

Does empathy predict altruism in the wild?

Richard A. I. Bethlehem, Carrie Allison, Emma M. van Andel, Alexander I. Coles, Kimberley Neil & Simon Baron-Cohen

To cite this article: Richard A. I. Bethlehem, Carrie Allison, Emma M. van Andel, Alexander I. Coles, Kimberley Neil & Simon Baron-Cohen (2016): Does empathy predict altruism in the wild?, *Social Neuroscience*, DOI: [10.1080/17470919.2016.1249944](https://doi.org/10.1080/17470919.2016.1249944)

To link to this article: <http://dx.doi.org/10.1080/17470919.2016.1249944>



© 2016 The Author(s). Published by Informa UK Limited, trading as Taylor & Francis Group.



Accepted author version posted online: 19 Oct 2016.
Published online: 28 Oct 2016.



Submit your article to this journal [↗](#)



Article views: 37




View related articles [↗](#)



View Crossmark data [↗](#)

Does empathy predict altruism in the wild?

Richard A. I. Bethlehem , Carrie Allison, Emma M. van Andel, Alexander I. Coles, Kimberley Neil and Simon Baron-Cohen

Department of Psychiatry, Autism Research Centre, University of Cambridge, Cambridge, UK

ABSTRACT

Why do people act altruistically? One theory is that empathy is a driver of morality. Experimental studies of this are often confined to laboratory settings, which often lack ecological validity. In the present study we investigated whether empathy traits predict if people will act altruistically in a real-world setting, “in the wild”. We staged a situation in public that was designed to elicit helping, and subsequently measured empathic traits in those who either stopped to help or walked past and did not help. Results show that a higher number of empathic traits are a significant and positive predictor for altruistic behavior in a real-life situation. This supports the theory that the act of doing good is correlated with empathy.

ARTICLE HISTORY

Received 18 April 2016
Revised 11 October 2016
Published online 31 October 2016


KEYWORDS

Empathy; social behavior; altruism; real-life; autism

What motivates a person to help others? There are broadly two schools of thought. The first is a rule-based/systems-based morality. The idea is that we help others because we follow rules that specify when or where or who to help (such as the “golden rule”: treat others as you would wish to be treated), rules that we have either derived through our own logic (if everyone followed such a rule, the world would be a better place), or which we have acquired through our cultural, legal, or religious codes (Bloom, 2014). The second is an empathy-based morality. The idea is that the degree to which we help others is determined by the level of our empathy. Empathy has two components: “cognitive empathy”, the ability to recognize or infer what another person is feeling, including whether they are suffering; and “affective empathy”, our emotional response to their thoughts and feelings, which impels us to action (e.g., to reduce their suffering) (Baron-Cohen, 2011). Which of these two routes to morality we use are determined by the ratio of two independent psychological processes: systemizing and empathizing (Baron-Cohen, Richler, Bisarya, Gurunathan, & Wheelwright, 2003). Systemizing is defined as the drive to understand or build systems. Some people have a higher drive to systemize than to empathize, and other people have the converse cognitive profile. Yet, others are equally balanced in their interest/aptitude in systemizing and empathizing.

Both routes to morality have their strengths and weaknesses. Culturally derived rules, for example, can be based on legal codes drawn up by the very best, wisest minds in a society, to help the public to know what society values as good behavior. The downside is that rules can be drawn up by those with a specific agenda, and may result in people not intervening to help a person because it is not in the rules, or because the rules forbid it. An often-discussed example is that many doctors in hospitals under the Nazi regime did not intervene to prevent patients being “euthanized” (murdered) because the law stated that people in certain groups (e.g., those with disabilities) should be exterminated (Lifton, 1986). An equally clear example is how the U.S. law in the 19th century defined how a slave-owner could treat his slave, which could include excessive corporal punishment, torture, or killing—all legally sanctioned (Goodell, 1853).

Empathy-based morality also has its strengths: it can, for example, lead to remarkable, seemingly selfless acts of altruism, at high risk to oneself, such as jumping into deep water to save a child, impelled by seeing the child’s eyes filled with terror and pleading for help, or by imagining the child’s fear. A downside of empathy-based morality is that people’s emotions may cloud their judgment about what is the best course of action (Bloom, 2014). An example might be to stay to comfort a child who is crying at school, to reduce his or her fear,

CONTACT Richard A. I. Bethlehem  rb643@cam.ac.uk; Simon Baron-Cohen  sb205@cam.ac.uk,  Autism Research Centre, University of Cambridge, 18b Trumpington Road, CB2 8AH Cambridge, UK

Data presented in this manuscript are available upon request and in anonymized format.

