency towards over-compliance can have a range of potentially serious and negative consequences this warrants further investigation, particularly given that poor social skills and being viewed as 'different' provide more opportunities for autistic individuals being exploited and becoming a target for bullying and victimisation (e.g., Cappadocia et al., 2012; Fink, et al., 2017; Fisher et al., 2012; Hebron et al., 2017; Humphrey & Lewis, 2008; Kloosterman, et al., 2013; Wainscot et al., 2008; but see Begeer et al., 2016).

Given the factors outlined above, it is surprising that the two studies to date examining compliance in autism have produced inconsistent findings (Maras & Bowler, 2012; North et al., 2008). However, these studies recruited different samples which, although comparable in terms of age and gender, may have differed with respect to anxiety and other predisposing factors. For example, North et al. (2008) sampled inpatients on a specialist unit for people with autism, while Maras and Bowler (2012) recruited participants from an existing research database, suggesting potential subtle differences in vulnerability between samples.

Conceptually, the GCS measures compliance globally, rather than in response to a specific situation. However, people may be more or less compliant in different situations, based on who they are with and what is being asked of them (Gudjonsson, Sigurdsson, Bragason, Einarsson, & Valdimarsdottir, 2004). The validity and reliability of the GCS for use with autistic populations is also presently unknown (see also Drake & Egan, 2017). Therefore, a behavioural measure of compliance alongside self-report measures would be helpful to gain a better understanding of compliance in response to a specific situation in autistic populations. We utilised the 'door in the face' (DITF) technique for this purpose. The DITF was developed as a method to increase the likelihood of an individual agreeing to a request (Cialdini, Vincent, Lewis, Catalan, Wheeler, & Darby, 1975), and is based on the notion that a request made to others is more likely to be agreed to if it is preceded by the offer and refusal of a more expensive request (Pascual & Guéguen, 2005). While TD individuals are most likely to reject the original costly request but agree to a second smaller 'target' request (Feeley, Anker, & Aloe, 2012), the factors discussed above indicate that autistic individuals may be more likely to agree to the highly unreasonable request in the first instance.

In summary, autistic individuals are more vulnerable to bullying and exploitation and they also experience further known risk factors for heightened compliance, including increased anxiety (Gillott & Standen, 2007) and reduced self-esteem (Howlin, 2002). However, it is presently unclear whether they are more compliant than TD individuals. Thus, the primary aim of the present study was to ascertain whether autistic individuals are more compliant than TD individuals using both a global self-report measure and an experimental behavioural task testing compliance to carry out a specific unreasonable request. It was predicted that the autistic group would be significantly more compliant on both of these measures. A secondary aim was to extend previous research to investigate the relationship between early life victimisation/bullying, anxiety and self-esteem with compliance in this population. Although not without its shortcomings (e.g., Findon et al., 2016; Mazefsky et al., 2011; Shalom et al., 2006), obtaining individuals' own perspectives through self-report has been shown to be important in understanding victimisation and psychopathologies such as anxiety and self-esteem in both typical (Hawker & Boulton, 2000; Reijnjes, Kamphuis, Prinzie, & Telch, 2010; Siegel, Greca, & Harrison, 2009) and autistic populations (Adams, Fredstrom, Duncan, Holleb, & Bishop, 2014). It was predicted that autistic adults would report experiencing significantly more bullying, higher anxiety and lower self-esteem compared with TD adults, and that higher levels of compliance would be associated with each of these measures.

Method

Participants

Twenty-six adults with autism (*M* age = 26.50 years, *SD* = 11.30; 19 males) took part in the research. The majority of autistic participants were recruited through National Health Service Adult Autism Diagnostic Services in the South West of England. Six participants were recruited through an Autism Summer School (a transitional programme for students with autism intending to go to University), and two through advertisements placed on the National Autistic Society website. All participants in the autism group had received a formal diagnosis of autism or Asperger's syndrome

according to DSM–IV or ICD-10 criteria following specialist assessment by a qualified clinician.

Twenty-six TD comparison participants (*M* age = 24.87 years, *SD* = 7.33; 16 males) were recruited as a convenience sample through advertisements around campus, using the University's psychology undergraduate research participant scheme, a departmental community Research Participation Scheme, and via word-of-mouth. All TD participants scored lower than the recommended cut off of six on the Autism Quotient 10 item scale (AQ-10; Allison, Auyeung, & Baron-Cohen, 2012) (*M* = 2.0, *SD* = 1.58), and significantly lower than the autism group (*M* = 6.69, *SD* = 2.71), $t(50) = 7.63$, $p < .001$, $d = 2.12$, 95% CI [1.41, 2.76].

