Original Article

autism

Autism
2023, Vol. 27(5) 1492–1507

DOI: 10.1177/13623613221140695
journals.sagepub.com/home/aut
SAGE

Explicit stigma and implicit biases toward autism in South Korea versus the United States

So Yoon Kim[1*], Jeong Eun Cheon[2*], Kristen Gillespie-Lynch[3], Jennifer Grandits[4] and Young-Hoon Kim[2]

Abstract

This cross-cultural study examined Koreans' and Americans' explicit stigma and implicit biases toward autism to examine potential mechanisms underlying recent evidence for heightened explicit autism stigma in South Korea relative to the United States. This evidence is somewhat at odds with other evidence that individuals living in collectivistic cultures such as South Korea may be more prone to present themselves favorably than those living in relatively individualistic cultures such as the United States. A total 224 American and 536 Korean non-autistic adult participants completed an online survey. Implicit biases were measured using the implicit association test. Koreans reported greater explicit stigma and exhibited more implicit biases toward autism than Americans. Explicit stigma was not correlated with implicit biases in either country. Less autism knowledge and pleasant contact with autistic people predicted greater explicit stigma among both Koreans and Americans. Less frequent contact and heightened assimilation ideology toward ethnic minorities predicted greater stigma only among Koreans. The variance in implicit biases explained by predictors was small, emphasizing the need for follow-up research investigating predictors of implicit biases. Informing Koreans about the shortcomings of assimilationist approaches and fostering an appreciation of the plurality of cultures may reduce stigma toward autistic individuals in South Korea.

Lay abstract

How people report their feelings about autism may be different from how they actually think about autism because some people may not want to reveal their true feelings. People who value the group's goal tend to present themselves as more socially acceptable than people who value one person's interests. We studied how people in South Korea and the United States report their feelings about autism and think about autism. Koreans tend to value the group's goals. Americans tend to prefer one person's goals. Koreans reported that they wanted more space from autistic people than Americans did. Koreans were more likely to think about autism with negative words (and think more negatively about autism). How Koreans and Americans report their feelings about autism was not related to their thoughts about autism. People who knew about autism and liked meeting with autistic people wanted to get closer to autistic people in South Korea and the US, Koreans who had met autistic people and thought that people who newly came to Korea from abroad should be more like Koreans did not want to get very close to autistic people. This could be because very few foreign people live in South Korea compared to the United States. Teaching Koreans that all cultures have values and should be appreciated will help them like autistic people more.

Keywords

assimilation, autism, cross-cultural, implicit biases, stigma

[1]Duksung Women's University, Republic of Korea
[2]Yonsei University, Republic of Korea
[3]College of Staten Island, USA
[4]Clemson University, USA
*Two authors share the co-first authorship.

Corresponding author,
Young-Hoon Kim, Department of Psychology, Yonsei University, 50 Yonsei-ro, Seodaemun-gu, Seoul 03722, Republic of Korea.
Email: solagratia72@gmail.com

Stigma—defined as labeling, stereotyping, distinguishing us and them, and discriminating (Goffman, 1963; Link & Phelan, 2001) against autistic individuals—varies across cultures (Gillespie-Lynch et al., 2019; S. Y. Kim et al., 2022; Obeid et al., 2015; Someki et al., 2019). Recent research suggests that public (i.e. non-autistic individuals') stigma toward both the label "autism" and unlabeled autistic characteristics is heightened in South Korea relative to the United States (S. Y. Kim et al., 2022; S. Y. Kim & Gillespie-Lynch et al., 2022). Public stigma, often measured as desired social distance from an autistic individual, is also heightened in Japan, Malaysia, and Lebanon compared to that in the United States or the United Kingdom (de Vries et al., 2020; S. Y. Kim et al., 2022; Obeid et al., 2015; Someki et al., 2019). This cross-cultural pattern could be interpreted as evidence that autism stigma is elevated in cultures that are relatively more collectivistic (i.e. prioritizing group harmony over individual pursuits) than it is in individualistic cultures (i.e. prioritizing individual goals and independence).

However, individual-level rater characteristics may influence autism stigma more than nationality (Gillespie-Lynch et al., 2019; S. Y. Kim & Gillespie-Lynch et al., 2022). On an individual level, vertical individualism (valuing individual efforts to dominate hierarchies) has been positively associated with stigma toward autistic people while horizontal collectivism (valuing collaboration with one's ingroup) has been negatively associated with stigma (Gillespie-Lynch et al., 2019). Vertical individualism and horizontal collectivism are also associated with social dominance orientation (SDO), or preferring inequalities favoring some social groups over others (Pratto et al., 1994; Strunk & Chang, 1999). People with high levels of SDO tend to express heightened stigma toward many types of marginalized people, including autistic people (Waisman et al., 2022), people with schizophrenia (Lampropoulos & Apostolidis, 2018), gender minorities (Puckett et al., 2020), and racial and ethnic outgroups (Kteily et al., 2011). According to the dual-process model, SDO is specifically associated with forms of discrimination that serve to keep oppressed people down (Pratto et al., 1994). Another function of discrimination is to enforce social norms (Phelan et al., 2008). Recent research suggested that stigma toward autistic people may particularly serve a social norm enforcing function in South Korea (S. Y. Kim et al., 2022). In this study, we examined explicit public stigma and implicit biases toward autism in South Korea and the United States to better understand if explicit stigma and implicit biases have similar or different functions across cultural contexts.