© 2016 The Author(s). Published by Informa UK Limited, trading as Taylor & Francis Group.

This is an Open Access article distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0/>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

thereby preventing the child from learning to cope independently.

The present study does not pit one route to morality over the other, but simply aims to test empirically if the number of empathic traits an individual has are a good predictor of altruistic behavior in a real-life setting. In this way, the study seeks to collect evidence for the empathy-based route to morality and to validate a measure of empathic traits, using a questionnaire, in real life. We do not address the philosophical questions of whether pure altruism actually exists, or whether acts of kindness are in fact motivated by more selfish motives, as proposed by social exchange theory or utilitarianism (Keltner, Kogan, Piff, & Saturn, 2014). Social exchange theory would posit that acts of kindness are in fact the outcome of a cost-benefit analysis between two individuals that might be at least partly driven by a selfish motive (Homans, 1961). Rather than comparing the different routes to helping behavior, we test if empathic concern can be a key motivator for acts of altruism. How much empathy one has is itself a complex outcome of both biological factors (Chakrabarti et al., 2009; Chapman et al., 2006) and early upbringing (Bowlby, 1988; Fonagy, Gergely, & Target, 2007), and is a skill that can improve with development, learning, and practice (Schumann, Zaki, & Dweck, 2014).

In the present study we adopt the definition of the altruistic impulse as a spontaneous, disinterested helping and caring reaction to a person in distress (de Waal, 2008), operationalized in the form of helping behavior. The idea that empathy can drive altruistic behavior is well established in literature (Dovidio, 1991), although not often in real-life situations. For example, Toi and Batson (1982) showed that pure altruistic helping may override motivations based on a costs-benefit analysis. This was shown using a 2×2 design in which empathy demands (low vs. high) and the ease of escape (easy vs. difficult) were experimentally manipulated (Toi & Batson, 1982). They found that when empathy conditions were high (e.g., high similarity between participant and victim), helping also remained high in both conditions (even when it would have been easy to not help). Personal distress was unaffected, which suggests that helping is not motivated out of a selfish desire to relieve the helper of his or her own aversive distress arousal. In a similar 2×2 design Batson, Duncan, Ackerman, Buckley, and Birch (1981) also investigated whether (transient) empathic emotion would affect helping behavior to a degree where it would trump efforts related to ease of escape. Again they showed that empathic emotion led to stronger altruistic behavior. Pitting self-reports of empathic feelings against

personal distress in a small sample experimental study, Batson, O'Quin, Fultz, Vanderplas, and Isen (1983) also showed that the latter led to more egoistic, whereas the former led to more altruistic, motivation. Empathic concern also positively directs attention to another's welfare (Sibicky, Schroeder, & Dovidio, 1995). This suggests that empathic concern is a motivator for helping behavior (Batson & Ahmad, 2001; Batson & Moran, 1999). In one of the few studies that did use a real-life setting, Darley and Batson (1973) showed that hurriedness was a key predictor for helping behavior. The present study sought to validate empathic traits as a less transient predictor of real-life helping behavior.

A second objective we investigated was if the number of autistic traits an individual has might be a negative predictor of altruistic helping. It has long been suggested that a core feature of autism is a difference in theory of mind, a concept that largely overlaps with cognitive empathy (Baron-Cohen, 1995, 2011). In addition, individuals with autism might experience novel situations as more stressful (Wood & Gadow, 2010), which in turn might reduce their helping behavior. Thus, one would expect to find less helping behavior in individuals with more autistic traits. There is some evidence that shows individuals with more autistic traits make fewer altruistic choices (Jameel, Vyas, Bellesi, Roberts, & Channon, 2014). The present study focused on autistic traits as a dimensional personality trait measured using a questionnaire and did not use this measure to diagnose as diagnosis requires a clinical assessment. Nor was this aspect of the study intended to imply that individuals with autism are less motivated to help, but rather to test if the more autistic traits an individual has the more these might interfere with their confidence to step in and help others.