Autism and TD groups did not significantly differ on age, t (50) = 0.62, p =.54, d = 0.17, 95% CI [-0.38, 0.71]. Participants were asked if they had ever been diagnosed with significant mental health difficulties (e.g., anxiety disorder, bipolar disorder, psychosis, personality disorder, etc.) and whether they were currently or had previously accessed mental health services for this. Six autistic participants indicated that they had historically accessed mental health services for common mental health problems such as anxiety and low mood, but no participants reported that they were currently accessing services. However, an inspection of scores on the Generalised Anxiety Disorder Assessment (GAD 7; see Table 1) indicated that the majority of autistic participants (73%) were experiencing at least mild levels of anxiety (scores ≥5), with 27% experiencing moderate anxiety (scores ≥10) and 15% experiencing severe anxiety (scores ≥15), which is consistent with high rates of co-occurring psychiatric disorders in the wider autistic population (e.g., Croen et al., 2015). No TD participants reported that they were currently accessing services for mental health issues, and scores on the GAD-7 indicated that the majority (81%) scored less than the clinical cut off of 5 for mild anxiety (15% scores ≥5; 4% scores ≥10; 0% scores ≥15).

Because the self-report tasks required a certain level of literacy, participants received a brief screen using the Schonell Graded Reading Test (Schonell & Goodacre, 1974). All participants demonstrated a reading age of at least 10 years (a score of 60 correct words or above on the Reading Test), and while this did not confirm the absence of intellectual disability, it provided a baseline indication of participants' ability to complete self-report measures. All participants were native English speakers

or equivalent and had completed formal education to at least 17 years of age ('A-Level' or above in the UK). The procedures outlined below were approved by a full NHS review committee (South Wales Research Ethics Committee: 14/WA/0184), as well as the Research Ethics committees of the University of Bath, and the two local NHS sites, in line with the standards set out by the British Psychological Society and the Declaration of Helsinki.

Measures

Retrospective Bullying Questionnaire (RBQ). Early life victimisation was assessed using the RBQ (Schäfer et al., 2004), a 44-item measure assessing bullying and its associated impact in both primary and secondary school. Items include *"did you have a happy time at primary school?"* and *"were you physically bullied at primary school?"* The RBQ has good test-retest reliability coefficients for both primary school *(r* = 0.88) and secondary school (*r* = 0.87) (Hamburger, Basile, & Vivolo, 2011). Although the RBQ has not been previously used in research with autistic individuals it has been successfully used with other clinical populations including those with psychosis (McDonnell, Stahl, Day, McGuire, & Valmaggia, 2018; Valmaggia et al., 2015), and previous studies of retrospective bullying and victimisation in autistic adults suggest they are able to accurately self-report this information (e.g., Balfe & Tantam, 2010; Bejerot & Humble, 2013). Scores of victimisation were calculated by combining scores from physical bullying (e.g., hitting, punching), verbal bullying (e.g., name calling) and indirect bullying (e.g., being excluded), and the severity of these forms of bullying (ranging from *"not at all"* to *"extremely serious")*. A global bullying score (range = 0-30) was obtained by combining the total primary bullying and secondary school bullying scores.

Rosenberg Self Esteem Scale (RSE). The RSE (Rosenberg, 1965) is a 10-item measure of self-esteem. Items (e.g., *''on the whole, I am satisfied with myself''*) are answered on a 4-point scale with reverse scoring for some questions. Scores range from 0 to 30, with higher scores representing higher levels of self-esteem. The RSE scale has good test–retest reliability and internal consistency (Cronbach's $\alpha > 0.81$ (Schmitt & Allik, 2005).

Generalised Anxiety Disorder Assessment (GAD-7). The GAD-7 (Spitzer, Kroenke, Williams, & Lowe, 2006) is a 7-item measure of current generalised anxiety. Items (e.g., *"I have had trouble relaxing")* ask the responder to give their responses based on their perception of the last two weeks, with responses measured on a 4-point scale. The GAD-7 has been shown to possess good reliability, as well as criterion, construct, factorial, and procedural validity (Spitzer, Kroenke, Williams, & Lowe, 2006). Scores range from 0 to 21, with higher scores indicating higher anxiety. Participants scoring above 5 (denoting clinically mild levels of anxiety) were contacted following their participation regarding their score and advised to consider contacting their general practitioner for further guidance.