Understanding the cultural context: South Korea

South Korea is an ethnically, culturally, and racially homogeneous country with relatively high cultural tightness, or beliefs about the extent to which social norms are strictly enforced in one's culture (Gelfand et al., 2011; S. Y. Kim et al., 2022; Kim-Rupnow, 2005). High cultural tightness and homogeneity may contribute to heightened stigma toward autistic individuals, who sometimes exhibit behaviors that violate social norms. Indeed, early qualitative research conducted solely in South Korea revealed that parents reported, and often themselves expressed, high levels of stigma toward autistic people (Grinker & Cho, 2013). Initial speculations that high levels of stigma could contribute to underdiagnosis of autism in South Korea were supported by a prevalence study, which revealed that many previously undiagnosed young people in South Korea were autistic (Y. S. Kim et al., 2011). In fact, this study reported autism prevalence rates in South Korea that were higher than had thus far been documented anywhere else in the world. Although subsequent research identified methodological issues with these prevalence estimates (Pantelis & Kennedy, 2016), under-identification of autism in South Korea is not surprising when one considers that autism was first separated from emotional and behavioral disorders to become an independent disability category eligible for special education in South Korea in 2007 (Acts on Special Education for Persons with Disabilities, 2007). Limited public understanding of autism may be contributing to heightened autism stigma in South Korea. Indeed, previous studies have shown that Koreans have less accurate knowledge about autism than Americans (S. Y. Kim et al., 2022; S. Y. Kim & Gillespie-Lynch et al., 2022). Less autism knowledge is often associated with heightened stigma toward autistic people (Gillespie-Lynch et al., 2019; S. Y. Kim et al., 2022).

While more autism knowledge has been associated with lower autism stigma across many cultural contexts, other constructs may only be associated with autism stigma in specific cultural contexts. For example, S. Y. Kim et al. (2022) found that cultural tightness was associated with autism stigma in South Korea but not in the United States. In contrast, outgroup derogation (or expression of disfavor toward outgroup members)—when measured in a minimal group paradigm during which participants are asked to evaluate outgroup members of arbitrarily defined, researcher-created social groups—was associated with autism stigma in the United States but not in South Korea. This finding contradicted the common belief that individuals from more collectivistic cultures tend to show more intergroup bias (a tendency to evaluate ingroup members more positively than outgroup members) than those from individualistic cultures (Yamagishi et al., 1998). However, Fischer and Derham (2016) suggested that collectivistic people exhibit bias only toward stable ingroups, not arbitrarily defined groups.

Stable ingroups may be particularly salient in highly homogeneous cultures like South Korea. Although slowly increasing, the percentage of multicultural individuals (i.e. immigrants and individuals who have acquired a Korean

nationality through naturalization or marriage) in South Korea was 2.18% in 2020 (Statistics Korea, 2020). Until 2007, Korean social studies textbooks explicitly emphasized that Korea is a monolithic society with one language, culture, history, and ethnicity (Choi, 2010; Kim, 2015). Beginning in mid-2005, with an increase in the multicultural population, acceptance of international norms of appreciating multiculturalism, and adoption of statewide multicultural policies, Korea has begun transitioning toward a multicultural society (Choi, 2010; Kim, 2015). However, several researchers contend that current Korean culture and multicultural policies still maintain an assimilationist top-down approach and overlook minorities' identities, cultures, and languages (Hong, 2010; Walton, 2018a, 2018b).

This tendency to impose majority group values on minority groups may reduce South Koreans' responsiveness to destigmatizing counter-narratives about autism, such as those put forth by the neurodiversity movement. The neurodiversity movement views autism and other neurological differences as natural and valuable aspects of human diversity and condemns efforts to "fix" autistic individuals by teaching them to conform to neurotypical social norms (Kapp et al., 2013). By reframing stigmatizing misconceptions about autism and recognizing autism as a core aspect of individuals' identities (Grinker, 2020), the neurodiversity movement may be reducing public autism stigma (S. Y. Kim & Gillespie-Lynch et al., 2022). However, some responses to autism in South Korea suggest that the neurodiversity movement's reframing of autism as a permanent and valuable aspect of personhood may not be well received in some Korean cultural contexts. For instance, Korean parents of autistic children may often reject an autism diagnosis for their child due to viewing the "autism" label as both permanent and stigmatizing (e.g. limiting the educational opportunities of autistic children and the marriageability of relatives; Grinker & Cho, 2013). Historically, autism has frequently been misdiagnosed as reactive attachment disorder in South Korea (Kang-Yi et al., 2013), which may also reflect a desire to view autism as transient. Consistent with wariness of the neurodiversity movement's reframing of autism as an enduring aspect of a person's identity, Koreans reported lower awareness of and agreement with the neurodiversity movement than Americans in a recent study (S. Y. Kim & Gillespie-Lynch et al., 2022). The neurodiversity movement is a relatively new concept in South Korea, and to date, there is only one study (S. Y. Kim & Gillespie-Lynch et al., 2022) that specifically examined Koreans' attitudes about the neurodiversity movement.

In this study, we explored potential associations between cultural tightness, perceived community norms imposed on autistic people, intergroup ideologies (i.e. beliefs about intergroup relations; Whitley & Webster, 2019), and autism stigma. We studied assimilation and multiculturalism as measures of intergroup ideologies in this study. An assimilationist approach holds that minority cultures should be replaced with majority cultures and norms based on the assumption that society should be culturally homogeneous (Guimond et al., 2014; Rosenthal & Levy, 2010). Assimilation may index prejudice because it prioritizes the majority over minority cultures (Guimond et al., 2014). Contrastingly, a multicultural ideology highlights the importance of acknowledging, appreciating, and maintaining intergroup differences (Rosenthal & Levy, 2010). A multiculturalist perspective mitigates biases toward minority groups because it encourages majority cultures to embrace minority cultures (Whitley & Webster, 2019).

