

RESEARCH ARTICLE

Social anxiety is more likely to influence reputation management decisions than autistic traits

Indu Dubey^{1,2}  | Maddie Groom¹ | Ameena Tahir¹ | Antonia Hamilton²

¹School of Medicine, Mental Health & Clinical Neurosciences University of Nottingham, Institute of Mental Health, Nottingham, United Kingdom

²Institute of Cognitive Neuroscience, University College London, London, United Kingdom

Correspondence

Indu Dubey, School of Medicine, Mental Health & Clinical Neurosciences University of Nottingham, Institute of Mental Health, Nottingham NG7 2TU, United Kingdom.
Email: indu.dubey2@nottingham.ac.uk

Funding information

University of Nottingham

Abstract

People manage their social reputation by selectively sharing achievements, thereby shaping the way others think about them. Autistic traits and social anxiety may have opposing impacts on reputation management. This study aimed to identify the influence of autistic traits and social anxiety on reputation management behavior, independently and in co-occurrence with one another. Seventy-seven adults with varying levels of autistic and social anxiety traits completed a novel *self-disclosure task* that required them to complete a computerized game and decide whether to disclose their scores to another participant. This design provided a safe social environment for sharing performance outcomes and allowed us to manipulate performance outcomes for participants and set a perceived ‘norm’ of high self-disclosure. Results showed that participants were more likely to disclose their high than low scores to the other player. Social anxiety reliably predicted the likelihood of disclosing their scores while high autistic traits predicted the likelihood of disclosure only in combination with high social anxiety. Additionally, establishing the norm of high disclosure facilitated self-disclosure in all the participants. This study shows that social anxiety may influence reputation management via selective self-disclosure more when co-occurring with high autistic traits. People with varying levels of autistic traits may not behave differently to maintain a social reputation.

Lay Summary

Most people manage their social reputation by sharing their achievements more than their failures. A total of 77 adults with varying levels of autistic and social anxiety traits completed a novel *self-disclosure task* that required them to decide whether to disclose their scores to another participant. We found that the behavior of selectively presenting the best performance to maintain a social reputation is more likely to be influenced by high levels of social anxiety. Participants with high autistic traits were also likely to selectively disclose their high scores, but only if they also had high social anxiety.

KEYWORDS

autistic traits, reputation management, self-disclosure, social anxiety

The modern world provides people with many opportunities to share information about successes and failures in their daily lives, from Instagram to Twitter. Such social disclosures can be useful tools in curating a reputation and building social connections: people can choose to present a public self-image as a successful person or

to gain sympathy and support by sharing failures. Here, we examine the decision to engage in selective self-disclosure to maintain a positive social reputation and how this might relate to social anxiety and autistic traits.

Sharing information about the self with another person can be a way to gain praise and to seek social

This is an open access article under the terms of the [Creative Commons Attribution](https://creativecommons.org/licenses/by/4.0/) License, which permits use, distribution and reproduction in any medium, provided the original work is properly cited.

© 2023 The Authors. *Autism Research* published by International Society for Autism Research and Wiley Periodicals LLC.

support, but it can also put the sharer at risk of being criticized. A detailed analysis of 15 million tweets about the popular word-guessing game Wordle with more than 2 million people playing the game in January 2022 (Hall, 2022), shows that people share their scores on social media more often for easy-to-guess words (Lesser, 2022), which suggests that people prefer to show off their good performance than share their failures. Similar effects have been seen in an explicit reputation management task developed by Cage et al. (2016). In this study, participants played a game and were awarded a score (manipulated to be high or low in relation to other players). They were then given a choice to display their scores on a “leader board”. Results showed that both neurotypical and autistic children displayed their scores more when their scores put them in the first position. This pattern of selective self-disclosure is understood as reputation management (Tennie et al., 2010). People engage in behaviors like sharing their success in order to control how they appear to other people and thus manage their reputation.

Social reputation management is likely to involve at least two key social cognitive processes – theory of mind and social motivation. Theory of mind (Baron-Cohen et al., 1985) may be important for deciding what information to share and how to communicate this information in order to influence others. Social motivation includes the need to maintain a good social status (Chevallier, Kohls, et al., 2012; Chevallier, Molesworth, & Happé, 2012) and thus to care about one’s reputation. Atypicalities in these social cognitive processes have been linked to both autistic traits and social anxiety (Pearcey et al., 2021). We consider here how these individual differences in social cognition might impact selective self-disclosure hence reputation management.

Autistic traits include difficulty in social communication and restricted/peculiar interests (Kanne et al., 2009). These traits follow a continuous distribution throughout the population, with a large number of people reporting low levels of traits while nearly 1.4% of males and 0.3% of females reporting levels of autistic traits similar to those with a diagnosis of autism (Constantino & Todd, 2003). People with higher autistic traits may have difficulty understanding what other people might be thinking or feeling (Ronald et al., 2006), which is consistent with suggestions of impaired theory of mind in autistic people (Baron-Cohen et al., 1985). Higher autistic traits may also be associated with lower social motivation (Chevallier, Kohls, et al., 2012). High autistic traits do not necessarily reflect the same experiences and differences as autistic spectrum conditions; however, research based on autistic traits provide a starting point to generate research questions relevant to autistic people (James et al., 2016; Sasson & Bottema-Beutel, 2022). Therefore, based on the literature discussed above, we might expect that autistic people will have some difficulty choosing actions to maintain a good reputation, including sharing

information about themselves. As an extreme example, a person with a very poor theory of mind might share all information or no information in a self-disclosure game, without regard for what other people will think about them. Similar but more subtle effects might be expected for those with high autistic traits.

Some recent studies have evaluated reputation management in autism in relation to theory of mind and social motivation (Cage et al., 2013, 2016; Chevallier, Molesworth, & Happé, 2012; Izuma et al., 2011). When given the option to donate to charity, typical adults tend to make higher donations in the presence of others, indicating a concern for maintaining a good reputation in front of others. However, on the same task, autistic adults were not affected by the presence of another person (Cage et al., 2013; Izuma et al., 2011). It is important to note that this lower concern about one’s reputation in autism is not a result of an inability to understand the reciprocal nature of social relationships. In the study by Cage et al. (2013) when participants were informed that the observer might donate to the participant, hence a context of potential benefit from social reciprocation, autistic participants modulated their behaviors in a similar fashion to typical people; they made a higher donation to the person who is likely to reciprocate the behavior. These findings are in contrast to what was reported in the explicit reputation management task (Cage et al., 2016) described above, where both typical and autistic participants decided to display their scores on the leader-board more often when they had high scores. In summary, the findings from the above-discussed studies suggest that the overall picture of reputation management in autism is somewhat mixed.

