



# From autistic pragmatic language problems to a negative attitude toward human nature—a serial multiple mediation model

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## ABSTRACT

It has recently been found that individuals high in autistic traits tend to believe that they are usually not treated fairly. In the present study, it is assumed that such a lowered personal belief in a just world is based on cumulative humiliation experiences that stem from autistic pragmatic language problems (e.g., communicating in a monotonous voice, not being “in tune” with others during conversations). Furthermore, the less individuals believe that they receive fair treatment, the more they may develop a negative attitude toward human nature (i.e., believing that humans are generally untrustworthy, unfair, and unhelpful). The serial multiple mediation model reflecting these assumptions received initial empirical support in a nonclinical sample ( $N = 344$ ). Implications for professional health care are addressed.

Recently, Bertrams (2021) found that people high in autistic traits tend to develop a relatively low personal belief in a just world. The personal belief in a just world reflects the extent to which people believe that they are treated fairly personally (Dalbert, 1999). Bertrams (2021) argued that one reason for this relationship between a generally pessimistic view of how one is treated and an autistic personality may be disturbing social experiences, such as being humiliated. Research has shown that being autistic carries an increased risk of maltreatment, such as being bullied in school (Maïano et al., 2016). Bertrams (2021) also suggested that autistic norm-deviating particularities in communication and social interaction may be one cause for receiving social maltreatment, which may then lead to a decrease in the personal just world belief as the more abstract generalization of such concrete negative social experiences. Because Bertrams (2021) did not directly measure and analyze this pattern, it was accomplished in the present study.

As an additional aspect of the present research, it is examined whether, from a relatively low personal just world belief (or high nonbelief), a more pronounced negative attitude toward human nature can follow. Research on negative attitudes toward human nature has a long history. Through Rosenberg's (1956) work, the negative attitude toward human nature became prominent as an individual difference variable in psychological and sociological research. This construct can be described as the extent to which someone believes that people in general are untrustworthy, unfair, and unhelpful (Smith, 1997). Believing that humans are inherently bad may be one logical consequence of the generalized thinking that one is usually not treated fairly

by other humans. In previous research, a stronger negative attitude toward human nature was found to be related to higher health care avoidance and a more negative attitude toward health care facilities (Alvaro and Burgoon, 1995). Thus, a negative attitude toward human nature may represent an adverse condition in seeking and receiving therapeutic help that may improve mental health problems resulting from traumatic social interactions.

In sum, the present study assumes that four variables may be influential in the following sequence (see Fig. 1): First, higher autistic pragmatic language problems predict more intense cumulative humiliation by others. Pragmatic language problems, as defined in the Broad Autism Phenotype Questionnaire (Hurley et al., 2007), are a crucial indicator of interactive difficulties resulting from autistic norm-deviating particularities in communication and social interaction (e.g., lack of reciprocity during conversations, not being comprehended, and speaking with a monotone voice). As pragmatic language problems are likely to be noticed by others as odd, these problems may affect the likelihood and intensity of humiliation. Second, more intensely experienced cumulative humiliation predicts that individuals are more likely to not believe that they are treated fairly in general. Third, a higher personal nonbelief in a just world predicts a stronger negative attitude toward human nature. Thus, a serial multiple mediation model was tested.

The present study first investigates the described process in a nonclinical population. One reason for this is that the variance in pragmatic language problems should be considerably restricted in a

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sample of formally diagnosed autistic people, as it is a diagnostic criterion for autism (American Psychiatric Association, 2013). Moreover, the dispositional affiliation motive is assessed as a covariate to assure that the presumed process is independent of general social motivation—that is, how strongly one is interested in positive contact with other humans *per se*.

## 1. Method

### 1.1. Participants

The data were collected via Prolific in September 2021. Prolific is a crowdsourcing platform for online research that has also been used to recruit participants for studies in the field of psychiatric research (e.g., Arsenakis et al., 2021). The usefulness of collecting empirical data via Prolific has recently been emphasized by Palan and Schitter (2018) and Arsenakis et al. (2021). Researchers can post links to their studies on the platform along with the respective description of the study and the associated payment amount. Registered crowdworkers see the advertised studies in their personal accounts, in which they can participate voluntarily.