The relatively small multicultural population, heightened cultural tightness, and limited discussions about multiculturalism may contribute to South Korea's relatively strong assimilationist and weak multiculturalist norms. Guimond et al. (2014) contend that assimilationist and multiculturalist ideologies can co-exist and may simultaneously be influenced over time by social and political policies. These two types of multicultural intergroup ideologies (i.e. strong assimilationist and weak multiculturalist ideologies), which refer to how individuals perceive minority cultures/norms, may contribute to heightened explicit stigma toward autistic individuals who often exhibit behaviors that diverge from dominant social norms. Indeed, Obeid et al. (2021) found that stigma toward autistic individuals was weakly associated with racial prejudice in the United States.

Examining explicit stigma and implicit biases toward autism cross-culturally

Thus far, evidence of heightened public stigma in South Korea relative to the United States has been based on individuals' self-reports, which may be influenced by social desirability bias (i.e. wanting to appear more sensitive and socially favorable; Dalton & Ortegren, 2011). Given that self-reports may underestimate explicit stigma (Dickter et al., 2020; Hinshaw & Stier, 2008), an increasing number of researchers are investigating implicit biases (i.e. evaluations that occur outside of conscious control and awareness; Greenwald & Banaji, 1995) toward autism. Implicit bias is often measured using the implicit association test (IAT; Greenwald et al., 1998), a computer-based binary classification task. The IAT gauges the speed with which participants associate cognitive concepts (e.g. autism labels) with pleasant and unpleasant attributes. Faster reaction times suggest a stronger implicit association between a concept and an attribute.

A review of research examining associations between implicit and explicit biases toward a range of disabilities revealed inconsistent patterns; six studies revealed small

correlations between implicit and explicit measures and five studies revealed no associations (Wilson & Scior, 2014). In the autism literature specifically, similarly inconsistent results have emerged; some studies have reported significant associations between implicit and explicit biases (Gillespie-Lynch et al., 2022; Lipson et al., 2020), while others have not (Jones et al., 2021; Obeid et al., 2021). Researchers generally agree that implicit and explicit attitudes operate under different mechanisms (Dickter et al., 2020; Dovidio et al., 1997). For instance, implicit biases, but not explicit attitudes, have been shown to predict some spontaneous nonverbal behaviors (e.g. eye contact or leaning forward) toward an autistic individual (Lipson et al., 2020). While participation in autism trainings has often been associated with reduced explicit stigma, implicit biases often do not change with training (Bast et al., 2020; Dickter et al., 2021; Jones et al., 2021). To the best of our knowledge, only one study thus far has demonstrated significant improvements in implicit biases following training (Gillespie-Lynch et al., 2022).

Associations between implicit and explicit biases may also differ across cultures because culture impacts social desirability tendencies (Bernardi, 2006; Crowne & Marlow, 1964). Individuals living in collectivistic cultures may be more prone to social desirability to present themselves favorably and maintain good interpersonal relationships with others (Kim & Kim, 2016; Lalwani et al., 2006). Ryan et al. (2021) reported that compared to Europeans, individuals from Confucian and collectivistic Asian countries (e.g. Korea, Japan) exhibited stronger social desirability tendencies when personality traits related to sensitivity and cooperativeness were in question. Relatedly, Korean and Japanese participants in the study by Kim & Kim (2016) were more likely to overreport their intentions to participate in public services compared to participants from individualistic countries (i.e. the United States, the Netherlands). This suggests that heightened social desirability tendencies among Koreans may reduce associations between explicit and implicit biases among Koreans in particular (because heightened social desirability bias would alter how explicit, but presumably not implicit, biases are expressed). If social desirability biases are heightened in South Korea, a clear understanding of stigma toward autistic people in South Korea may only be attainable with measures that are designed to bypass such tendencies, such as the IAT, which is less vulnerable to deliberate control of responses than explicit responses. Nevertheless, to our knowledge, no studies have examined implicit biases toward autism among Koreans.

The current study

This study extends upon previous cross-cultural comparisons between South Korea and the United States by examining implicit biases toward autism in South Korea and identifying additional variables that may explain why autism stigma is heightened in South Korea relative to the United States. Specifically, we aimed to address the following research questions (RQs):

> RQ1. Are there cross-cultural differences in implicit biases and explicit attitudes toward autism?

As in past research (S. Y. Kim et al., 2022), we expected Koreans to report more explicit stigma toward autism than Americans. In addition, we expected Koreans to exhibit more negative implicit biases toward autism than Americans.

> RQ2. Does the strength of the association between implicit biases and explicit stigma differ depending on the country?

We hypothesized that the association between implicit biases and explicit stigma toward autism would be stronger among Americans than Koreans. Despite inconsistent findings concerning associations between explicit and implicit biases (e.g. Gillespie-Lynch et al., 2022; Obeid et al., 2021; Wilson & Scior, 2014), we hypothesized that implicit biases would be correlated with explicit stigma, at least among Americans, in line with the theoretical framework in the broader social psychology literature that considers explicit and implicit attitudes distinct, but related, constructs as well as meta-analytic evidence that explicit and implicit biases tend to be associated with one another when they assess related constructs (e.g. both focus on affective responses; Hofmann et al., 2005; Nosek & Smyth, 2007). Koreans, who are living in a relatively collectivistic culture, may be more strongly influenced by social desirability bias (Kim-Rupnow, 2005; Lalwani et al., 2006) and underreport their desired social distance from autistic individuals, resulting in a weaker association with implicit bias when compared to the association among Americans.

> RQ3. What participant variables predict explicit autism stigma?