As stated before, most studies that have examined the relationship between empathy and altruism are laboratory-based and few are based in real-world settings (Einolf, 2006). One of the few influential studies to have done so dates back to 1973 (Darley & Batson, 1973). In their "Good Samaritan" study, Darley & Batson showed that hurriedness significantly impedes the inclination to help someone in need. In modern studies these types of real-life settings have become extremely scarce. The present study aimed to fill this gap. To this end we staged a scene in public—"in the wild"—in which a man sat on the ground next to a fallen bicycle, looking injured. This was similar to the original study setup used by Darley and Batson (1973). This scene was intended to elicit helping behavior. We followed up individuals who stopped to help and compared them to those who did not stop to help. After participants had passed by the staged scene, they were stopped by the experimenter and were told

they were participating in a study on “memory and personality traits”. This “cover story” was included so that the participant remained blind to the hypothesis.¹ The experimenter stopping them also remained blind as to the participant’s group membership (whether they had stopped to help or had walked past).

Both groups were subsequently asked to complete the Empathy Quotient (EQ) (Baron-Cohen & Wheelwright, 2004), a dimensional measure of empathy, as the primary predictor of who helped and who did not. In addition, they were asked to complete the Autism Spectrum Quotient (AQ) (Baron-Cohen, Wheelwright, Skinner, Martin, & Clubley, 2001), a dimensional measure of autistic traits, to test if the decision to help was independent of autistic traits. No measure of hurriedness was included as the focus of the present study was on the relationship between empathic traits and helping behavior. Hurriedness would likely also affect general participation in the study, but should have no effect on autistic or empathic traits. In addition, as contextual influences such as group size affect helping behavior in a bystander situation and even elicit differential neural responses (Goldberg, 1995; Hortensius & de Gelder, 2014), we only recruited participants who were unaccompanied. We used logistic regression analysis to test if either of these measures predicted if a person helped or not.

Methods

Participants

A total of 55 participants were recruited to take part in the study, of which 37 completed follow-up questionnaires. Participants were aged between 18 and 77 years (mean = 45.5 years, *sd* = 17.5), and comprised 19 males and 18 females. Participants were recruited as passersby on the street where the study was being conducted, and fulfilled the criteria of (a) being an adult; (b) walking unaccompanied, in the specified direction down the street; (c) having no visible physical impairment that might affect their ability to help. They were fully debriefed on completion of the study, and were permitted to withdraw at any stage. Ethical approval for the study was granted by the Cambridge University Psychology Research Ethics Committee. Participants were paid £6 for their participation if they completed both the recruitment stage and the two follow-up questionnaires. Observational data on whether individuals stopped or walked past were also collected from 1067 passersby who fulfilled the criterion of being unaccompanied, but were not necessarily

walking in the specified direction and who we could not always recruit for follow-up questionnaires because the experimenter was debriefing a previous passerby.

Procedure

Measuring the participant’s altruism was defined by their response (stopping to help or not stopping to help) to a staged scenario in the street. A male confederate sat on the ground near a bend in the road so he could only be observed by passersby once they had turned the corner, and he appeared as though he had just fallen off his bicycle. The confederate was positioned with his back to the path, to avoid a potential confounding factor of eye contact, the bicycle in a distorted position next to him (Figure 1, position B). He affected a look of moderate pain, and rubbed his ankle and winced. If a passerby stopped to help, they were told by the confederate that he had fallen off his bicycle 5 min earlier, and had hurt his ankle, but that he was fine and was resting. Participants were classified as helpers if they verbally inquired about the confederates well-being. The participant’s behavior was recorded by Experimenter 1, who was sitting across the road (Figure 1, position A). A second experimenter (Experimenter 2) stood 45 m up the street (Figure 1, position C). Experimenter 1 discreetly signaled to Experimenter 2 as to whether a participant met the inclusion criteria.

Irrespective of whether they stopped to help or not, participants were stopped further along the street by Experimenter 2 and asked whether they wanted to take part in a study about personality and memory. Informed consent was obtained when they agreed to take part. The participant was instructed by Experimenter 2 to recall any memorable features they had observed during the past 5 min of their journey. They were then informed that they would be sent the questionnaires by email, to complete later, and that they would be paid for completing these. Both Experimenters 1 and 2 were positioned so as to not be visible to the participant when they were passing the confederate, to reduce the likelihood that participants would realize the scene was staged. Experimenter 2 sat behind a bush that blinded her view of the staged scene, to ensure she was blind to the behavior of the participant.

Measures

Participants who agreed to be contacted after the recruitment stage with Experimenter 2 were instructed

¹Two participants explicitly inquired about the fallen cyclist and whether he was part of the study. These two individuals were therefore excluded from further analyses.