The second set of traits that is particularly relevant to reputation management is social anxiety. Social anxiety is characterized by excessive worry about what other people may think with a particular focus on any potential negative evaluation by others (Stein & Stein, 2008). The fear of negative evaluation or humiliation results in social avoidance in social anxiety disorder (SAD) (Stein & Stein, 2008). People with high social anxiety often show larger audience effects (Uziel, 2007) and engage less in self-disclosure (Schlenker & Leary, 1985). In general conversation, socially anxious people disclose very little or share more superficial information about themselves than the conversation partners (McCroskey & Richmond, 1976; Meleshko & Alden, 1993). Since in computer-mediated interactions, there are diminished non-verbal cues and people have the ability to edit the conversation by filtering out the unflattering content, these factors encourage selective positive self-presentation in social media. Socially anxious people report greater comfort in engaging in social interaction online than face to face (Erwin et al., 2004; Walther, 1996) and demonstrate greater self-disclosure in online interactions than non-socially anxious participants (Weidman et al., 2012). They are less likely to avoid a face-to-face conversation

with someone if they have had an opportunity to talk to them online (Markovitzky et al., 2012).

To summarize, our examination of the previous literature on reputation management through selective social disclosure in relation to autistic traits and social anxiety leads us to make distinct predictions for these two characteristics. If high autistic traits are linked to a poor theory of mind and poor reputation management, then we would predict that people with these traits would share social information with little concern about maintaining social reputation. For example, they might share a high score on a game just as often as a low score. In contrast, if social anxiety traits are linked to an excessive focus on reputation management, we would expect people with high social anxiety to engage in careful selective social disclosure and to share information only when they have high scores. Thus, we can draw out contrasting predictions for how autistic traits and social anxiety might impact the process of reputation management and self-disclosure.

Interestingly, high autistic traits and high social anxiety often co-occur (Freeth et al., 2013; Spain et al., 2018). Nearly 50% of autistic people experience social anxiety (Maddox & White, 2015). A recent review shows that self-reported autistic traits are more highly correlated with self-reported social anxiety in autistic than non-autistic participants (Spain et al., 2018). Studies suggest that cognitive abilities might mediate this relationship as social anxiety is more common in autistic people with high cognitive abilities (Witwer & Lecavalier, 2010). Those autistic people who may lack insight into their social difficulties may be “protected” while those who have insight into their social limitations may feel acutely lonely (Attwood 2000, p. 97). A recent study further suggests that difficulty understanding others’ perspectives might make autistic people anxious about the confusing and uncertain nature of social interactions (Hunsche et al., 2022). Hence, while linked to social situations, the anxiety experienced by autistic people may have a slightly different origin than what is typically experienced by socially anxious people that is, a fear of negative evaluation by others. The coexisting anxiety may also result in misinterpretation of social cues and possibly negative social interactions resulting in social avoidance despite having higher social motivation in autistic people (White & Roberson-Nay, 2009). While independently these traits may have opposing influences on reputation management behaviors, it is less clear how they interact when co-occurring and influence the processes of reputation management. Specifically, is it possible to define which of these traits takes precedence when the social situations involve behavior that may directly impact social status?

The present study aimed to characterize the behavior of sharing information about the self in relation to both autistic and social anxiety traits, in order to better understand how these traits influence the process of reputation

management. We developed a novel task to explore self-disclosure in a computer game, similar to (Cage et al., 2016). In our task, participants played a simple game and received a score every three trials; they could then choose to disclose their score to another player via a chatroom, receiving a positive comment from the other player if they do so. We measured how often people chose to disclose their score, and if they do so more for their high-performance outcomes compared to low-performance outcomes hence being selective in self-disclosure.

Based on our review above, we can draw out several distinct predictions for this data. First, we predict that participants will generally disclose their high scores more often than low scores. Second, we predict that participants with high autistic traits will be less selective in self-disclosure and that participants with high social anxiety traits will be more selective in disclosing their high scores only. We do not have specific predictions for the interaction between these factors.

METHODS

Participants

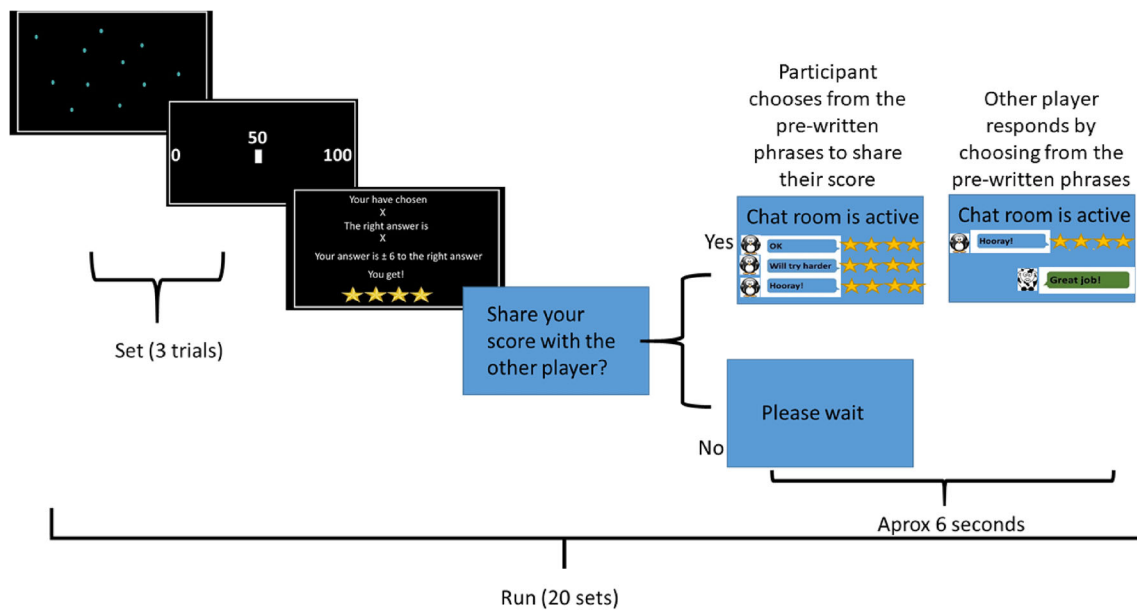
A total of Seventy-seven adults (46 females) aged 18–32 years ($M = 23.08$, $SD = 3.41$) took part in the study. They were recruited through study recruitment posters, as well as social media posts from the (information withheld to anonymize the manuscript), and local autism support groups (contacted through websites such as MeetUp, Facebook, the National Autism Society, and (information withheld to anonymize the manuscript) Autism Society). We did not recruit participants based on formal autism or social anxiety diagnoses but aimed to recruit a sample with a wide range of autistic and social anxiety traits. Participant characteristics as measured for this study are presented in the Table 1. The rationale for the tools used is given in the section “measures”. All the participants provided informed written consent prior to data collection.