Gudjonsson Compliance Scale (GCS). The GCS form D (Gudjonsson, 1989) is a 20 true/false item self-report questionnaire measuring the tendency of people to conform to requests made by others, particularly people in authority, in order to please them or to avoid conflict and confrontation (e.g., *"I try my best to please others"; "I give in easily when I am pressured"*). Scores range from 0 to 20, with higher scores representing increased compliance (Gudjonsson et al., 2004). Psychometric investigation of the scale has reported acceptable internal consistency (alpha 0.71) and test-re-test reliability of 0.88 (Gudjonsson, 1989).

The 'Door-in-the-face' (DITF) Experimental Test of Compliance. The DITF is a behavioural indicator of compliance, first described by Cialdini et al. (1975). It is a technique in which the requester makes two requests, beginning with a costly and unreasonable request that most people should reject. If the initial request is rejected, a second less costly request is made. It is assumed that the refusal of the initial request increases the likelihood of compliance with the smaller request, theoretically because feelings of guilt are induced in the respondent for failing to comply with the initial request, increasing social desirability in the respondent. The second smaller request may be viewed as a reasonable concession (Millar, 2002). Participants' responses were scored categorically, wherein they 1) acceded immediately to the unreasonable two-hour request; 2) refused the initial request but acceded to the second 20-minute request; or 3) refused both requests. For the purpose of the current study, responses to both the initial and subsequent request were used as indicators of compliance.

Procedure

Participants were tested individually in dedicated laboratory space in the Department of Psychology at the University of Bath. They completed each of the paper-based questionnaire measures in the same order, before the procedure for the DITF task began (adapted from Chan & Au, 2011).

Following completion of the questionnaires, participants received the initial DITF task request as follows: *"Thank you for filling in those questionnaires. I have some more questionnaires here, like the ones you have just completed. There are 30 questionnaires in total, and they should take another two hours to complete. These are optional questions, so you do not have to do them. You will not be paid any extra money for doing them, but completing them would really help with our research. Would you be willing to complete them now?"* Adherence to the script was followed as closely as possible, but some minor alterations were necessary when participants asked questions or attempted to bargain (e.g., *"I can't complete them now, but would if you posted them to me",* was countered with *"We need to have them completed in the same session as the questionnaires you have just completed"*). If the participant consented to the initial request, the participant completed one filler questionnaire which was unrelated to the study which took around one minute to complete (The Adult Well-being Scale; Snaith, Constantopoulos, Jardine, & McGuffin, 1978). Upon completion of the filler questionnaire participants were then debriefed.

Participants who replied 'no' to the initial request received the following request: *"You're right, 30 does seem like rather a lot. Perhaps you could do five for us? Those would take 20 minutes to complete; would you be prepared to complete them now?"* If the participant responded positively to the target request, the filler questionnaire was given and the participant was then debriefed upon completion. Participants who refused the target request were told: *"That is no problem at all; they are not important questions anyway. Thank you for taking part".* Participants were then debriefed.

Following debrief regarding the experimental task, participants were asked about the factors that had influenced their decision making with regards to the unreasonable request.

Analysis

First, differences between groups were examined. A series of independent t-tests (with Bonferroni adjustments for multiple comparisons) examined differences between autistic and TD groups on each of the self-report measures for victimisation/bullying (RBQ), self-esteem (RSE) anxiety (GAD-7) and self-reported compliance (GCS), while a Chi-Square analysis was used to test for an association between diagnostic group membership and likelihood of yielding to requests on the experimental task of compliance (the DITF).

Pearson Bivariate correlations were used to explore associations between self-reported compliance on the GCS and scores on the RBQ, RSE and GAD-7. Next, hierarchical multiple regression and multinomial logistic regression analyses tested whether diagnosis group, RBQ, RSE and GAD-7 scores predicted performance on self-reported (GCS) and behavioural tests of compliance (DITF), respectively. Finally, a multinomial logistic regression analysis was performed to examine whether self-reported compliance and group membership predicted behavioural compliance. Since agreement to complete an additional 20 minutes' worth of tasks was the most frequent (and arguably socially desirable) behavioural compliance response, this was used as the reference category on the multinomial logistic regressions for the DITF task.

An alpha value of lower than 0.05 was considered to indicate significant effects and Cohen's *d* are reported throughout as estimates of effect sizes with 95% confidence intervals.