Figure 1. Experimenter 1 was seated on a bench at position A, the confederate was situated at position B, and Experimenter 2 was seated outside of the participants' field of view at position C.

to complete two questionnaires in their own time that were e-mailed to them. These were the EQ (Baron-Cohen & Wheelwright, 2004) and the AQ (Baron-Cohen et al., 2001). The AQ is a short 50-item self-administered questionnaire to identify the degree of autistic traits in an individual and has shown good re-test reliability (Baron-Cohen et al., 2001). The EQ is a 40-item self-administered questionnaire to assess empathic traits, and like the AQ has strong re-test reliability (Baron-Cohen & Wheelwright, 2004). At the end of the online questionnaires participants were fully debriefed about the actual nature of the study and given the option to opt out and leave any comments they might have about the study. None of the participants opted out at this stage.

Results

Logistic regression was performed for EQ and AQ. The reason for not including EQ and AQ in the same model is because these are strongly correlated (Wheelwright et al., 2006), as we confirmed (see Figure 2). Only individuals who had completed both measures were included in these models ($N = 34$). All statistical analyses were performed using R (R Core Team, 2015).

Results from the logistic regression show a positive predictive value for the EQ ($p = 0.0375$, Nagelkerke's $R^2 = 0.211$) with respect to helping (Table 1 and 2, Figure 3). The average EQ score in the helper group was 56.4 ± 19.5 , for the non-helper group the average EQ score was 42.6 ± 13.6 . The AQ did not have a

significant negative predictive value on helping ($p = 0.136$, Nagelkerke's $R^2 = 0.101$). The average AQ

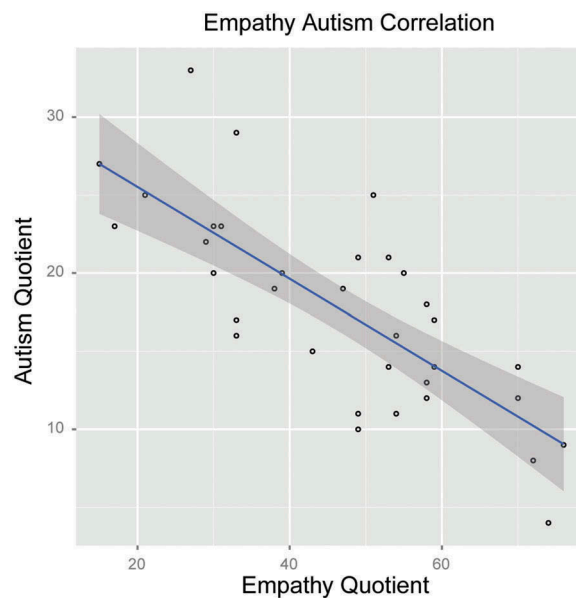


Figure 2. The strong negative correlation between the Autism Spectrum Quotient and the Empathy Quotient ($R = -0.76$, $p < 0.001$).

Table 1. Logistic regression for model 1 (EQ).

	β (S.E.)	Odds ratio	95% confidence interval	
			Lower	Upper
Model 1 (Intercept)		0.0203	0.0005	0.3051
EQ*	0.061 (0.030)	1.0625	1.0090	1.1353
$p(\text{EQ}) = 0.0375$, Nagelkerke $R^2 = 0.211$				

Table 2. Logistic regression for model 2 (AQ).

	β (S.E.)	Odds ratio	95% confidence interval	
			Lower	Upper
Model 2 (Intercept)		2.2941	0.2420	26.2401
AQ	-0.101 (0.067)	0.9039	0.7795	1.0235
$p(\text{AQ}) = 0.136$, Nagelkerke's $R^2 = 0.101$				

score in the helper group was 15.1 ± 7 , for the non-helper group the average was 18.8 ± 6 . There was only one individual who had an AQ score that could be considered indicative of autism and thus the range was largely restricted toward normative values. There was no significant effect of age on helping behavior ($p = 0.233$, Nagelkerke's $R^2 = 0.007$).

Observational data from anonymous passersby was used to test if perceived similarity (identifying with a fellow cyclist) might influence the act of helping. This sample included every single individual (either cyclist or pedestrian) that passed by (in either direction) the confederate, including the ones that participated in the

follow-up questionnaires. To investigate whether being a cyclist (more similarity) or pedestrian (less similarity) influenced helping, we calculated the odd ratio's for helpers and non-helpers in cyclists vs. pedestrians. Odds ratios did not show a significant helping bias for one or the other group: $\chi^2(1) = 2.595$, $p > .10$. See Table 3.