Measures

The Autism-Spectrum Quotient- Adult -AQ (Baron-Cohen et al., 2001): All the participants completed the Autism-Spectrum Quotient (AQ) scale, a self-report 50-item scale in which each item is scored as 1 or 0. Participants scoring ≥ 26 are recommended to undergo full autism diagnostic assessment (Baron-Cohen et al., 2001). About 25% of participants scored ≥ 26 indicating that a larger proportion of our participants had significantly high autistic traits than the typical population which is 1.4% for males and 0.3% for females (Constantino & Todd, 2003).

TABLE 1 Participant characteristics.

Variable	Gender	<i>N</i>	Mean (<i>SD</i>)	Skewness (<i>SE</i>)	<i>Z</i> score
Age	All	77	23.1 (3.41)	0.86 (0.27)	3.18
	Females	46	22.8 (3.43)	1.04 (0.35)	2.97
	Males	31	23.5 (3.38)	0.67 (0.42)	1.60
Score on The Liebowitz Social Anxiety Scale	All	77	55.2 (19.66)	0.06 (0.27)	0.22
	Females	46	58.4 (18.50)	0.07 (0.35)	0.2
	Males	31	50.3 (20.63)	0.21 (0.42)	0.5
Score on The Autism-Spectrum Quotient- Adult	All	77	21.6 (6.46)	0.24 (0.27)	0.89
	Females	46	21.2 (5.91)	−0.20 (0.35)	−0.57
	Males	31	22.1 (7.27)	0.52 (0.42)	1.24

**FIGURE 1** Dot guessing game presentation.

The Liebowitz Social Anxiety Scale (LSAS) (Liebowitz, 1987): A 24-item, self-administered tool to measure avoidance of social interactions and avoidance of social performance. A score above 30 is a good indicator of significant social anxiety (Rytwinski et al., 2009). A large number of our participants (90%) scored above 30 on LSAS indicating a high proportion of participants with significant social anxiety in this sample.

Self-disclosure task: The behavioral task was presented on a computer screen running Matlab (The MathWorks Inc., 2000) and Cogent toolbox. The Cogent 2000 is developed by John Romaya and the Cogent 2000 team at the Wellcome Department of Imaging Neuroscience, UCL. This task had a “dot guessing game” where participants tried to perform a difficult counting task (details in the section below) and received “feedback” on their performance. The participants were told a cover story that another player has also joined this game and will take turns to play the game. In reality, there was no other

player, only a simulated player whose responses were generated by a computer program. The participant had the chance to disclose their scores to the other player in the “*Self-disclosure*” phase after every set of 3 trials of the dot guessing game.

Dot guessing game: In this game participants saw a random number of dots appearing on the screen for only 0.5 s. They then guessed the number of dots using a scale that allowed them to choose any number between 0 and 100. On the 3 learning trials, they received feedback indicating the accuracy of their guess as 1–4 stars (1 = not close, 4 = very close). On the test trials, feedback was given as an average accuracy for a *set* of three trials. The game had three runs. Each run had 20 sets of 3 trials (see Figure 1).

Feedback manipulation: On the test trials, feedback provided on each set did not accurately reflect the participant’s performance but was manipulated to ensure that each participant received a mix of 4, 3, 2, and 1 star

scores over the 20 sets of trials. If a participant's actual average score on a set was more than 3.5 stars that is, the participant could guess the number of dots very efficiently, they were shown a feedback score of 4 stars. Similarly, if their average score for three trials was 1, they were shown a score of 1 star. However, if their score was anything between 1.1 and 3.5, they were shown a randomly chosen score from 4, 3, 2, or 1 star/s as feedback on their performance. Overall, we tried to ensure that each participant received an approximately equal number of 4, 3, 2, and 1-star feedback.

Cover story: Participants were told they will play the dot guessing game on the computer against another player who is also participating in the study. They were told that they are not allowed to meet the other participant. In reality, participants played the game alone and were presented with pre-set commands on the computer. Participants were told that there are four runs of the game and that in the 1st and 3rd run, they will play the game while the “other player” is available to chat, while in the 2nd and 4th runs the “other player” would play the game and the participant will be available to chat. The runs for the “other player” were included to help the participant believe that the other player was real. The 4th run of the game (that was the last run and was to be played by the other player) was never presented as it would not have any impact on the participant's behavior. Instead, participants were debriefed after the 3rd run.

Self-disclosure: On starting the game, participants chose an animal icon to represent them and were able to meet their game partner in a simple chatroom (Figure 2). In this chatroom, participants could choose one of 3 or 4 statements to interact with, which then appears in the “conversation bar” on the right of the computer screen. After a short delay, the partner's response appears, giving the impression of a text message conversation. For

example, the conversation could go: PARTICIPANT (P): *Hi*, RESPONSE (R): *Hello, how are you*, P: *Good thank you, what about you?* R: *Good thank you, have you done such a study before?* P: *Yes, a couple of times, do you often take part in studies?* R: *I do take part sometimes*, P: *Best of luck*, R: *It will be fun*. (see Table S1 in the supplementary materials for all the text snippets used in the sample conversations).

After this brief interaction with the other player, participants proceeded to the “dot guessing game”. At the end of every set (i.e., 3 trials) of the dot guessing game, participants received feedback along with an option to disclose their score to the other player (or not), who was waiting for their turn and was available to chat. If the participants chose to disclose their score with the other player, they would be directed to the chatroom, where they could then choose from three available sentences to disclose their score. The other player (i.e., the computer) then “responded” with a suitably positive statement. For example, after a 4-star trial, P says: *Hooray* and R responds: *Great job*, or after a 1-star trial, P says: *Oops, not good* and R responds: *Better luck next time* (see Table S2 in the supplementary materials for examples). If participants chose not to disclose their score, they had to wait for approximately 6 seconds until the next trial began; this was to ensure that motivation to complete the study more quickly does not affect participants' decision to disclose their score to the other player.