Of the 401 participating individuals, 57 were excluded because of a failed attention check ( $n = 53$ ), a formal autism diagnosis ( $n = 3$ ), or English was not their first language ( $n = 1$ ). The final sample consisted of 344 US residents (for their sociodemographic data, see Table 1). Each participant was compensated for with £2. The minimum required sample size ( $N = 287$ ) was determined by a power analysis with respect to the five most relevant correlations (two-tailed,  $\rho H1 = 0.2$ ,  $\rho H0 = 0$ ,  $\alpha = 0.01$ ,  $1 - \beta = 0.80$ ). The expected effect size was based on the average published effect in personality and social psychology ( $r = 0.21$ ) (Richard et al., 2003). Due to expected participant exclusions, a reasonably larger sample was recruited. The final sample size was sufficiently large for the mediation analysis (Fritz and MacKinnon, 2007).

### 1.2. Procedure and measures

After giving informed consent, the participants provided their sociodemographic information. This was followed by an attention check (Bertrams and Schlegel, 2020): the question “Who is the current president of Russia?” was followed by the instruction not to choose any of the three response options (Boris Yeltsin, Vladimir Putin, or Dmitry Medvedev), but to click “continue” instead. If an answer was nevertheless given, it was considered a failed attention check. The subsequently described measures were then presented in a randomized order, each on a separate page. Finally, the participants were thanked, debriefed, and compensated.

#### 1.2.1. Broad Autism Phenotype Questionnaire (Hurley et al., 2007)

In this study, the primarily interesting subscale was *pragmatic language problems* (12 items, e.g., “My voice has a flat or monotone sound to it,” “I feel disconnected or ‘out of sync’ in conversations with others,” “People ask me to repeat things I’ve said because they don’t understand”). For auxiliary analyses, the two remaining subscales of the Broad Autism Questionnaire, *aloof personality* (12 items, e.g., “I would rather

**Table 1**

Demographic information for the present sample.

Age ( $M \pm 1SD$ )	26.50 $\pm$ 7.76 <sup>a</sup>
Gender	
Male	22.1%
Female	76.7%
Other	1.2%
Ethnicity	
Asian/Pacific Islander	5.8%
Black	9.9%
Hispanic or Latino	3.2%
Native American or American Indian	0.3%
White	73.5%
Mixed	4.9%
Other	2.3%
Highest level of education	
No High School Diploma (or equivalent)	0.9%
High School Diploma	36.0%
Bachelor’s degree	44.5%
Postgraduate degree	12.8%
Other	5.8%
Employment	
Self-employed	9.3%
State-employed	7.3%
Employed by private company or organization	54.4%
Homemaker	2.0%
Unemployed	15.7%
Other	11.3%

Note.  $N = 344$ .

<sup>a</sup> Age range: 18–66 years.

talk to people to get information than to socialize”) and *rigid personality* (12 items, e.g., “I feel a strong need for sameness from day to day”) were also assessed. The answers were provided on six-point scales, with options ranging from *very rarely* (1) to *very often* (6).

#### 1.2.2. Cumulative humiliation subscale (Hartling and Luchetta, 1999)

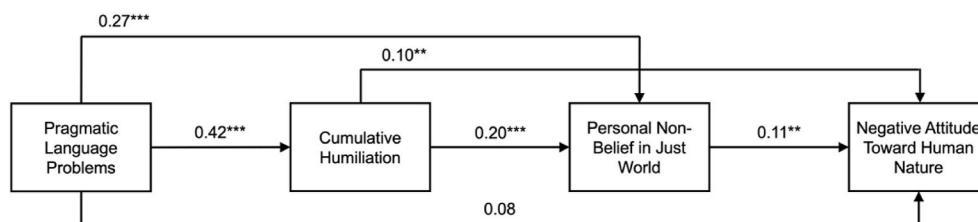
The item stem “Throughout your life how seriously have you felt harmed by being ...” was followed by 12 experiences, such as “... bullied,” “... excluded,” and “... embarrassed.” For each experience, the participants rated how much it applied to themselves on scales measured from *not at all* (1) to *very seriously* (5).