Results

Differences between diagnostic groups

A series of *t*-tests (with a corrected alpha level of .013) revealed that autistic participants reported experiencing significantly more early life victimisation on the RBQ, lower self-esteem on the RSE, higher anxiety on the GAD-7 and greater compliance on the GCS compared to TD participants (all *p*s < .004). Table 1 summarises these data and test results.

Table 1. Mean scores (SDs) and *t* test results between autism and TD group comparisons for each of the self-report measures

	Autism mean (SD)	**TD mean (SD)**	***t***	***p***	**Effect (*d*)**	**95% CI**	**Correlation with self-reported compliance (GCS) across both groups**	
							r	***p***
Bullying (RBQ)	17.27 (8.28) Range = 0-38	5.5 (6.16) Range = 0-20	5.81	<.001	1.61	[0.96, 2.21]	.49	<.001
Self Esteem (RSE)	18.08 (6.52) Range = 6-27	23.00 (4.80) Range = 13-30	3.10	.003	-0.86	[-1.41, -0.28]	-.61	<.001
Anxiety (GAD-7)	8.58 (5.67) Range = 0-19	3.15 (2.59) Range = 0-11	4.44	<.001	1.23	[0.62, 1.81]	.47	<.001
Compliance (GCS)	10.65 (3.93) Range = 6-20	7.81 (2.83) Range = 3-14	3.00	.004	0.83	[0.25, 1.38]	--	--

A Chi square analysis was conducted to assess whether autistic and TD groups also differed in the likelihood of complying with an unreasonable request on the DITF task. As can be seen in Figure 1, autistic participants were significantly more likely to comply with the initial unreasonable request to complete two hours' of additional tasks, while TD participants were more likely to yield to the second request for just 20 minutes extra of their time χ^2 (2, N = 52) = 7.74, p = .021.

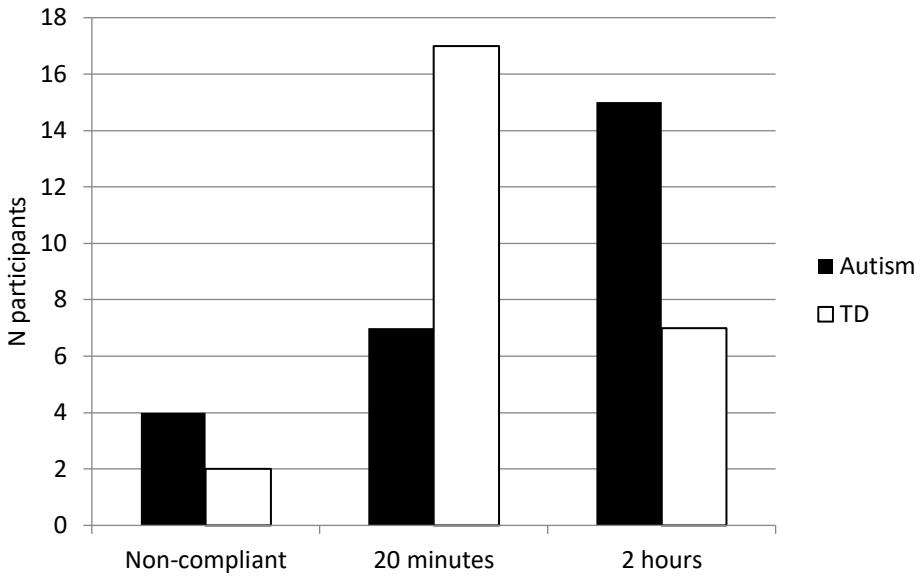

Figure 1. Compliance to requests made on the DITF task by autism and TD groups

Participants were asked why they chose to refuse or comply with the unreasonable two hour request. Around half of those who complied with the two-hour request said that they nevertheless viewed the request as 'unreasonable'. Typical reasons for choosing to comply included participants believing that research seeking to identify the vulnerabilities of autistic people was worthwhile; not having engagements following testing; wanting to contribute to science and research; and wanting to be helpful. Two participants stated that they had complied in order to deliberately prevent their subsequent engagements from taking place, and one participant stated that they found it interesting and relaxing to complete questionnaires. In contrast, the majority of participants who refused the initial two-hour request stated that they viewed the request as 'unreasonable'. Typical reasons for not complying with the request included participants believing it was an unreasonable request for no extra reimbursement of their time, and having engagements following the participation session.