Procedure

This study was reviewed by (information withheld to anonymize the manuscript). All procedures performed in this study were in accordance with the ethical standards of the (information withheld to anonymize the manuscript) and with the 1964 Helsinki declaration and its

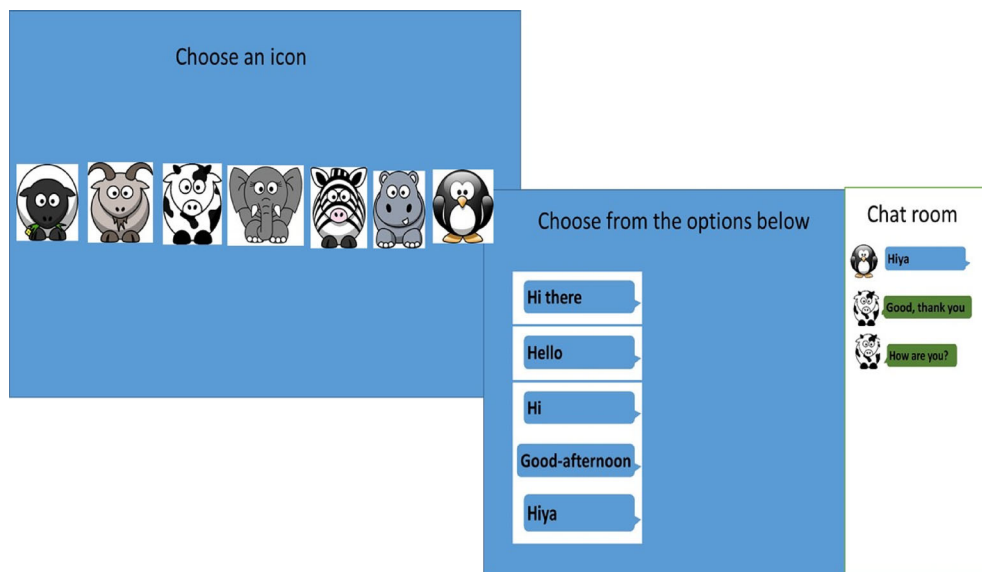


FIGURE 2 An example of the “specially designed chatroom” for the study.

later amendment in 2008. Informed consent was obtained from all the individual participants.

All the participants completed the consent form and demographic information sheet upon arrival. They completed the AQ scale (Baron-Cohen et al., 2001) and LSAS (Liebowitz, 1987). Then the behavioral task (dot guessing game and specially designed chatroom) was explained to them. Instructions were displayed on the screen and participants started the task believing that they were playing with another participant.

The task began with a demonstration of the “dot guessing game”. Once they understood the game, they had an opportunity to have a brief chat with the “other player” as described above. Participants then proceeded to the 1st run of the task in which they played 20 sets (each set has 3 trials) of the “dot guessing game”. After each set, they received a score and had the option to disclose it or not to the other player. If they chose to disclose the score, they were directed to the chatroom, or else they waited for the next trial to begin (see Figure 1).

On the 2nd run, the other player played the game while the participant waited. On 16 out of 20 sets of the dot guessing game, the other player (computer) disclosed its score to the participants and revealed a score of 1 star (on 4 sets); 2 stars (on 4 sets); 3 stars (on 4 sets) or 4 stars (on 4 sets) in a randomized order. For 4 sets the computer did not disclose the score and participants received a message suggesting “the other player has chosen not to share their score for this set”. This high level of disclosure across all types of outcome scores was chosen to set a norm for extensive self-disclosing in the 2nd run that is, the run played by the other player (computer) so that we could see if participants’ levels of self-disclosure changed in the following (3rd) run. The 3rd run of the dot guessing game was again played by the participants. The procedure of this run was the same as the 1st run. The task ended as the participant finished this run.

Data analyses

Selective self-disclosure: We compared the self-disclosure over four levels of scores awarded for each set, using a repeated measure ANOVA. Because participants’ scores were partly determined by their true performance, it was not possible to ensure that everyone received an equal number of 1,2,3, or 4 stars scores. Therefore, the self-disclosure for the four scores was calculated as a proportion of the number of sets on which that score was awarded.

Σ (sets with score X where participant disclosed their score) / Σ (sets with score X).

A logistic regression was used to predict the self-disclosure of participants (raw score yes/no as a binary choice) with three primary predictors (1) the score participants were awarded for their performance, (2) their AQ score, and (3) their score on LSAS. The two-way and

three-way interactions of these variables were also added to the model.

Additionally, we calculated overall self-disclosure as the sum of trials when participants decided to disclose their score and compared this between runs 1 and 3 (those completed by the participant) using a paired sample t -test. This allows us to determine whether the proportion of self-disclosure increased once the participants observed the high disclosure of the other participant in run 2.

RESULTS

Selective self-disclosure: A comparison of selective self-disclosure in relation to the scores awarded to the participants showed that they disclosed their scores more when they received a higher score than when they received a lower score in both the 1st (*Greenhouse–Geisser corrected: $F(2.56, 194.37) = 18.98, p < 0.001, \eta_p^2 = 0.200$*) and 3rd (*Greenhouse–Geisser corrected: $F(2.67, 205.91) = 22.05, p < 0.001, \eta_p^2 = 0.223$*) runs (See Figure 3). For example, in run 1, the participants disclosed their score on 70% of sets where they were awarded 4 stars but only 49% of sets where they were awarded 1 star. Similarly, on run 3, they disclosed their score on 80% of sets when they were awarded 4 stars and only 52% when they were awarded 1 star.

Logistic regression: The regression model was designed to determine whether the decision to disclose the scores in the game was predicted by AQ, LSAS scores, or the level of scores awarded. Results presented in Table 2 show a significant main effect of LSAS scores

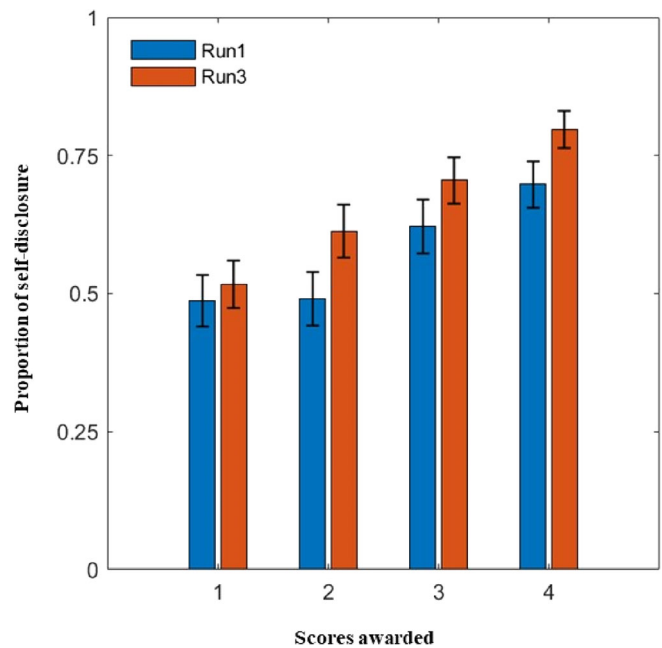


FIGURE 3 Self-disclosure in relation to the scores awarded to the participant over two runs of the game.

TABLE 2 Logistic regression model including three main factors and their interactions for predicting self-disclosure.