Discussion

The present study shows that in our selective sample of people who are passing by, EQ is a significant positive predictor of altruistic helping, confirming the notion that empathy may be a motivator of altruism. There was no significant predictive effect of AQ (Figure 2, and Table 1). The neurobiological mechanisms that underpin empathy have an evolutionary history (De Waal, 2012; Panksepp & Panksepp, 2013) and although empathy may have evolved in primates as a mechanism to facilitate parents "reading" the needs of their

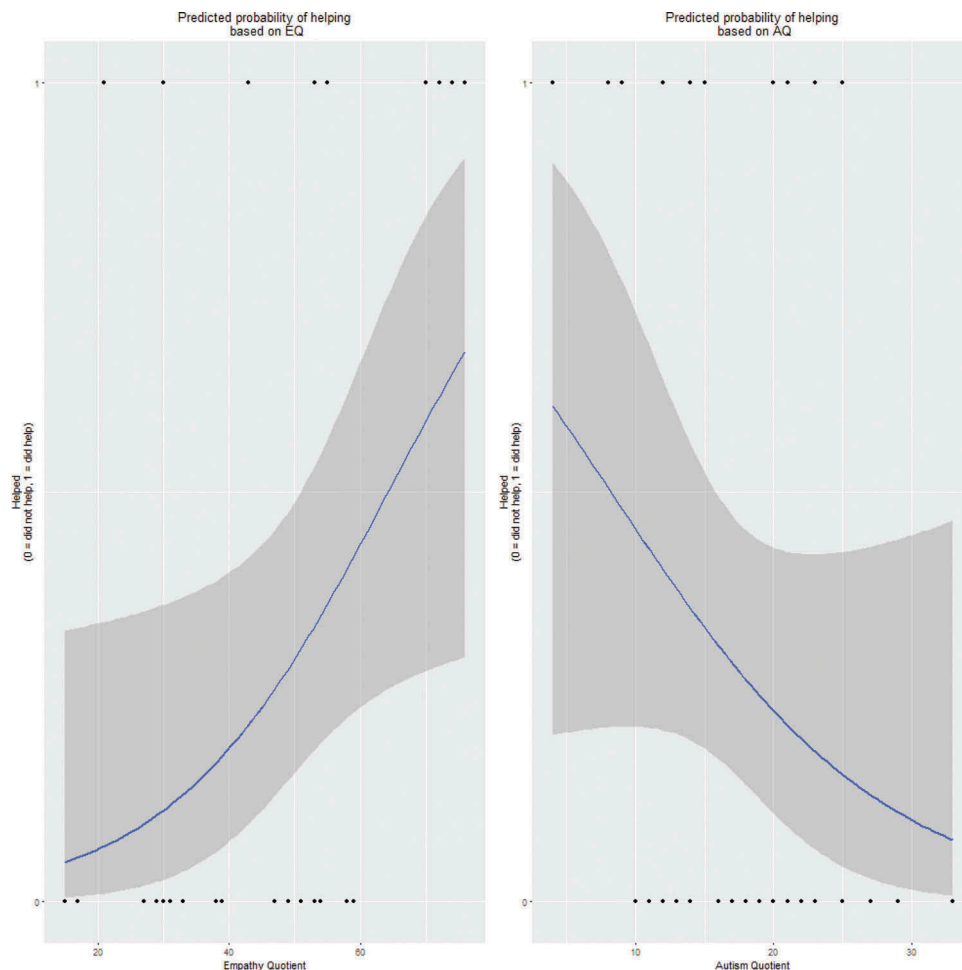


Figure 3. Predicted probability of helping based on EQ and AQ, showing a positive predictive value of EQ on helping. Model fits are summarized in Table 1.

Table 3. Chi-squared contingency table for observational data for those not meeting inclusion criteria.

		Helped		Total
		Yes	No	
Type	Pedestrian	31	414	445
	Cyclist	29	593	622
	Total	60	1007	1067

nonverbal infant (de Waal, 2012), thereby increasing the likelihood of the infant's survival to reproduction and passing on the relevant genes (Chakrabarti et al., 2009), it plays a role in a much wider variety of social relationships (Baron-Cohen, 2011; de Waal, 2012). The present research supports the notion that there are individual differences in empathy, some people being more prone to help than others (Hogeveen, Inzlicht, & Obhi, 2014), and that this is correlated with their level of empathy.