#### 1.2.3. Personal belief in a just world scale (Dalbert, 1999)

The participants responded to seven items (e.g., “I am usually treated fairly”) on seven-point scales with choices that ranged from *strongly disagree* (1) to *strongly agree* (7). For a more comprehensible presentation of the results, the responses were coded in such a way that higher values expressed a lower personal just world belief or a higher personal nonbelief in a just world.

#### 1.2.4. Misanthropy index (Smith, 1997)

A negative attitude toward human nature was assessed with the three items (e.g., “Generally speaking, would you say that most people can be trusted or that you can’t be too careful in dealing with people”) of the misanthropy index. This measure is used in the US General Social Survey (GSS) (Smith, 1997) and captures the extent of the belief that people in



**Fig. 1.** Serial Multiple Mediation Analysis

Note. Unstandardized path coefficients are shown.  $N = 344$ .  $*p \leq .05$ ,  $**p \leq .01$ ,  $***p \leq .001$  (all two-tailed).

general are untrustworthy (item 1), unfair (item 2), and unhelpful (item 3). (Note that this measure does not ask for any feelings of hate toward people; hence, the term “misanthropy” may be inappropriately chosen here.) The answers were given on three-point scales (e.g., [1] *most people can be trusted*, [2] *depends*, and [3] *you can't be too careful in dealing with people*).

### 1.2.5. Unified motive Scales—subscale affiliation (Schönbrodt and Gerstenberg, 2012)

To test whether the results hold beyond general social motivation, the affiliation motive was measured with 10 items (e.g., “I try to be in the company of friends as much as possible”), which were answered on six-point scales that range from *strongly disagree* (0) to *strongly agree* (5).

## 2. Results

### 2.1. Descriptive statistics

Table 2 depicts the descriptive statistics and bivariate correlations for the measured variables. Pragmatic language problems were significantly positively related to cumulative humiliation, personal nonbelief in a just world, and negative attitude toward human nature. Moreover, in line with the serial multiple mediation assumption, there were significant positive correlations between cumulative humiliation and personal nonbelief in a just world, as well as between personal nonbelief in a just world and negative attitude toward human nature.

### 2.2. Mediation analysis

A serial multiple mediation analysis based on 10,000 bootstrap samples (percentile method) was conducted using the analysis tool PROCESS, as described in Hayes (2018, model 6, pp. 168–180, 556, 587). In the respective statistical model, variables assumed to be causally prior are modeled as affecting all variables later in the sequence. It was examined whether pragmatic language problems predict a negative attitude toward human nature via the mediational sequence depicted in Fig. 1.

In line with the assumption of mediation, pragmatic language was found to be no longer directly significantly related to negative attitude toward human nature when the proposed mediators—cumulative humiliation and personal nonbelief in a just world—were statistically taken into account. However, as seen in Fig. 1, each variable predicted its hypothesized successor variable within the logical sequence of variables. The bootstrap interval for the whole mediational sequence did not include the null (95% CI [0.001, 0.02]). This result indicates that higher pragmatic language problems were related to a higher negative attitude toward human nature because pragmatic language problems were associated with a more severe experience of having been humiliated in

one's life, which in turn was related to a higher nonbelief in the idea that oneself is generally treated justly, a factor that was linked to a more pronounced attitude that humans are generally untrustworthy, unfair, and unhelpful. Notably, the relationships between pragmatic language problems and personal nonbelief in a just world, as well as between cumulative humiliation and negative attitude toward human nature, remained statistically significant (Fig. 1), indicating partial mediation at these positions in the overall model. The mediation analysis was repeated with the covariates aloof personality (broad autism phenotype), rigid personality (broad autism phenotype), age, gender, and affiliation motive (i.e., social motivation). The integration of the covariates did not change the results.

### 2.3. Auxiliary analyses

To test whether the mediational path to negative attitude toward human nature via cumulative humiliation and personal nonbelief in a just world is specific to the autistic trait of pragmatic language problems, two alternative serial multiple mediation analyses were run. First, pragmatic language problems were replaced by aloof personality, and second, by rigid personality as the initial variable in the model. As covariates, pragmatic language problems and either rigid personality or aloof personality, as well as age, gender, and affiliation motive, were added to the model. In neither of the two models, serial multiple mediation was found, as the bootstrapped 95% CIs for the mediational sequences in both cases included the null (10,000 bootstrap samples, percentile method).