Predictors	Df	1st run		3rd run	
		Wald χ^2	<i>P</i>	Wald χ^2	<i>P</i>
Score awarded	3	6.32	0.097	4.04	0.257
AQ	1	1.15	0.283	2.08	0.149
LSAS	1	6.74	0.009**	6.84	0.009**
Score awarded \times AQ	3	6.40	0.094	3.22	0.359
Score awarded \times LSAS	3	10.31	0.016*	7.68	0.053
LSAS \times AQ	1	2.55	0.110	4.26	0.039*
Score awarded \times AQ \times LSAS	3	11.17	0.011*	5.71	0.127

Note: Score awarded = 1 to 4 stars participants saw as feedback on their performance on the dot guessing game. Abbreviations: AQ = score on *The Autism-Spectrum Quotient- Adult -AQ* (Baron-Cohen et al., 2001) showing the level of autistic traits. LSAS = scores on *The Liebowitz Social Anxiety Scale (LSAS)* (Liebowitz, 1987) showing the level of social anxiety.

**p* < 0.05.

***p* < 0.001.

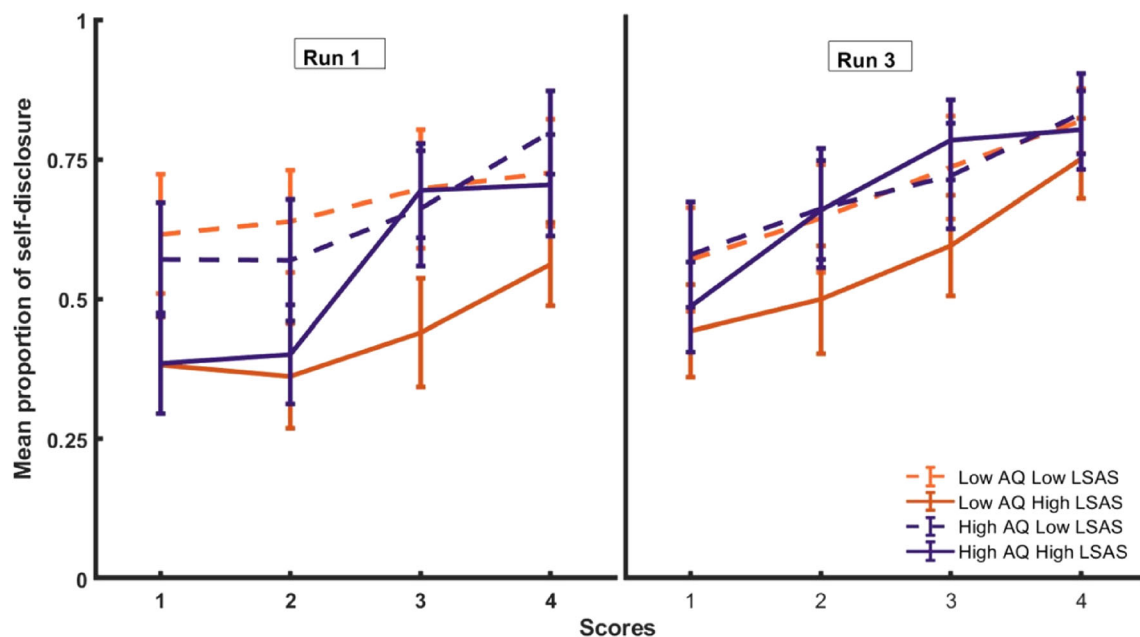


FIGURE 4 To understand the interactions in 1st and 3rd runs we here plot the proportion of social disclosure in relation to the score awarded and the median split-based subgroups with high and low autistic traits measured on AQ and high and low social anxiety measured on LSAS.

in both 1st and 3rd runs, suggesting a significant role of social anxiety on self-disclosure. There is also a significant two-way interaction between scores awarded and LSAS. These results show that social anxiety influenced participants' decision to disclose their scores more selectively, which in this case meant that participants with high LSAS scores disclosed their high scores more often than low scores.

We also found a significant three-way interaction between scores awarded, AQ, and LSAS on the 1st run. These results suggest that the presence of high autistic traits along with high social anxiety and the levels of scores awarded can have a differential effect on the decision to self-disclose. To understand this effect further we created sub-groups of high- and low-scorers on the AQ and LSAS, based on a median split of the data

on each measure. As shown in Figure 4, participants disclose their scores more when they are awarded a better score (upward slope of the lines); and participants with high LSAS scores are generally less likely to self-disclose (solid lines). The interaction seems to be influenced primarily by the high-LSAS-high-AQ group, who disclose very little when they are awarded low scores but a lot more when they are awarded high scores (solid blue line).

Looking at the plot for run 3 reveals similar effects. There is a two-way interaction between AQ and LSAS on the 3rd run. Once again, the decision to disclose scores seems to be influenced primarily by an interaction between social anxiety and autistic traits.

Overall self-disclosure: The participants chose to disclose their scores with the other player on more than half

of the sets in the first run ($M = 11.40$, $SD = \pm 7.23$ out of 20 sets) as well as on the 3rd run ($M = 12.60$, $SD = \pm 6.15$) after the “other player” had their turn. A paired sample *t*-test shows that the score sharing increased significantly in the 3rd run ($t(76) = -2.37$, $p = 0.020$).

DISCUSSION

The aim of this study was to explore how autistic traits and social anxiety may affect the tendency to self-disclose and act to build a social reputation. In this study, using a self-disclosure task, we find the following key results. First, participants engage in selective self-disclosure to enhance their social reputation. Second, social anxiety reliably predicts the tendency to self-disclose while autistic traits influence self-disclosure only when co-occurring with high social anxiety traits. Finally, adults with co-occurring high autistic traits and high social anxiety are the most sensitive to maintaining a positive social reputation by sharing high scores more often than low scores. We have additionally found that self-disclosure increases after engaging in a social interaction that promotes it. We now discuss these results in relation to previous studies investigating how autistic traits and social anxiety may affect reputation management.

Selective self-disclosure

The ubiquity of social media now gives many people the opportunity to share information about themselves and to carefully curate what information they share (Ahern et al., 2007). In this study, we found that typical adults disclosed their scores on an online platform to the other player more when they were awarded a higher score than when they were awarded a lower score. This finding is consistent with the literature suggesting that computer-based interactions encourage people to selectively share information about themselves that help presents a positive self-image (Walther, 1996). People disclose information about themselves more when they expect positive feedback from others (Schlosser, 2020). Hence, self-disclosure is used as a social currency to form relationships and liking (Omarzu, 2000). However, achievements or failures do not always predict self-disclosure behavior. As we see in the present study, participants disclosed their higher score more than the lower score but the levels of score do not always reliably predict if a participant would disclose this information to others. Several other factors play a role in determining if a person would disclose information about the self or not. Self-disclosure or sharing information about the self is an inherently rewarding experience (Csibra & Gergely, 2011). People choose to give up monetary gains to be able to disclose information about themselves rather than to share a fact (Tamir & Mitchell, 2012). Also, people feel obliged to disclose information about themselves when their communication

partner does so (Omarzu, 2000). This might further explain the increased self-disclosure we found in the present study in the 3rd run when participants observed their communication partner disclose both their high and low scores. In the next section, we discuss some personality traits that influence the decision to share information about self and to build a positive social reputation.