There is very little existing empathy research using real-world, "in the wild" data. One such study, by Hauser, Preston, and Stansfield (2014), suggested that affiliative motivations have a stronger influence on altruistic behavior than empathic ones. While the data from the present study cannot directly contradict those findings, it is worth noting that the condition for altruism in the Hauser et al. (2014) study (holding open a door) is an action that has little cost to the person, and also is not directly related to their distress. As such, performing the helping behavior would not decrease the person's distress. Therefore, it may be that empathy only becomes the main driving factor in altruistic behavior when the level of need is perceived to be beyond a certain point (thereby eliciting a greater empathic response), or when the altruistic behavior can relieve some of the other person's distress which is evoking the empathy. Future research could investigate how the cost of helping, or the saliency of the situation, influences the degree to which empathy plays a role.

We found no evidence to support the notion that more autistic traits negatively predict altruistic helping. It should be noted, however, that in the present study there was a bias toward individuals who score low on the AQ. Only one individual scored in a range that might be considered indicative of autism and follow-up confirmed that this individual had indeed received a formal diagnosis of autism. It is of interest that this individual was in fact one of the participants who helped. Although we do not expect the dimensional relation between AQ and helping to change by including a broader range of AQ scores, this cannot be ruled out based on the present data.

As can be seen from the observational data in Table 3, the vast majority of passersby did not help: in fact, only 7% of pedestrians stopped to help. In contrast, 29% of people who filled out the questionnaires helped. It is

likely that the reason people did not take part in the questionnaires overlaps with their reason for not helping. The main reason for both seemed to be that people were simply in a rush to get somewhere, which has been shown to reduce helping behavior (Darley & Batson, 1973). This was also noticed by experimenters and in anecdotal responses from participants who were approached but did not want to take part. In other words, it is likely that people who help a random stranger might also be more likely to take part in an online survey when approached by a stranger on the street. While this may explain the difference in participation between the number of helpers in the observational data and the number of helpers participating in the follow-up, it does not explain the relationship between empathic traits and helping behavior. It may have skewed our data toward a greater number of helpers and thus a potentially higher score on the EQ compared to a normative population, so future studies might want to include a larger and more normative sample.

From the present study, we conclude that autistic traits do not predict people's response to our staged situation. However, more research is needed to determine whether this might be the result of a selection bias or a true effect. Similarly, although the EQ scores seemed to be within the "normal" range (Baron-Cohen et al., 2014), future studies will have to determine whether this potential bias affected the present results.

Another interesting aspect for future studies would be to systematically investigate the role of gender in helping behavior in a real-life setting. In the present study, 80% of the helpers were female. Gender could not explicitly be included in the present analysis, due to the small sample size and due to the fact that gender interacts with both EQ and AQ (Baron-Cohen & Wheelwright, 2004; Ruzich et al., 2015). Adding gender into either model would thus introduce multicollinearity into the regression model. A previous study that explicitly investigated the modulation of gender in a real-life helping situation showed no strong effect of the gender of the person in need of help, but did show effects on the gender of the helper (Goldberg, 1995). Interestingly, and in contrast to the present study, men seemed to be more generous than women. Unfortunately, our recording of observational did not include gender of the passerby, this is an element that would certainly be worth including in future studies. Lastly, although we show no clear effect of age on helping behavior, the age range of the present sample was rather wide and future studies might want to delineate this aspect further.

In conclusion, the present study supports the notion that the act of doing good is correlated with empathy.

This in turn may suggest empathy to be a key motivator for helping behavior. Irrespective of whether there are other routes to altruistic helping or not, empathy is certainly one such route. The implication of the present study is that within any institution (even perhaps extreme inhumane institutions such as those under the Nazi regime), there will be individual differences in how people within the institution respond, and that some of this variation in helping behavior is accounted for by where on the empathy dimension the individual is situated.

Acknowledgments

This study was funded by the Autism Research Trust and the Medical Research Council. RB was funded by the Pinsent Darwin Trust, Medical Research Council and Cambridge Trust. The research was also supported by the National Institute for Health Research (NIHR) Collaboration for Leadership in Applied Health Research and Care East of England at Cambridgeshire and Peterborough NHS Foundation Trust. The views expressed are those of the author(s) and not necessarily those of the NHS, the NIHR, or the Department of Health. This study was submitted in part-fulfillment of the BA degree in Psychology, Cambridge University, by KN.

Disclosure statement

No potential conflict of interest was reported by the authors.

Funding

This work was supported by the Autism Research Trust and the Medical Research Council; Pinsent Darwin Trust, Medical Research Council and Cambridge Trust; National Institute for Health Research.