As in past research (Gillespie-Lynch et al., 2015, 2019; S. Y. Kim et al., 2022; Obeid et al., 2015), we expected that being female, having more autism knowledge, more pleasant and frequent contact with autism, and less national expectations for autistic individuals to conform to societal norms will be associated with weaker explicit stigma. We also hypothesized that heightened outgroup derogation, SDO, assimilation, and multiculturalism would be associated with stronger explicit stigma toward autism. We expected that higher cultural tightness would be associated

with explicit stigma among Koreans, but not Americans, as demonstrated in previous studies (S. Y. Kim et al., 2022). Finally, we hypothesized that more self-esteem would be associated with heightened autism stigma among Koreans, but not Americans. Having low self-esteem increases the likelihood that individuals will derogate members of marginalized groups because negative evaluations of others may serve to maintain one's self-image (Fein & Spencer, 1997). The association between self-esteem and stigma toward other groups may be intertwined with cultural values. Individuals from more interdependent cultures such as South Korea may more often define themselves in relation to others (Carpenter, 2000). Therefore, self-esteem may be more strongly associated with autism stigma in Korea than in the United States.

We did not have an RQ and corresponding hypothesis concerning predictors of implicit biases because of the lack of previous studies as most studies have investigated the aforementioned variables in relation to explicit, but not implicit, attitudes (Gillespie-Lynch et al., 2015, 2019; S. Y. Kim et al., 2022; Obeid et al., 2015).

Method

Participants

A total of 609 American and 726 Korean adult participants (>18 years of age) recruited via Amazon Mechanical Turk (MTurk) and dataSpring, an online survey panel recruitment platform similar to MTurk, respectively, participated in the study for compensation. Of these, 30 American and 85 Korean participants, who indicated that they were using a smartphone, tablet, or device other than a computer and were not in a distraction-free environment, were asked to return to the survey once they were on a computer and in a distraction-free environment because the survey included the online IAT. Among participants who completed the survey, 67 American and 102 Korean participants, who failed any of the two attention check items (please mark *strongly agree* for this item; Buchanan & Scofield, 2018), and 50 American participants who completed the survey twice, as indicated by a duplicate IP address, were eliminated from the analyses.

We asked two questions about the diagnostic status of participants ("What relationships to autism have you experienced?," "Are you autistic?"), and 155 Americans and 3 Koreans, who responded that they were autistic to only one of the questions (e.g. indicating that they have autism to the former question asking about the relationship to autism but answered that they do not have autism or self-identify as autistic to the latter question) were excluded from the analysis. Finally, 83 Americans, who self-identified as autistic in both diagnostic status questions were eliminated from the analysis regardless of their formal diagnostic status. The results including participants who self-identified as autistic are reported in footnotes, and the characteristics of participants who self-identified as autistic are presented in Supplementary Table S1. The final sample included a total of 224 American and 536 Korean participants. Table 1 presents the characteristics of the final sample of respondents who were included in the analyses.[1]

Procedures

After signing the online consent form, participants completed a Qualtrics online survey including social distance scale, IAT, participatory autism knowledge-measure (PAK-M), items assessing the pleasantness and quantity of previous contact with autistic individuals, relationships to autism, cultural tightness, SDO, social desirability, multicultural intergroup ideologies, outgroup derogation, perceived beliefs about normalization in one's country, self-esteem, and demographics, in the order mentioned above. All items that had not been used in previous studies (i.e. stimulus words of the IAT and instruments measuring multicultural intergroup ideologies, national expectations for autistic people to conform, and outgroup derogation) were first translated from English to Korean by SYK and back-translated into English by JEC. Revisions to the Korean version of the items were made as necessary via consensus. The two authors involved in the translation were fluent in both English and Korean. The study procedures including the informed consent were approved by Yonsei University Institutional Review Board office (IRB#: 7001988-202110-HR-1372-03).

Measures

Supplementary Materials present the full list of items used in this study. See Supplementary Table S2 for Cronbach's alpha of each instrument for the combined sample and by country.

Explicit social distance scale. A social distance scale (Gillespie-Lynch et al., 2019), adapted from Bogardus (1933), was used to measure explicit autism stigma. The scale measures willingness to engage with an autistic person at varying levels of intimacy and has been widely used in previous cross-cultural studies examining stigma toward autistic people (Gillespie-Lynch et al., 2019, 2022; S. Y. Kim et al., 2022; Obeid et al., 2015, 2021). The version of the social distance scale used in S. Y. Kim et al. (2022) was used in this study. Participants responded to eight items on a 5-point Likert-type scale ranging from 1 ("strongly agree") to 5 ("strongly disagree"), with higher mean scores indicating heightened stigma toward autism.

Implicit attitudes toward autism (IAT). We used a single-category IAT, a type of IAT that prior research has shown can

Table 1. Participant characteristics.

Demographic variable	Mean (SD)		Cohen's *d*	*p* values[a]
	United States (*n* = 224)	South Korea (*n* = 536)		
Age [range]	36.95 (10.03) [19, 64]	43.28 (10.56) [19, 69]	0.61	<0.001
Proportion of male	0.48	0.50	0.04	0.62
Explicit stigma	2.30 (0.67)	3.42 (0.70)	1.61	<0.001
Implicit stigma	−0.10 (0.31)	−0.34 (0.34)	0.72	<0.001
Autism knowledge	3.46 (0.36)	3.34 (0.22)	0.45	<0.001
Pleasantness of contact	5.08 (1.62)	2.39 (1.98)	1.43	<0.001
Time	2.86 (0.95)	1.35 (0.65)	2.01	<0.001
Cultural tightness	4.35 (0.78)	4.66 (0.62)	0.47	<0.001
Social dominance orientation	2.47 (0.77)	1.98 (0.62)	0.73	<0.001
Assimilation	4.67 (1.14)	4.59 (1.04)	0.08	0.349
Multiculturalism	4.78 (1.04)	4.32 (1.00)	0.45	<0.001
Outgroup derogation	3.39 (1.66)	2.48 (0.98)	0.74	<0.001
Perceived beliefs about normalization in one's country	3.53 (0.80)	3.66 (0.67)	0.77	0.027
Social desirability	1.71 (0.23)	1.61 (0.21)	0.45	<0.001
Self-esteem	2.90 (0.49)	2.84 (0.48)	0.12	0.135
	n (%)			
Ethnicity—American[b]				
White/Caucasian	190 (84.82)	N/A		N/A
African American	11 (4.91)	N/A		N/A
Hispanic	3 (1.33)	N/A		N/A
Asian	10 (4.46)	N/A		N/A
Native American	6 (2.68)	N/A		N/A
Other	4 (1.78)	N/A		N/A
Ethnicity—Korean[b]				
Korean	N/A	536 (100.0)		N/A
Multi-cultural	N/A	0 (0)		N/A
Education[c]	3.21 (0.63)	2.69 (0.85)	1.49	<0.001
Secondary school	8 (3.57)	74 (13. 81)		N/A
Vocational/Trade/Technical School	2 (0.89)	78 (14.55)		N/A
College	148 (66.07)	324 (60.45)		N/A
Advanced (Masters, Doctoral)	66 (29.46)	60 (11.19)		N/A