Impact of social anxiety and autistic traits on selective self-disclosure

The findings from this study indicate that social anxiety plays a significant role in influencing people's self-disclosure of performance. People with high social anxiety were less likely to disclose information about their performance than those with low anxiety (reflected in the main effect of social anxiety for runs 1 and 3), but, like people with low social anxiety, they were more likely to disclose their performance outcome when their score was higher (reflected by the two-way interaction in run 1). This is consistent with the idea that people with high social anxiety adopt a self-protective stance in which they limit their self-disclosure to a minimum, hence reducing the chances of being negatively evaluated (Meleshko & Alden, 1993). Online interactions are particularly helpful for socially anxious people as they allow them to overcome the cognitive burden of processing their and their partner's non-verbal cues and focus only on verbal responses (High & Caplan, 2009). At the same time, online interactions help conceal undesirable cues such as blushing, looking away, or anxious body movements hence helping socially anxious people to present themselves in a positive light (High & Caplan, 2009). Findings from the present study support this idea of selective self-presentation by socially anxious people on online platforms, as our participants with high social anxiety selectively concealed their low scores. We observed that the interaction between scores and social anxiety is not as strong in the 3rd run as it was in the 1st run of the participants' performance. The major difference between these two runs was a middle run in which the other player (computer) completed the dot guessing game while the participants observed. The other player disclosed a mix of low and high scores hence setting a “not too high” performance standard. It is reported that socially anxious people perceive themselves more negatively when the expected standard of performance is set high than when it is set low (Wallace & Alden, 1997). Their self-evaluation is more affected by the expected performance standards than by their own performance, hence their tendency to hide “not so favorable” information about self might be context-dependent (Moscovitch & Hofmann, 2007). Since in our task the expected standard of performance was set as “not too high”, it might have helped participants feel comfortable sharing their low scores as well.

Unlike social anxiety, we found that autistic traits had little impact on self-disclosure independently of

social anxiety. People with high as well as low autistic traits disclosed information about their performance in largely the same way (reflected by the non-significant main effect of autistic traits in the regression). Looking at the cognitive mechanisms underlying reputation management, these findings are contrary to the reduced social motivation theory (Chevallier, Kohls, et al., 2012) which claims that people with higher autistic traits may have a lower motivation to maintain social reputation. Interestingly, the coexisting traits of high social anxiety changed this “indifference” to reputation management but only in people with high autistic traits. Our findings suggest that participants with high autistic traits co-occurring with high social anxiety are more sensitive to their social reputation than those with low social-anxiety and/or low autistic traits. These findings suggest that while our participants with high autistic traits were aware of the strategies that could be used to maintain a high social reputation, only those with additional social anxiety used them. The findings suggest that while people with varying levels of autistic traits have comparable abilities to reflect on what others may think about them, they may not attempt to change manage their reputation unless they have a tendency to feel anxious about negative evaluation of others. This is consistent with the findings of Cage et al. (2013) who discussed the role of positive motivation (i.e., expectation of benefitting from engaging in social behaviors) on reputation management in autistic people. They found that while autistic people may not engage in reputation management (donation to a charity) in the presence of others, they do engage in it when expecting tangible personal benefit (expecting reciprocity in donations to them). This supports the idea that autistic people can identify behaviors that may result in a better social reputation but may not always engage in them.

Previous studies exploring reputation management in autistic participants did not evaluate co-existing social anxiety or anxiety traits. It is possible that the mixed findings reported on reputation management in autism emerge from the sample differences in co-existing social anxiety. It is known that autistic people are more likely to have negative social experiences which increase their sensitivity to social rejection or lead them to have lower expectations of positive social interactions (Acker et al., 2018; Rowley et al., 2012). Autistic adolescents are also more likely to report low self-esteem than comparable non-autistic adolescents with similar negative social experiences (Sebastian et al., 2009). This further highlights the need to examine the effects of autistic traits and co-occurring social anxiety when exploring social reputation management.

Limitations

The participants included in the present study were recruited from a range of settings including local support groups, autism charities, and University students to

capture a broad population with varying levels of autistic traits. This resulted in a sample that is unlike the typical population, as our sample had a much higher proportion of people with high social anxiety and high autistic traits. However, this gave us a wide spread of scores on measures of autistic traits and social anxiety to explore linear relations with other variables.

The small number of participants in the study might have limited the power to detect smaller effects, particularly multi-factorial interactions. A post-hoc analysis indicated that we were sufficiently powered (0.8) to detect medium effects or larger (odds ratio of 0.33 or greater), suggesting that smaller effects may have been missed.

While we have a good spread of scores on tools used in the study, the absence of information about the diagnostic status of the participants, and the small sample size, limit the generalization of findings to the larger population. Therefore, it would be important to replicate the study with a larger sample size, potentially with a sample that includes autistic participants with varying levels of anxiety.

Unlike the natural social or online social situations, we presented a highly restricted social environment to the participants. While it helped us ensure better control over unpredictable social situations, it significantly limited the ecological validity of the task. Despite the limitations listed here, these preliminary findings with people with high autistic traits and high social anxiety present a strong rationale for future exploration of the role of co-occurring anxiety in influencing reputation management in autistic people.

Implications

The results from this study help us understand the possible factors affecting mixed findings on reputation management in autistic people. It also highlights the importance of measuring the role of social anxiety when exploring social cognition and social decision-making in autism. Finally, these findings hint toward how co-occurring anxiety may make autistic people hypersensitive to any social evaluation, needing specialized support to manage social situations. Systematic exploration of co-existing social anxiety and autistic traits, as presented in this study, can give us insights into the underlying mechanisms through which these factors affect social behaviors, hence guiding suitable treatment approaches.

CONCLUSION

Overall, findings from this study suggest that reputation management, measured as the propensity to self-disclosure in an online game, is influenced by whether the score was high or low, severity of social anxiety, and whether the other player shared their scores. The findings also suggest that people irrespective of their autistic traits

engage in reputation management when motivated to avoid negative evaluation. Furthermore, the co-existence of high autistic traits and social anxiety may make people sensitive to their social reputation. This needs further investigation to see if similar findings are seen in people who have a diagnosis of autism with and without a social anxiety disorder.