ORCID

Richard A. I. Bethlehem  <http://orcid.org/0000-0002-0714-0685>

References

- Baron-Cohen, S. (1995). *Mindblindness: An essay on autism and theory of mind*. Cambridge, MA: MIT Press.
- Baron-Cohen, S. (2011). *The science of evil: On empathy and the origins of cruelty*. New York, NY: Basic Books.
- Baron-Cohen, S., Cassidy, S., Auyeung, B., Allison, C., Achoukhi, M., Robertson, S., ... Lai, M. C. (2014). Attenuation of typical sex differences in 800 adults with autism vs. 3,900 controls. *PLoS One*, 9(7), e102251. doi:10.1371/journal.pone.0102251
- Baron-Cohen, S., Richler, J., Bisarya, D., Gurunathan, N., & Wheelwright, S. (2003). The systemizing quotient: An investigation of adults with Asperger syndrome or high-functioning autism, and normal sex differences. *Philosophical Transactions of the Royal Society B Biological Sciences*, 358 (1430), 361–374. doi:10.1098/rstb.2002.1206
- Baron-Cohen, S., & Wheelwright, S. (2004). The empathy quotient: An investigation of adults with Asperger syndrome or high functioning autism, and normal sex differences. *Journal of Autism Developmental Disorders*, 34(2), 163–175. doi:10.1023/B:JADD.0000022607.19833.00
- 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 Developmental Disorders*, 31(1), 5–17. doi:10.1023/A:1005653411471
- Batson, C. D., & Ahmad, N. (2001). Empathy-induced altruism in a prisoner's dilemma II: What if the target of empathy has defected? *European Journal of Social Psychology*, 31(1), 25–36. doi:10.1002/Ejsp.26
- Batson, C. D., Duncan, B. D., Ackerman, P., Buckley, T., & Birch, K. (1981). Is empathic emotion a source of altruistic motivation? *Journal of Personality and Social Psychology*, 40(2), 290–302. doi:10.1037/0022-3514.40.2.290
- Batson, C. D., & Moran, T. (1999). Empathy-induced altruism in a prisoner's dilemma. *European Journal of Social Psychology*, 29(7), 909–924. doi:10.1002/(Sici)1099-0992(199911)29:7<909::Aid-Ejsp965>3.0.Co;2-L
- Batson, C. D., O'Quin, K., Fultz, J., Vanderplas, M., & Isen, A. M. (1983). Influence of self-reported distress and empathy on egoistic versus altruistic motivation to help. *Journal of Personality and Social Psychology*, 45(3), 706–718. doi:10.1037/0022-3514.45.3.706
- Bloom, P. (2014). Against empathy. *Boston Review*. Retrieved from <http://bostonreview.net/forum/paul-bloom-against-empathy>
- Bowlby, J. (1988). *A secure base: Clinical applications of attachment theory*. London: Routledge.
- Chakrabarti, B., Dudbridge, F., Kent, L., Wheelwright, S., Hill-Cawthorne, G., Allison, C., ... Baron-Cohen, S. (2009). Genes related to sex steroids, neural growth, and social-emotional behavior are associated with autistic traits, empathy, and Asperger syndrome. *Autism Research*, 2(3), 157–177. doi:10.1002/aur.80
- Chapman, E., Baron-Cohen, S., Auyeung, B., Knickmeyer, R., Taylor, K., & Hackett, G. (2006). Fetal testosterone and empathy: Evidence from the empathy quotient (EQ) and the "reading the mind in the eyes" test. *Social Neuroscience*, 1(2), 135–148. doi:10.1080/17470910600992239
- Darley, J. M., & Batson, C. D. (1973). From Jerusalem to Jericho - Study of situational and dispositional variables in helping behavior. *Journal of Personality and Social Psychology*, 27(1), 100–108. doi:10.1037/H0034449
- de Waal, F. B. (2008). Putting the altruism back into altruism: The evolution of empathy. *Annual Review of Psychology*, 59, 279–300. doi:10.1146/annurev.psych.59.103006.093625
- de Waal, F. B. (2012). The antiquity of empathy. *Science*, 336 (6083), 874–876. doi:10.1126/science.1220999
- Dovidio, J. F. (1991). The empathy-altruism hypothesis: Paradigm and promise. *Psychological Inquiry*, 2(2), 126–128. doi:10.1207/s15327965pli0202_4
- Einolf, C. J. (2006). *The empathy-altruism hypothesis in the real world*. Paper presented at the annual meeting of the American Sociological Association, Montreal. http://citation.allacademic.com/meta/p104388_index.html