SD: standard deviation; N/A: not applicable.
[a]The *p* values calculated from *t* tests comparing the United States and South Korea.
[b]Ethnicity variable was not mutually exclusive.
[c]Less than high school 1, received high school diploma/GED 2, Vocational/Trade/Technical school/Some college 3, Bachelor's Degree 4, Advanced Degree (Masters, Doctoral) 5.

have satisfactory reliability and validity (Karpinski & Steinman, 2006), to measure participants' implicit biases toward autism. The IAT, constructed on the Qualtrics platform (Carpenter et al., 2019), assessed how quickly participants associated the category, autism, with positive or negative attributes. Participants were asked to sort the stimulus words into three categories (autism, good, and bad), which were displayed at the top right and left corners of the screen, by pressing one of the two keys on a keyboard (i.e. either "i" or "e") when the stimulus word was presented at the center of the screen. After the stimulus words were translated by SYK and JEC, two doctoral-level autism researchers who are fluent in both Korean and English reviewed the translation and confirmed that the stimulus words held similar meanings and salience across Korean and English.

Reaction time was recorded in milliseconds. The IAT used in this study consisted of four blocks; each test block was preceded by a practice block. In the first two blocks, the category, autism, was paired with a positive attribute, Good (i.e. "Good or Autism" on the left vs "Bad" on the right), and the category, autism, was paired with a negative attribute, Bad (i.e. "Good" on the left vs "Autism or Bad" on the right) in the latter two blocks. The stimulus words used in the IAT measuring implicit biases toward autism in Gillespie-Lynch et al. (2022) were also used in this study, and a professor specializing in Special Education in South Korea confirmed the face validity of stimulus words in

Table 2. Categories and target terms for IAT experiment.

Category	Stimulus words
Good	Love, Joy, Pleasure, Peace
Bad	Terrible, Angry, Evil, Hate
Autism	Dislikes unexpected changes, Repeats body movements, Struggles making friends, Interprets language literally

IAT: implicit association test.

Korean contexts. The categories and stimulus words used in the study are summarized in Table 2.

We piloted two versions of the IAT, one with a total of 144 test trials and the other with 72 test trials, with a small sample of Korean and American undergraduate students. Students from both countries reported high levels of fatigue and reduced attention in the longer version. We thus used the Brief version (Sriram & Greenwald, 2009), consisting of 36 trials in each of two test blocks and 24 trials in each of two practice blocks, in this study.

Participatory autism knowledge measure. Adapted from a 13-item instrument by Stone (1987), this 29-item measure assessed participants' knowledge about autism (Gillespie-Lynch et al., 2019; S. Y. Kim et al., 2022). The version used in this study was developed via collaboration with autistic students and asked participants to rate true-or-false statements on a 5-point Likert-type scale ranging from 1 ("strongly disagree") to 5 ("strongly agree"). A higher score indicated more accurate knowledge about autism.

Due to the low internal consistency of the PAK-M among Koreans, we examined the internal consistency of the non-reverse-scored (i.e. regular) and reverse-scored items. Participants' different response styles when responding to regular and reverse-scored items may introduce uncontrolled variance that influences the consistency and factor structure of instruments (Suárez-Alvarez et al., 2018; Vigil-Colet et al., 2020). We separated the items into reverse-scored items and regular-scored items and noted results in footnotes whenever using the regular-scored or reverse-scored versions resulted in different patterns from the main analysis results that utilized the full PAK-M measure.[2]

Previous contact with autistic individuals. We used a single-item "In the past, my overall experiences with autistic individuals have been pleasant," adapted from Gardiner and Iarocci (2014) to assess the pleasantness of previous contact with autistic individuals. Participants responded on a 7-point Likert-type scale ranging from 1 ("strongly disagree") to 7 ("strongly agree"), with a higher score indicating more pleasant contact. We measured the quantity of previous contact, using an item, "How often do you spend time with an autistic individual?" (Brown et al., 1999), rated on a 5-point Likert-type scale ranging from 1 ("don't spend time") to 5 ("very often"). In addition, we also asked participants to indicate their relationship to autism. We further categorized participants' relationships to autism into those who are a nuclear family member (i.e. parents, children, or siblings) of an autistic person and those who are not.

Cultural tightness. We used five items from the cultural tightness scale of the study by Gelfand et al. (2011) to measure the degree to which social norms within nations are clearly defined and enforced. Participants completed five items on a 6-point Likert-type scale from 1 ("strongly disagree") to 6 ("strongly agree"), and a higher mean score represented heightened cultural tightness. Gelfand et al. (2011) reported sufficient reliability and validity for their instrument.

SDO scale. We used an SDO scale (Kteily et al., 2011; Pratto et al., 1994; initially translated and adapted into Korean by Lee & Yoo, 2018) to measure participants' endorsement of non-egalitarian relationships among different social groups. Participants responded to four items on a 5-point Likert-type scale from 1 ("strongly disagree") to 5 ("strongly agree"). Two items were reverse-scored, and a higher mean score represented heightened SDO.