AUTHOR CONTRIBUTIONS

Indu Dubey and Antonia Hamilton contributed to the study conception, design, and material preparation. Data collection was done by Indu Dubey and Ameena Tahir. Statistical analysis was performed by Indu Dubey, Ameena Tahir, Maddie Groom, and Antonia Hamilton. The first draft of the manuscript was written by Indu Dubey and all authors commented on previous versions of the manuscript. All authors read and approved the final manuscript.

ACKNOWLEDGMENTS

This research was financially supported by University of Nottingham.

CONFLICT OF INTEREST STATEMENT

The authors have no competing interests to declare that are relevant to the content of this article.

DATA AVAILABILITY STATEMENT

Anonymized data will be made available on the University of Nottingham's data repository upon publication of the manuscript.

ETHICS APPROVAL

This study was reviewed by the Faculty of Medicine & Health Sciences, Division of Psychiatry and Applied Psychology sub-committee, University of Nottingham. All procedures performed in this study were in accordance with the ethical standards of the University of Nottingham and with the 1964 Helsinki declaration and its later amendment in 2008.

CONSENT

All the participants provided informed written consent prior to the data collection.

ORCID

Indu Dubey  <https://orcid.org/0000-0002-3937-1058>

REFERENCES

- Acker, L., Knight, M., & Knott, F. (2018). 'Are they just gonna reject me?' Male adolescents with autism making sense of anxiety: An interpretative phenomenological analysis. *Research in Autism Spectrum Disorders*, *56*, 9–20. <https://doi.org/10.1016/j.rasd.2018.07.005>
- Ahern, S., Eckles, D., Good, N. S., King, S., Naaman, M., & Nair, R. (2007). Over-exposed? *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*, 357–366. <https://doi.org/10.1145/1240624.1240683>
- Attwood, T. (2000). Strategies for improving the social integration of children with asperger syndrome. *Autism*, *4*(1), 85–100. <https://doi.org/10.1177/1362361300004001006>
- Baron-Cohen, S., Leslie, A. M., & Frith, U. (1985). Does the autistic child have a "theory of mind"? *Cognition*, *21*(1), 37–46. [https://doi.org/10.1016/0010-0277\(85\)90022-8](https://doi.org/10.1016/0010-0277(85)90022-8)
- Baron-Cohen, S., Wheelwright, S., Skinner, R., Martin, J., & Clubley, E. (2001). The autism-spectrum quotient (AQ): Evidence from Asperger syndrome/high-functioning autism, males and females, scientists and mathematicians. *Journal of Autism and Developmental Disorders*, *31*(1), 5–17.
- Cage, E., Bird, G., & Pellicano, E. (2016). Reputation Management in Children on the autism Spectrum. *Journal of Autism and Developmental Disorders*, *46*(12), 3798–3811. <https://doi.org/10.1007/s10803-016-2923-1>
- Cage, E., Pellicano, E., Shah, P., & Bird, G. (2013). Reputation management: Evidence for ability but reduced propensity in autism. *Autism Research*, *6*(5), 433–442. <https://doi.org/10.1002/aur.1313>
- Chevallier, C., Kohls, G., Troiani, V., Brodtkin, E. S., & Schultz, R. T. (2012). The social motivation theory of autism. *Trends in Cognitive Sciences*, *16*(4), 231–239. <https://doi.org/10.1016/j.tics.2012.02.007>
- Chevallier, C., Molesworth, C., & Happé, F. (2012). Diminished social motivation negatively impacts reputation management: Autism spectrum disorders as a case in point. *PLoS One*, *7*(1), e31107. <https://doi.org/10.1371/journal.pone.0031107>
- Constantino, J. N., & Todd, R. D. (2003). Autistic traits in the general population. *Archives of General Psychiatry*, *60*(5), 524. <https://doi.org/10.1001/archpsyc.60.5.524>
- Csibra, G., & Gergely, G. (2011). Natural pedagogy as evolutionary adaptation. *Philosophical Transactions of the Royal Society B: Biological Sciences*, *366*(1567), 1149–1157. <https://doi.org/10.1098/rstb.2010.0319>
- Erwin, B. A., Turk, C. L., Heimberg, R. G., Fresco, D. M., & Hantula, D. A. (2004). The internet: Home to a severe population of individuals with social anxiety disorder? *Journal of Anxiety Disorders*, *18*(5), 629–646. <https://doi.org/10.1016/j.janxdis.2003.08.002>
- Freeth, M., Bullock, T., & Milne, E. (2013). The distribution of and relationship between autistic traits and social anxiety in a UK student population. *Autism*, *17*(5), 571–581. <https://doi.org/10.1177/1362361312445511>
- Hall, R. (2022). *Wordle creator overwhelmed by global success of hit puzzle*. The Guardian.
- High, A. C., & Caplan, S. E. (2009). Social anxiety and computer-mediated communication during initial interactions: Implications for the hyperpersonal perspective. *Computers in Human Behavior*, *25*(2), 475–482. <https://doi.org/10.1016/j.chb.2008.10.011>
- Hunsche, M. C., Cervin, M., Storch, E. A., Kendall, P. C., Wood, J. J., & Kerns, C. M. (2022). Social functioning and the presentation of anxiety in children on the autism spectrum: A multimethod, multiinformant analysis. *Journal of Psychopathology and Clinical Science*, *131*(2), 198–208. <https://doi.org/10.1037/abn0000724>
- Izuma, K., Matsumoto, K., Camerer, C. F., & Adolphs, R. (2011). Insensitivity to social reputation in autism. *Proceedings of the National Academy of Sciences*, *108*(42), 17302–17307. <https://doi.org/10.1073/pnas.1107038108>
- James, R. J. E., Dubey, I., Smith, D., Ropar, D., & Tunney, R. J. (2016). The latent structure of autistic traits: A Taxometric, latent class and latent profile analysis of the adult autism Spectrum quotient. *Journal of Autism and Developmental Disorders*, *46*(12), 3712–3728. <https://doi.org/10.1007/s10803-016-2897-z>
- Kanne, S. M., Christ, S. E., & Reiersen, A. M. (2009). Psychiatric symptoms and psychosocial difficulties in young adults with autistic traits. *Journal of Autism and Developmental Disorders*, *39*(6), 827–833. <https://doi.org/10.1007/s10803-008-0688-x>
- Liebowitz, M. R. (1987). Social phobia. *Modern Problems of Pharmacopsychiatry*, *22*, 141–173.