Predictors of self-reported and behavioural measures of compliance

A multiple regression analysis was performed to determine whether diagnosis group, self-reported bullying, anxiety and self-esteem predicted self-reported compliance on the GCS. The model explained 43.3% of the variance and was

significant, $F(4, 47) = 8.97$, $p > .001$. However, self-esteem was the only statistically significant individual predictor ($p = .002$) (Table 2).

Table 2. Linear model of predictors of self-reported compliance on the GCS from diagnosis group, bullying experiences, anxiety and self-esteem (95% bias corrected and accelerated confidence intervals are reported in parentheses).

		95% CI for *b*			
	b (SE)	Lower	Upper	β	*p*
Constant	13.75 (3.04)	7.63	19.87		
Diagnosis group	-0.16 (1.09)	-2.35	2.03	-.02	.885
Bullying (RBQ)	0.10 (0.06)	-0.02	0.21	.24	.113
Anxiety (GAD-7)	0.04 (0.11)	-0.18	0.26	.06	.703
Self-esteem (RSE)	-0.27 (0.08)	-0.44	-.11	-.46	.002

A multinomial multiple regression (with acquiescence to the second 20-minute request as the reference category), was performed to determine whether diagnosis group, bullying experiences, anxiety and self-esteem predicted performance on the behavioural measure of compliance (DITF). Addition of the predictors to a model that contained only the intercept did not significantly improve the fit between model and data, $\chi^2(8, N = 52) = 9.19$, $p = .326$, and no unique contributions were made by diagnosis group, $\chi^2(2) = 3.16$, $p = .206$, bullying, $\chi^2(2) = 0.07$, $p = .965$, anxiety, $\chi^2(2) = 0.51$, $p = .774$, or self-esteem, $\chi^2(2) = .25$, $p = .884$. Moreover, as shown in Table 3, none of the variables predicted the likelihood of participants providing a completely non-compliant behavioural response versus acceding to complete a further 20 minutes' worth of tasks, nor did they predict the likelihood of them acceding to the two-hour versus 20-minute request. The coefficients, odds ratios and 95% confidence intervals estimating the relationship between these predictors and behavioural responses on the DITF are presented in Table 3.

Table 3. Multinomial regression predicting behavioural response to the DITF task by diagnosis group, bullying, anxiety and self-esteem.

				95% CI for Odds ratio	
	b (*SE*)	*p*	Odds ratio	Lower	Upper
Non-compliant vs. 20 minutes					
Intercept	-3.35 (2.82)	.235			
Diagnosis group	1.58 (1.27)	.215	4.85	0.40	58.74
Bullying (RBQ)	0.02 (0.07)	.806	1.02	0.88	1.18
Anxiety (GAD-7)	-0.002 (0.13)	.988	1.00	0.77	1.30
Self-esteem (RSE)	0.05 (0.10)	.642	1.05	0.86	1.28
2 hours vs. 20 minutes					
Intercept	-1.09 (1.79)	.542			
Diagnosis group	1.36 (0.87)	.117	3.88	0.71	21.21
Bullying (RBQ)	0.00 (0.05)	.995	1.00	0.91	1.10
Anxiety (GAD-7)	0.06 (0.09)	.523	1.06	0.89	1.26
Self-esteem (RSE)	-0.001 (0.07)	.961	1.00	0.88	1.41

Relationship between self-reported and behavioural measures of compliance

Finally, a multinomial logistic regression was run to examine whether self-reported compliance and group membership predicted behavioural compliance. The final model failed to reach significance χ^2 (4, N = 52) = 8.01, p = .091) and likelihood ratio tests revealed that behavioural compliance was not predicted by self-reported compliance, $\chi^2(2) = 0.53$, p = .974; however it was significantly predicted by having an autism diagnosis, $\chi^2(2) = 6.36$, p = .042. As shown in Table 4, neither GCS scores nor diagnosis group predicted the likelihood of participants providing a completely non-compliant behavioural response versus acceding to complete a further 20 minutes' worth of tasks. While GCS scores also did not predict the likelihood of participants agreeing to the two-hour versus 20-minute request, diagnosis group did significantly predict the likelihood of acceding to the two-hour request. The odds ratios and 95% confidence intervals estimating the relationship between self-reported compliance and diagnosis group membership with behavioural responses on the DITF are presented in Table 4.

Table 4. Multinomial regression predicting behavioural response to the DITF task by self-reported compliance (GCS) and diagnosis group.