Multicultural intergroup ideology. We measured two different domains of multicultural intergroup ideologies, assimilation and multiculturalism, each of which was assessed using the three-item scales of Guimond et al. (2014), rated on a 7-point Likert-type scale ranging from 1 ("strongly disagree") to 7 ("strongly agree"). The assimilation scale measured participants' orientation to reduce cultural and ethnic differences and diversity within groups, with a higher mean score indicating heightened assimilationist beliefs. The multiculturalism scale reflected participants' positive evaluation of cultural and ethnic diversity and respect for minority group identities (Guimond et al., 2014), with a higher mean score indicating greater appreciation for minority cultures.

Perceived beliefs about normalization in one's country. We adapted two items from the neurodiversity attitudes scale by VanDaalen (2021) to measure the degree to which participants believed that people in their nation would agree that autistic individuals are expected to conform to and follow societal norms. The country referenced in the question matched the country of the participants. Participants responded on a 5-point Likert-type scale ranging from 1 ("strongly disagree") to 5 ("strongly agree"), with a higher mean score representing greater beliefs about normalization in one's country

(i.e. more expectations for autistic people to follow societal norms). The Pearson correlation between the two items was 0.46 in the combined sample ($r = 0.44$ and 0.47 for Americans and Koreans, respectively).

Outgroup derogation. We adapted five items from the study by Crocker et al. (1987) to measure outgroup derogation toward people from other countries. Participants answered the scale on a 7-point Likert-type scale ranging from 1 ("very false") to 7 ("very true"), and a higher mean score represents more outgroup derogation.

Self-esteem. Participants completed Rosenberg's (1965) self-esteem scale, which consists of 10 items on a 4-point Likert-type scale (1 "strongly disagree," 4 "strongly agree"). Jang and Shin (2011) translated and validated this instrument in Korean. A higher mean score on this scale indicated higher self-esteem.

Social desirability. Five items (e.g. "I am always courteous even to people who are disagreeable") from Marlowe-Crowne social desirability scale–short form (MCSDS-SF; Reynolds, 1982) were used to measure participants' social desirability. Participants were asked to select either true or false to each item. Cronbach's alpha was low for the version used in this study ($\alpha = 0.20$, 0.32, and 0.11 for the combined sample, Americans, and Koreans, respectively). We did not include social desirability as a predictor in analyses due to its low internal consistency.[3]

Demographic questionnaire. Participants were asked to indicate their age, gender, education level, race, diagnostic status, and how long they had lived in the United States or South Korea. Of 760 participants included in the final analysis, only 36 participants (4.6%) lived in the country other than their country for more than 5 years.[4]

Analytic approach

Computing IAT scores. Using the improved *D*-score algorithm, we computed a difference standardized score (i.e. *D*-score; Greenwald et al., 2003) for each participant. We replaced response latencies smaller than 300 ms with 300 ms, as recommended by Richetin et al. (2015) and in line with previous studies using the IAT (e.g. Cadinu & Galdi, 2012).[5] Average reaction times across trials by country are presented in Supplementary Table S4. A positive *D*-score indicates more positive implicit biases toward autism, while a negative *D*-score indicates more negative implicit biases toward autism. We did not remove any outliers during this process since none of the participants had a *D*-score greater than 3.3 (as per recommendations of Field, 2016).

Data analysis. For all analyses, based on the recommendations of Wasserstein et al. (2019), we applied an alpha level of 0.005 and considered *p* values between 0.05 and 0.005 as suggestive to account for the large number of analyses conducted. For instruments that included both regular and reverse-scored items, we conducted sensitivity analyses to see if we get the same results, when only including regular items. Except for the findings in relation to the PAK-M, including regular-scored items did not change the significance patterns of the analyses.

We first conducted exploratory independent *t* tests by country for all variables and computed zero-order correlations in the combined sample and by country. All data analyses were conducted using STATA. To address the first research question, we conducted an independent *t* test comparing participants' social distance scale scores and *D*-scores from IAT by country. To address the second research question, Pearson's *r* correlations between participants' social distance scale scores and *D*-scores were computed by country. Subsequently, we examined whether the strength of the associations between social distance scale scores and *D*-scores differ by country, using cortesti function in STATA, which tests the equality of two correlation coefficients.

The results of the baseline correlations by country suggested that different sets of variables were associated with explicit stigma depending on the country (see Supplementary Table S5, S6, and S7 for the correlation matrices in the combined sample, Koreans, and Americans, respectively). Furthermore, previous studies comparing explicit autism stigma in South Korea and the United States (S. Y. Kim et al., 2022; S. Y. Kim & Gillespie-Lynch et al., 2022) also suggested that variables that account for stigma differed by country. Therefore, to address the third research question, we conducted two separate regression analyses by country, and variables that were suggestively correlated ($p < 0.05$) with explicit stigma in their zero-order correlations in their respective country were included in each regression model. Because of the high correlation ($r = 0.43$) between two contact quantity variables (i.e. contact frequency and having an autistic nuclear family member), the variable that explained the most variance in zero-order regressions predicting explicit stigma was selected in the final model if both were correlated with explicit stigma.

We eliminated outliers with studentized residuals greater than three from the analyses following the recommendations of *Statistical Methods and Data Analytics* (UCLA Advanced Research Computing Statistical Methods and Data Analytics, n.d.). Because standardized normal probability (P-P) plots showed slight indications from non-normality of residuals in regression models predicting explicit stigma in each country even after removing outliers, we conducted robust regression, which corrects for minor violations of assumptions such as normality, heteroscedasticity, or leverage (UCLA Advanced Research Computing Statistical Methods and Data Analytics, n.d.), for both regression models. We also

repeated the same regression procedures in the combined sample to examine whether country differences in explicit stigma remained significant after accounting for the individual characteristics. We entered the country variable first before including other individual characteristics variables. Participants' gender was not included as a predictor in any of the regression models because it was not significantly correlated with explicit stigma.