- Maddox, B. B., & White, S. W. (2015). Comorbid social anxiety disorder in adults with autism Spectrum disorder. *Journal of Autism and Developmental Disorders*, 45(12), 3949–3960. <https://doi.org/10.1007/s10803-015-2531-5>
- Markovitzky, O., Anholt, G. E., & Lipsitz, J. D. (2012). Haven't we met somewhere before? The effects of a brief internet introduction on social anxiety in a subsequent face to face interaction. *Behaviour Research and Therapy*, 50(5), 359–365. <https://doi.org/10.1016/j.brat.2012.02.002>
- McCroskey, J. C., & Richmond, V. P. (1976). The effects of communication apprehension on the perception of peers. *Western Speech Communication*, 40(1), 14–21. <https://doi.org/10.1080/10570317609373881>
- Meleshko, K. G., & Alden, L. E. (1993). Anxiety and self-disclosure: Toward a motivational model. *Journal of Personality and Social Psychology*, 64(6), 1000–1009. <https://doi.org/10.1037/0022-3514.64.6.1000>
- Moscovitch, D. A., & Hofmann, S. G. (2007). When ambiguity hurts: Social standards moderate self-appraisals in generalized social phobia. *Behaviour Research and Therapy*, 45(5), 1039–1052. <https://doi.org/10.1016/j.brat.2006.07.008>
- Omarzu, J. (2000). A disclosure decision model: Determining how and when individuals will self-disclose. *Personality and Social Psychology Review*, 4(2), 174–185. https://doi.org/10.1207/S15327957PSPR0402_05
- Pearcey, S., Gordon, K., Chakrabarti, B., Dodd, H., Halldorrsson, B., & Creswell, C. (2021). Research review: The relationship between social anxiety and social cognition in children and adolescents: A systematic review and meta-analysis. *Journal of Child Psychology and Psychiatry*, 62(7), 805–821. <https://doi.org/10.1111/jcpp.13310>
- Robert Lesser. (2022). *Wordle, 15 million tweets later*. <https://Observablehq.Com/@rlesser/Wordle-Twitter-Exploration>.
- Ronald, A., Viding, E., Happé, F., & Plomin, R. (2006). Individual differences in theory of mind ability in middle childhood and links with verbal ability and autistic traits: A twin study. *Social Neuroscience*, 1(3–4), 412–425. <https://doi.org/10.1080/17470910601068088>
- Rowley, E., Chandler, S., Baird, G., Simonoff, E., Pickles, A., Loucas, T., & Charman, T. (2012). The experience of friendship, victimization and bullying in children with an autism spectrum disorder: Associations with child characteristics and school placement. *Research in Autism Spectrum Disorders*, 6(3), 1126–1134. <https://doi.org/10.1016/j.rasd.2012.03.004>
- Rytwinski, N. K., Fresco, D. M., Heimberg, R. G., Coles, M. E., Liebowitz, M. R., Cissell, S., Stein, M. B., & Hofmann, S. G. (2009). Screening for social anxiety disorder with the self-report version of the Liebowitz social anxiety scale. *Depression and Anxiety*, 26(1), 34–38. <https://doi.org/10.1002/da.20503>
- Sasson, N. J., & Bottema-Beutel, K. (2022). Studies of autistic traits in the general population are not studies of autism. *Autism*, 26(4), 1007–1008. <https://doi.org/10.1177/13623613211058515>
- Schlenker, B. R., & Leary, M. R. (1985). Social anxiety and communication about the self. *Journal of Language and Social Psychology*, 4(3–4), 171–192. <https://doi.org/10.1177/0261927X8543002>
- Schlosser, A. E. (2020). Self-disclosure versus self-presentation on social media. *Current Opinion in Psychology*, 31, 1–6. <https://doi.org/10.1016/j.copsyc.2019.06.025>
- Sebastian, C., Blakemore, S.-J., & Charman, T. (2009). Reactions to ostracism in adolescents with autism Spectrum conditions. *Journal of Autism and Developmental Disorders*, 39(8), 1122–1130. <https://doi.org/10.1007/s10803-009-0725-4>
- Spain, D., Sin, J., Linder, K. B., McMahon, J., & Happé, F. (2018). Social anxiety in autism spectrum disorder: A systematic review. *Research in Autism Spectrum Disorders*, 52, 51–68. <https://doi.org/10.1016/j.rasd.2018.04.007>
- Stein, M. B., & Stein, D. J. (2008). Social anxiety disorder. *The Lancet*, 371(9618), 1115–1125. [https://doi.org/10.1016/S0140-6736\(08\)60488-2](https://doi.org/10.1016/S0140-6736(08)60488-2)
- Tamir, D. I., & Mitchell, J. P. (2012). Disclosing information about the self is intrinsically rewarding. *Proceedings of the National Academy of Sciences*, 109(21), 8038–8043. <https://doi.org/10.1073/pnas.1202129109>
- Tennie, C., Frith, U., & Frith, C. D. (2010). Reputation management in the age of the world-wide web. *Trends in Cognitive Sciences*, 14(11), 482–488. <https://doi.org/10.1016/j.tics.2010.07.003>
- The MathWorks Inc. (2000). Natick, MA.
- Uziel, L. (2007). Individual differences in the social facilitation effect: A review and meta-analysis. *Journal of Research in Personality*, 41(3), 579–601. <https://doi.org/10.1016/j.jrp.2006.06.008>
- Wallace, S. T., & Alden, L. E. (1997). Social phobia and positive social events: The price of success. *Journal of Abnormal Psychology*, 106(3), 416–424. <https://doi.org/10.1037/0021-843X.106.3.416>
- Walther, J. B. (1996). Computer-mediated communication. *Communication Research*, 23(1), 3–43. <https://doi.org/10.1177/009365096023001001>
- Weidman, A. C., Fernandez, K. C., Levinson, C. A., Augustine, A. A., Larsen, R. J., & Rodebaugh, T. L. (2012). Compensatory internet use among individuals higher in social anxiety and its implications for well-being. *Personality and Individual Differences*, 53(3), 191–195. <https://doi.org/10.1016/j.paid.2012.03.003>
- White, S. W., & Roberson-Nay, R. (2009). Anxiety, social deficits, and loneliness in youth with autism Spectrum disorders. *Journal of Autism and Developmental Disorders*, 39(7), 1006–1013. <https://doi.org/10.1007/s10803-009-0713-8>
- Witwer, A. N., & Lecavalier, L. (2010). Validity of comorbid psychiatric disorders in youngsters with autism Spectrum disorders. *Journal of Developmental and Physical Disabilities*, 22(4), 367–380. <https://doi.org/10.1007/s10882-010-9194-0>

SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

How to cite this article: Dubey, I., Groom, M., Tahir, A., & Hamilton, A. (2023). Social anxiety is more likely to influence reputation management decisions than autistic traits. *Autism Research*, 1–11. <https://doi.org/10.1002/aur.3040>