				95% CI for Odds ratio	
	b (*SE*)	*p*	Odds ratio	Lower	Upper
Non-compliant vs. 20 minutes					
Intercept	-2.32 (1.31)	.091			
GCS	0.01 (0.14)	.945	1.01	0.77	1.32
Diagnosis group	1.56 (1.05)	.137	4.73	0.61	36.42
2 hours vs. 20 minutes					
Intercept	-1.06 (0.88)	.228			
GCS	0.02 (0.10)	.820	1.02	0.85	1.23
Diagnosis group	1.59 (0.69)	.021	4.90	1.27	18.98

Discussion

The present study found that autistic individuals self-reported a significantly higher tendency to comply with the requests of others than non-autistic individuals, and they were more likely to accede to spending an additional two hours completing questionnaires for no additional reimbursement for their time on a behavioural test of compliance.

To our knowledge this was the first study that has utilised a measure of observed compliance to an unreasonable request with autistic individuals. Using the DITF experimental task (Cialdini et al., 1975), 58% of autistic participants in the current study agreed to go along with the initial unreasonable request for two additional hours of their time, compared to 27% of TD participants. In contrast the majority (65.4%) of TD participants agreed to the less costly 'target' request for a further 20 minutes of their time. The autistic group also self-reported a greater tendency towards compliance using the GCS, in line with North et al.'s (2008) finding but in contrast to Maras and Bowler (2012) who failed to find a significant difference in self-reported compliance using the same measure. The different results between these studies

using the GCS may reflect the heterogeneity of the autistic population (Geschwind, 2009). For example, Maras and Bowler (2012) reported no difference in state anxiety or self-esteem in their autistic sample, whereas the autistic participants in the current study reported experiencing significantly higher levels of anxiety over the last two weeks and, pertinently, lower self-esteem. North et al's (2008) sample were inpatients on a specialist unit for people with autism, suggesting many were also experiencing a range of complex emotional difficulties and problems at the time of their participation and co-occurring difficulties such as high anxiety and low self-esteem were likely to have been present.

Consistent with previous research, alongside higher anxiety and lower self-esteem, autistic participants in the present study also reported experiencing significantly more early life victimisation and bullying than TD participants (e.g. Adams et al., 2014; Gillott & Standen, 2007; Howlin, 2002), and these variables were significantly associated with self-reported compliance across both groups (e.g., Carter-Sowell et al., 2008; Gudjonsson, 1989; Gudjonsson et al., 2002). Indeed, diagnosis, bullying, self-esteem and anxiety together explained 43.3% of the variance in GCS scores, but only self-esteem scores were significant in the regression model. Hence, higher compliance scores appeared to be largely driven by diminished self-esteem, in line with previous reports (Gudjonsson & Sigurdsson, 2003; Gudjonsson et al., 2002). This provides some support for the notion that individuals may comply with the requests of others in order to improve their sense of self-worth (Williams, 2009).

However, a key caveat to this conclusion is that performance on the DITF behavioural measure of compliance was not predicted by bullying, self-esteem, anxiety, or indeed by the GCS. In fact, the only significant predictor of compliance on the DITF was diagnosis group, with autistic participants being more likely to go along with the most unreasonable request to complete a further two hours of tasks. This also raises the question of whether the GCS and the DITF are measuring the same underlying constructs. As noted in the introduction, the GCS measures compliance globally rather than in response to a specific situation, while the DITF is an effective means of enhancing compliance to a specific situation (Dillard, Hunter, & Burgoon, 1984; Fern, Monroe, & Avila, 1986; O'Keefe & Hale, 1998). The DITF is based on the premise that by making an initial highly unreasonable request which is likely to be

rejected, an individual then is more likely to go along with a further, smaller, request (in this case to complete an additional 20 minutes of tasks). As expected, most TD participants rejected the initial request for two additional hours of their time, but subsequently agreed to spend a further 20 minutes completing tasks for no additional payment. Proposed explanations for this effect include heuristics in 'reciprocal concessions' – that is, feeling compelled to make a concession after one rejects a larger request (e.g., Feeley, Fico, Shaw, Lee, & Griffin, 2017) and guilt-based explanations (Millar, 2002; O'Keefe & Figge, 1997), which would presumably still be underpinned to some extent by some of the same factors underlying GCS compliance, such as bullying, self-esteem and anxiety (e.g., Steele, 1975). Indeed, Carter-Sowell et al. (2008) reported that ostracised individuals are particularly susceptible to compliance on the DITF. It is surprising therefore that bullying, self-esteem and anxiety did not predict compliance on the DITF performance in the present study, however, participants reported early life victimisation; more recent experiences of bullying (i.e., in later life) may have resulted in significant associations.