Finally, we conducted a set of exploratory robust regressions predicting implicit biases by country to explore whether variables that have been suggested to be associated with explicit stigma also predict implicit biases toward autism. The same analytic procedures taken to identify the predictors of explicit stigma were conducted for implicit biases. Two separate robust regressions for each country were conducted with variables that were suggestively correlated with implicit biases in their respective zero-order correlations entered as predictors.

Community involvement

Autistic people were not directly involved in this study. The PAK-M used in this study was developed through collaboration with autistic students (Gillespie-Lynch et al., 2022).

Results

Cross-cultural comparison of explicit stigma and implicit biases

Exploratory one-sample *t* tests revealed that explicit stigma and implicit biases were both significantly different from 0 among Koreans ($p < 0.001$ for both explicit stigma and implicit biases) and Americans ($p < 0.001$ for both explicit stigma and implicit biases). As reported in Table 1, independent *t* tests revealed that Koreans reported greater explicit stigma (M = 3.42, SD = 0.70) and exhibited more negative implicit biases (M = −0.34, SD = 0.34) toward autism than Americans (explicit stigma M = 2.30, SD = 0.67; implicit biases M = −0.10, SD = 0.31; both $p < 0.001$).

In addition, exploratory *t* tests showed that Koreans reported significantly less knowledge about autism, less frequent and pleasant contact with autistic people, less SDO, less appreciation for multiculturalism, and less outgroup derogation than Americans (all $p < 0.001$). Koreans also suggestively reported more expectations for autistic people to follow societal norms in their country ($p = 0.03$). Participants' assimilation ideology and self-esteem levels did not differ depending on their country ($p = 0.35$ and 0.14, respectively).

Correlation between explicit stigma and implicit biases

Explicit stigma was not correlated with implicit biases in either country (Korea: $r < 0.001$, $p = 1.00$, United States: $r = 0.02$, $p = 0.72$).[6] Comparison of the correlation coefficients revealed that the strength of the associations between implicit biases and explicit stigma did not differ by country ($z = -0.24$, $p = 0.81$).[7]

Variables predicting stigma

The results from the regression models predicting explicit stigma in the United States and South Korea and in the combined sample are presented in Table 3. The regression model predicting explicit stigma in the combined sample predicted 52% of the variance; Korean nationality ($p < 0.001$), less autism knowledge ($p < 0.001$), less pleasant and frequent contact with autistic people ($p < 0.001$), and younger age ($p = 0.001$) predicted greater stigma. Outgroup derogation ($p = 0.01$) and cultural tightness ($p = 0.01$) suggestively predicted greater explicit stigma.[8] The regression model predicting explicit stigma in the United States explained 44.0% of the variance; less knowledge and less pleasant contact predicted higher explicit stigma ($p < 0.001$ and $p = 0.001$, respectively).[9] The regression model predicting explicit stigma in South Korea explained 26.0% of the variance, and less knowledge, less pleasant and frequent contact, and heightened assimilation predicted greater explicit stigma (all $p < 0.001$). Heightened SDO ($p = 0.02$) and less belief about normalization in one's country ($p = 0.01$) suggestively predicted greater explicit stigma among Koreans.[10]

The results of the exploratory regressions predicting implicit attitudes among Americans, Koreans, and the combined sample are presented in Supplementary Table S8. When examining the combined sample, Korean nationality and older age significantly predicted more negative implicit attitudes ($p < 0.001$ and $p = 0.0046$, respectively); more accurate knowledge and greater SDO suggestively predicted positive implicit attitudes ($p = 0.007$ and $p = 0.02$, respectively).[11] The regression model explained 13% of the variance. Having a nuclear family member suggestively predicted more positive implicit attitudes ($p = 0.03$) among Americans ($R^2 = 0.02$). Heightened SDO and younger age suggestively predicted more positive implicit attitudes among Koreans ($p = 0.02$ and 0.04, respectively; $R^2 = 0.03$).[12]

Discussion

This was the first study to examine Koreans' implicit biases toward autism, with Koreans reporting more explicit stigma and demonstrating more implicit biases compared to Americans. Explicit stigma was not correlated with implicit stigma among Koreans or Americans. While accurate autism knowledge and pleasant previous contact predicted explicit stigma for both groups, some variables (e.g. perceived social norms about assimilation) were associated with explicit stigma among Koreans only, which may contribute to heightened explicit autism stigma in South Korea.

Table 3. Summary of regressions predicting explicit stigma in the United States and South Korea.