## 3. Discussion and implications

The present study revealed initial evidence for the assumed relational sequence of autistic pragmatic language problems, cumulative humiliation, personal nonbelief in a just world, and a negative attitude toward human nature. In concrete terms, people who have norm-deviating communication and interaction peculiarities that could make them appear odd to others had a somewhat heightened likelihood of developing the view that humans are, in general, bad (i.e., untrustworthy, unfair, and selfish). This relationship was mediated by the self-perceived experiences of cumulative humiliations throughout one's life, from which one built the generalized belief that they are typically treated unfairly in this world. These findings were found to be independent of differences in age, gender, and general social motivation (affiliation motive) and specific to pragmatic language problems. Regarding the two other aspects of the broad autism phenotype, aloof personality and rigid personality, there was no supporting empirical evidence for corresponding mediation models.

A secondary finding was that cumulative humiliation only partially mediated the relationship between pragmatic language problems and

**Table 2**  
Descriptive statistics and correlations for study variables.

Variable	$\omega$	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8	9
1. Pragmatic language problems (BAPQ)	.77	2.86	0.68	–								
2. Aloof personality (BAPQ)	.90	3.15	0.82	.44***	–							
3. Rigid personality (BAPQ)	.85	3.31	0.73	.35***	.45***	–						
4. BAPQ total score	.89	3.10	0.58	.74***	.83***	.76***	–					
5. Cumulative Humiliation	.94	2.84	0.99	.29***	.23***	.24***	.32***	–				
6. Personal nonbelief in just world	.85	3.98	0.74	.33***	.25***	.20***	.33***	.34***	–			
7. Negative attitude toward human nature	.64 <sup>a</sup>	2.09	0.57	.19***	.25***	.29***	.31***	.25***	.23***	–		
8. Affiliation motive	.92	2.43	0.97	–.20***	–.76***	–.37***	–.59***	–.16**	–.17**	–.15**	–	
9. Age	–	26.50	7.76	–.22***	.01	–.06	–.11*	.05	.05	–.15**	–.10	–
10. Gender	–	–	–	.14**	.03	.11*	.11*	.07	.07	.14**	–.14**	–.27***

Note. *N* = 344 (*n* = 340 for statistics involving gender). BAPQ = Broad Autism Phenotype Questionnaire (the total score was not of interest in the present study; however, for interested researchers, the descriptive statistics are reported here). The overall scores of the psychometric scale were obtained by averaging the responses to the scale items. Coding for gender: 1 = male, 2 = female.

\**p* ≤ .05, \*\**p* ≤ .01, \*\*\**p* ≤ .001 (all two-tailed).

<sup>a</sup> Even though McDonald's  $\omega$  was low, the average inter-item correlation (.38) suggests a homogenous measure (Briggs and Cheek, 1986).

personal nonbelief in a just world. One possible explanation may be that personal nonbelief in a just world is determined not only by negative experiences but also by relatively stable personality traits, such as the Big Five (Nudelman, 2013). Pragmatic language problems have recently been found to be related to the Big Five in the same direction as the personal nonbelief in a just world (Lorenz and Algner, 2021). Thus, there may be some personality-based variance overlap between pragmatic language problems and personal nonbelief in a just world beyond humiliation experiences, explaining the respective significant path in the mediation model.

Furthermore, the mediation of the relationship between cumulative humiliation and a negative attitude toward human nature by personal nonbelief in a just world was only partial. This finding could be interpreted as two paths leading from cumulative humiliation to a negative attitude toward human nature. There may be an immediate, rather non-reflected and affective path: being repeatedly humiliated by others may directly instigate emotionally toned distrust toward people. In addition, there can be a mediated, more strongly cognitively reflected path via the experience-based global belief that one does not experience fairness in life (i.e., personal nonbelief in a just world), resulting in rationalized distrust. As an additional potentially relevant point, the variables of cumulative humiliation and negative attitude toward human nature are very concretely focused on the negative aspects of other people (i.e., their perceived misbehavior and their perceived negative character traits). In contrast, personal nonbelief in a just world captures perceived unfairness more abstractly. These differences may reflect the more affective path toward a negative attitude toward human nature on the one hand and the more cognitively reflected path via personal nonbelief in a just world on the other.