Others, however (e.g., Turner, Tamborini, Limon, & Zuckerman-Hyman, 2007; Tusing & Dillard, 2000), have argued that compliance to the target request may be better explained by the notion of social responsibility – that is, feeling obliged to the cause but unable to commit to the full request. This account is supported by meta-analyses indicating that the DITF appears to be effective only for appeals made on behalf of a prosocial source such as charitable causes (Dillard et al., 1984; O'Keefe & Hale, 1998). Thus, it could be that autistic participants were even more motivated to the research cause and consequently agreed to complete significantly more research-based tasks.

After completion of the study, participants were asked about the factors that had influenced their decision making with regards to the unreasonable request. While more than half of participants who complied with the two-hour request reported that they nevertheless viewed the request as 'unreasonable', their typical reasons for choosing to comply included wanting to contribute to science and research and generally wanting to be helpful, supporting Tusing and Dillard's (2000) contention that compliance on the DITF is underpinned by feelings of social responsibility. Of those who did not comply with the unreasonable request, the vast majority stated that they

viewed the request as 'unreasonable' and typical reasons for not complying included feeling that it was an unfair request for no extra reimbursement. Thus, motivational factors, as well as individual differences in strategic reasoning and perceptions of fairness may also be key, which previous research has shown are related to theory of mind ability (Castelli, Massaro, Sanfey, & Marchetti, 2014; Takagishi, Kameshima, Schug, Koizumi, Yamagishi, 2010; Sally & Hill, 2006).

This also raises an important ethical issue for researchers regarding the requests they make of autistic participants. The majority of autistic people take part in research because they want to contribute to research, improve the lives of autistic individuals, learn more about themselves and feel accepted (Haas et al., 2016), and their compliance is a major underlying factor to the success of most autism research. The current findings strongly underscore the need for researchers to be mindful, however, of not over-burdening participants who may continue to take part beyond what is reasonable. This highlights the necessity of agreeing what is fair and reasonable with an autistic person *before* they participate and further emphasises the need for patient and public involvement at the research design and development stage. Future research should examine autistic reasoning and perceptions of fairness more closely in the context of compliance to research and other types of requests.

Interestingly, while autistic participants were more likely to comply with the initial costly request on the DITF, those who rejected the first request showed a non-significant trend to being more likely than TD participants to not comply at all (although it is important to note the numbers were small). A 'preference for consistency' has been shown to moderate the DITF effect (Cantarero, Gamian-Wilk, & Dolinski, 2017; see also Guadagno et al. (2001). Cantarero et al. (2017) recently demonstrated that individuals who prefer change and unpredictability are more likely to display inconsistent behaviour by refusing an initial request but consenting to a target one, while individuals who prefer consistency and predictability were less likely to comply with the second 'target' request. Similar findings were reported by Bowler and Worley (1994), who reported that although autistic adults were no more susceptible to social influence than TD adults on Asch's line judgment task they were more likely to adopt a consistently conforming or non-conforming strategy, exhibiting a rigidity which is characteristics of autism (American Psychiatric Association, 2013).

Regardless of what drives self-reported and behavioural compliance, these findings highlight the importance of minimising the pressures that are placed on autistic individuals in a range of situations from completing research, workplace tasks and requests made in the context of friendship activities (Sofronoff et al., 2011), to acquiescing to pressure to engage in sexual activity (Brown-Lavoie, Viecili, & Weiss, 2014) engaging in criminal behaviours due to coercion by peers (Allen et al., 2008; Gudjonsson & Sigurdsson, 2004; Helverschou et al., 2015), and making false confessions when under interrogative questioning (Gudjonsson & Mackeith, 1990). This has important implications for a range of professionals from health and social care, education and employment to the CJS. Professionals should encourage autistic people to make free choices with greater assertiveness as opposed to being led by others regarding their relationships, healthcare, and access to services and treatments, whilst also being mindful that some autistic people may feel more comfortable in being led in decision making by others (Luke, Clare, Ring, Redley, & Watson, 2011).