- Fonagy, P., Gergely, G., & Target, M. (2007). The parent-infant dyad and the construction of the subjective self. *Journal of Child Psychology and Psychiatry*, 48(3–4), 288–328. doi:10.1111/j.1469-7610.2007.01727.x
- Goldberg, T. L. (1995). Altruism towards panhandlers: Who gives? *Human Nature*, 6(1), 79–89. doi:10.1007/BF02734137
- Goodell, W. (1853). *The American slave code in theory and practice: Its distinctive features, shown by its statutes, judicial decisions, and illustrative facts*. New York, NY: Negro Universities Press.
- Hauser, D. J., Preston, S. D., & Stansfield, R. B. (2014). Altruism in the wild: When affiliative motives to help positive people overtake empathic motives to help the distressed. *Journal of Experimental Psychology: General*, 143(3), 1295–1305. doi:10.1037/a0035464
- Hogeveen, J., Inzlicht, M., & Obhi, S. S. (2014). Power changes how the brain responds to others. *Journal of Experimental Psychology: General*, 143(2), 755–762. doi:10.1037/a0033477
- Homans, G. (1961). *Social behavior: Its elementary forms* (pp. 13). New York, NY: Harcourt Brace Jovanovich.
- Hortensius, R., & de Gelder, B. (2014). The neural basis of the bystander effect—the influence of group size on neural activity when witnessing an emergency. *NeuroImage*, 93 (Pt 1), 53–58. doi:10.1016/j.neuroimage.2014.02.025
- Jameel, L., Vyas, K., Bellesi, G., Roberts, V., & Channon, S. (2014). Going ‘above and beyond’: Are those high in autistic traits less pro-social? *Journal of Autism and Developmental Disorders*, 44(8), 1846–1858. doi:10.1007/s10803-014-2056-3
- Keltner, D., Kogan, A., Piff, P. K., & Saturn, S. R. (2014). The sociocultural appraisals, values, and emotions (SAVE) framework of prosociality: Core processes from gene to meme. *Annual Review of Psychology*, 65, 425–460. doi:10.1146/annurev-psych-010213-115054
- Lifton, R. J. (1986). *The Nazi doctors: Medical killing and the psychology of genocide*. New York, NY: Basic Books.
- Panksepp, J., & Panksepp, J. B. (2013). Toward a cross-species understanding of empathy. *Trends in Neuroscience*, 36(8), 489–496. doi:10.1016/j.tins.2013.04.009
- R Core Team. (2015). *R: A language and environment for statistical computing*. R Foundation for Statistical Computing, Vienna, Austria. ISBN 3-900051-07-0. <http://www.R-project.org/>.
- Ruzich, E., Allison, C., Chakrabarti, B., Smith, P., Musto, H., Ring, H., & Baron-Cohen, S. (2015). Sex and STEM occupation predict autism-spectrum quotient (AQ) scores in half a million people. *PLoS One*, 10(10), e0141229. doi:10.1371/journal.pone.0141229
- Schumann, K., Zaki, J., & Dweck, C. S. (2014). Addressing the empathy deficit: Beliefs about the malleability of empathy predict effortful responses when empathy is challenging. *Journal of Personality and Social Psychology*, 107(3), 475–493. doi:10.1037/a0036738
- Sibicky, M. E., Schroeder, D. A., & Dovidio, J. F. (1995). Empathy and helping: considering the consequences of intervention. *Basic and Applied Social Psychology*, 16(4), 435–453. doi:10.1207/s15324834basp1604_3
- Toi, M., & Batson, C. D. (1982). More evidence that empathy is a source of altruistic motivation. *Journal of Personality and Social Psychology*, 43(2), 281–292. doi:10.1037/0022-3514.43.2.281
- Wheelwright, S., Baron-Cohen, S., Goldenfeld, N., Delaney, J., Fine, D., Smith, R., ... Wakabayashi, A. (2006). Predicting autism spectrum quotient (AQ) from the Systemizing Quotient-Revised (SQ-R) and Empathy Quotient (EQ). *Brain Research*, 1079(1), 47–56. doi:10.1016/j.brainres.2006.01.012
- Wood, J. J., & Gadow, K. D. (2010). Exploring the nature and function of anxiety in youth with autism spectrum disorders. *Clinical Psychology-Science and Practice*, 17(4), 281–292. doi:10.1111/j.1468-2850.2010.01220.x