The present findings suggest one explanation, namely a negative attitude toward humans, for a previous finding that individuals who scored high on a measure of autistic traits were less prosocial than individuals who scored lower on the same traits (Jameel et al., 2014). At this point, it must be stated very clearly that this study tells nothing about hatred in autistic individuals. Unfortunately, the term “misanthropy” (ancient Greek for “to hate people”) is used in the applied measure and in some publications (e.g., Smith, 1997). However, the emotion of hatred was not captured by the items used.

Another central implication of the present findings was suggested in the introduction: a negative attitude in terms of what one can generally expect from other humans may obscure the awareness that actual help to resolve the humiliation-related trauma that contributed to this attitude can be obtained. The counselling and therapeutic support that may help improve mental well-being may not be sought by those who distrust others. Previous evidence suggests that a negative attitude toward human nature is associated with distrust in health care facilities and even the avoidance of health care offers (Alvaro and Burgoon, 1995). Despite this, counselors and therapists nevertheless have to care for distrusting and possibly resistant or noncompliant clients. In some cases, the present serial multiple mediation model could explain the underlying psychological reasons for this behavior. In optimal settings, timely support could prevent autistic individuals and others who are affected by difficulties in social communication and interaction from experiencing humiliation and its potential consequences. For instance, explicit anti-bullying strategies in schools could contribute a part (Carrington et al., 2017).

Previous studies that did not take the broad autism phenotype into account showed that humiliating social interactions, such as being bullied, can be associated with low mental health and well-being, as well as social problems (Chirichella-Besemer and Motta, 2008; Matthews et al., 2022; Pabian et al., 2022; Reijntjes et al., 2010; Takizawa et al., 2014). Moreover, being victimized has been found to predict decreased social trust (Lundberg and Abdelzadeh, 2019). The present study can add to this research, as it revealed relationships between cumulative humiliation, personal nonbelief in a just world, and a negative attitude toward human nature. The respective parts of the examined mediational

sequence may be informative, even with regard to people without pragmatic language problems.

Given that the investigated relational sequence of the four variables depicted in Fig. 1 has not yet been tested in prior research, the present results should be considered preliminary and should be replicated in further research. Additionally, there are several limitations that should be addressed in future studies, and a few of them should be mentioned here. Individuals with formal diagnoses of autism or other conditions related to communication and social interaction difficulties should be systematically included in the sampling procedure. Such inclusion would allow more direct conclusions to be drawn for clinical populations than is possible in this study. In view of the present findings, such an elaborate study seems promising; however, the restricted variance in social communication/interaction difficulty measures within samples of autistic individuals is a methodological challenge that must be considered. It also has to be noted that some of the relationships found were small in size; therefore, one should not infer, for example, that pragmatic language problems are regularly accompanied by a negative attitude toward the nature of the human race. While some individuals with pronounced autistic traits may be prone to developing such a potentially problematic attitude, others will not. There are, most certainly, protective moderating factors that were not taken into account in the present study, but this may provide useful insights in future research.

Most research on pragmatic language problems has been conducted in the context of autism. However, this could change, as since the fifth edition of the Diagnostic and Statistical Manual of Mental Disorders, the “social (pragmatic) communication disorder” exists as a separate diagnostic category beyond autism (Swineford et al., 2014). In addition, some studies have related pragmatic language problems to attention deficit hyperactivity disorder (e.g., Camarata and Gibson, 1999). Therefore, future studies on the relationship between pragmatic language problems on the one hand and cumulative humiliation, the personal nonbelief in a just world, and the negative attitude toward human nature on the other may extend the scope to a broader spectrum of diagnostic categories.

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#### Author contributions statement

AB conceived the project, designed the study, conducted the study, prepared the data set, analyzed the data and wrote the manuscript.

#### Ethical approval/informed consent

The research was conducted in accordance with the Declaration of Helsinki as revised 1989. The study was approved by the Institutional Review Board of the Faculty of Human Sciences at the University of Bern (reference number: 2019-05-00004). Informed consent of the participants was obtained after the nature of the procedures had been fully explained.

#### Declaration of competing interest

The author declares that he has no conflict of interest.

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