Findings also highlight that extreme caution is warranted by CJS professionals to ensure that autistic witnesses, victims and suspects are not unduly influenced to being led while giving evidence. It is important to note, however, the distinction between compliance and suggestibility. In a police interview context, compliance might result in being led, manipulated or pressured into agreeing to a statement or falsely confessing for some immediate instrumental gain such as terminating the interview earlier (Gudjonsson, 2003), whereas suggestibility involves being genuinely misled about information that one comes to accept as true (Gudjonsson & Clark, 1986). While findings indicate that autistic adults may be more compliant, previous research suggests that neither children (e.g., Bruck, London, Landa, & Goodman, 2007; McCrory, Henry, & Happé, 2007) nor adults with autism are any more suggestible (e.g., Maras & Bowler, 2011, 2012; North et al., 2012).

This study provides further evidence that autistic individuals experience higher levels of bullying than TD individuals in early life (e.g., Cappadocia et al., 2012; Fink et al., 2017; Fisher et al., 2012; Hebron et al., 2017; Humphrey & Lewis, 2008; Kloosterman, et al., 2013; Wainscot et al., 2008; but see Begeer et al., 2016). The need-threat model (Williams, 2009) suggests that victimisation, ostracism and social

exclusion might lead to reduced self-esteem and cause individuals to become more compliant, which is broadly consistent with the present finding that victimisation, anxiety and self-esteem were all associated with heightened compliance, but self-esteem was the only unique predictor of GCS scores. Although this finding was a result of analysis of the combined (autistic and TD) samples, autistic participants reported more early life bullying, and scored lower on self-esteem and higher on anxiety and compliance scales, suggesting that this finding has relevance for them. It is possible that the difficulties associated with navigating the social world which are characteristic of autism mean that autistic individuals may be less able to utilise a range of complex social strategies to regain a sense of self-esteem, and as a result experience depleted self-regulation capacity and an increased tendency to comply (see Kashsdan, Weeks, & Savostyanova, 2011). Future work should examine this possibility in more depth, and explore whether social anxiety also plays a causal role. It is also important to utilise measures other than self-report questionnaires, since difficulties in self-reflection have been reported in autism (e.g., Mazefsky, Kao & Oswald, 2011; Shalom et al., 2006), with some evidence that autistic individuals under-report their difficulties (Findon et al., 2016).

The present study further highlights the need for identifying and offering appropriate support for autistic children and adolescents who are currently or at risk of being bullied and ostracised. Humphrey and Symes (2010) suggested that classmate support was the strongest predictor of bullying frequency, and so engendering appropriate peer support for autistic pupils may be an efficacious method to reduce bullying. Schools and colleges may wish to consider how this is achieved in their individual services and establishments. Further to this, Laugeson, Frankel, Gantman, Dillon, and Mogil (2012) have found a parent assisted social skills group (PEERS) to be efficacious in improving social awareness and assertion in young people with autism, and these gains appeared to be maintained at three-month follow up, suggesting sustained improvements. These are promising findings, particularly given the current findings that people with a history of victimisation are more likely to report higher compliance, which appears to be driven by diminished self-esteem. Indeed, if individuals are more likely to engage in activities or behaviours because their early life experiences render them less confident and limit their ability to ‘say no’ to

others, this has important implications for a range of contexts from schools and colleges to parents and clinicians working with young people – including those with autism.

The present study is not without limitations. In particular, the unreasonable request used in the experimental task was not independent of the context in which it was undertaken; it was done as part of an existing commitment, with participants already engaged. Autistic participants may have had more free time to be able to agree to a further two hours of their time, and possibly a greater desire to continue or maintain the interaction. Participants were also self-selecting and had travelled to participate, and their 'compliance' with the task may have been a reflection of their willingness to participate in research**,** particularly as it concerned factors such as anxiety and victimisation. Indeed, when asked what factors influenced their decision to stay for two hours, many participants believed the project was worthwhile and wished to help the researchers contribute to the evidence base. Thus, while findings clearly highlight compliance to research-related requests (which is an important issue in itself), it is less clear how this may map on to other types of requests, such as to carry drugs, take a date back to an apartment, or lend money. Future research should therefore adapt the experimental task of compliance utilising an unreasonable request that is unrelated to the purpose for which participants are undertaking testing, and with different types of people (e.g., known vs. unknown; authority vs. peer). Compliance to other sorts of requests may be better predicted by factors such as bullying, anxiety, self-esteem and, potentially, global self-reported compliance. Future research should also tease apart whether greater compliance by autistic individuals observed on the DITF is driven by factors such as social responsibility (Tusing & Dillard (2000), motivation, or theory of mind (Castelli et al., 2014; Takagishi et al., 2010), and examine what situational factors are important in heightened vulnerability to compliance in autism.

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