Predictors	*B*	*SE B*	β	*t*	*p*
United States; $F = 35.55$; $R^2 = 0.44$; $p < 0.001$					
Autism knowledge	**−0.99**	**0.12**	**−0.53**	**−7.90**	**<0.001**
Pleasant contact	**−0.09**	**0.03**	**−0.23**	**−3.35**	**0.001**
Cultural tightness	−0.05	0.04	−0.05	−1.07	0.29
Social dominance orientation	0.01	0.07	0.02	0.22	0.83
Outgroup derogation	0.02	0.03	0.05	0.85	0.40
South Korea; $F = 18.05$; $R^2 = 0.26$; $p < 0.001$					
Autism knowledge	**−0.57**	**0.12**	**−0.189**	**−4.72**	**<0.001**
Pleasant contact	**−0.07**	**0.02**	**−0.19**	**−4.32**	**<0.001**
Time	**−0.25**	**0.05**	**−0.23**	**−5.18**	**<0.001**
Social dominance orientation	0.11	0.05	0.10	2.32	0.02
Assimilation	**0.12**	**0.03**	**0.18**	**4.49**	**<0.001**
Multiculturalism	0.004	0.03	0.01	0.14	0.89
Perceived beliefs about normalization in one's country	−0.11	0.04	−0.11	−2.63	0.01
Self-esteem	−0.02	0.06	−0.01	−0.27	0.78
Outgroup derogation	0.02	0.03	0.03	0.67	0.51
Age	−0.004	0.003	−0.06	−1.55	0.12
Combined sample; $F = 90.06$; $R^2 = 0.52$; $p < 0.001$					
Country	**0.69**	**0.08**	**0.37**	**8.23**	**<0.001**
Autism knowledge	**−0.81**	**0.09**	**−0.26**	**−8.58**	**<0.001**
Pleasantness of contact	**−0.08**	**0.01**	**−0.22**	**−5.74**	**<0.001**
Time	**−0.13**	**0.04**	**−0.16**	**−3.78**	**<0.001**
Cultural tightness	0.10	0.04	0.08	2.52	0.01
Multiculturalism	−0.04	0.02	−0.05	−1.73	0.08
Self-esteem	0.005	0.05	0.003	0.09	0.93
Outgroup derogation	0.05	0.02	0.07	2.54	0.011
Age	**−0.01**	**0.002**	**−0.09**	**−3.56**	**0.001**
Education	0.04	0.03	0.05	1.53	0.13

SE: standard error.
Values in bold indicate $p < 0.005$.

Cross-cultural comparison of explicit stigma and implicit biases

As hypothesized, Koreans reported heightened explicit stigma (consistent with past research; S. Y. Kim et al., 2022) and more negative implicit biases toward autism compared to Americans. These differences in explicit stigma and implicit biases remained significant after accounting for rater characteristics. Contrary to our hypothesis, the strength of the association between implicit biases and explicit stigma did not differ by country. The similar strength of the association in both countries may be attributed to the nonsignificant associations between implicit biases and explicit stigma. Similar to the findings by Jones et al. (2021) and Obeid et al. (2021), our results suggest that implicit and explicit biases toward stigma may operate through different mechanisms.

Variables predicting explicit and implicit stigma

Country-level differences in explicit stigma toward the autism label remained significant after accounting for individual-level variables, in accordance with the study by S. Y. Kim et al. (2022). More accurate knowledge about autism and pleasant previous contact predicted explicit stigma for both Americans and Koreans. This finding highlights the need for efforts to increase autism knowledge and foster positive contact with autistic individuals in both countries, as suggested by previous studies (Gillespie-Lynch et al., 2019; S. Y. Kim et al., 2022; Someki et al., 2019). Quantity of time spent with autistic people predicted explicit stigma among Korean participants, but not Americans. Koreans reported significantly less frequent contact with autistic individuals than did Americans. By increasing opportunities for more frequent contact (perhaps via more inclusive educational contexts), we might be able to reduce autism stigma in South Korea.

Assimilation and perceived beliefs about normalization in one's country predicted explicit stigma in South Korea. These two variables encompassed participants' perceptions of societal norms (or beliefs about individuals around them) regarding diversity, which are often shaped by public policy (Luís & Palma-Oliveira, 2016; Nyborg, 2003). The cultural homogeneity and assimilationist policies in

South Korea (Hong, 2010; Walton, 2018a, 2018b) may contribute to Koreans' perceptions of social norms that ethnic minority groups should try to fit into the majority culture. Similarly, this national expectation for minority individuals' behavior may also impact stigma toward autistic individuals (a minority group).

Unexpectedly, Koreans' heightened expectations for autistic individuals to become "normal" to fit into society predicted reduced autism stigma. Due to the low awareness of the neurodiversity movement in South Korea (S. Y. Kim & Gillespie-Lynch et al., 2022), some Koreans may believe that attempts to normalize autistic individuals are beneficial; therefore, those who perceived such social norms may have reported less social distance from autistic individuals. The contrasting pattern of the relationships between stigma and assimilation and between stigma and national beliefs about normalization of autistic individuals suggests that Koreans may conceptualize normalization of various minority groups differently. Future studies are thus needed to explore how different national-level (e.g. public policy) or individual factors impact Koreans' perspectives on normalizing different minority groups.

Notably, younger age was suggestively correlated with (and suggestively predicted) more positive implicit attitudes among Koreans, but not Americans. This pattern may manifest recent and drastic changes in awareness and prevalence of autism in South Korea. As previously noted, autism was first assigned its own special education category in South Korea when the Act on Special Education for Persons with Disabilities was enacted in 2007. Since then, autism has become the second-most prevalent special education disability type in South Korea (Ministry of Education, 2020). Younger generations' unique characteristics may also contribute to age-based differences in implicit biases toward autism. Although geographically speaking they live in an ethnically homogeneous country, younger Koreans may be more connected to the digital world, likely exposing them to social justice and diversity-related messages from other countries (Liang et al., 2010). This exposure may translate into more positive implicit attitudes toward autism. Similarly, a later cohort of American college students in a study by White et al. (2019) demonstrated greater knowledge and reported more positive explicit attitudes toward autistic students than a cohort enrolling 5 years earlier. Nevertheless, these changes across cohorts in explicit attitudes about autism were not mirrored by cross-sectional associations between age and explicit stigma in this study.

SDO, which was associated with explicit autism stigma in the study by Waisman et al. (2022), suggestively predicted implicit biases among Koreans. Kteily et al. (2011) contended that SDO may generate prejudice and discrimination that legitimizes group-based dominance hierarchies. Considering that SDO also suggestively predicted explicit stigma among Korean participants and that the zero-order correlation between SDO and explicit stigma among Americans was also significant, more studies are needed to explore the possibility that SDO may contribute to both explicit and implicit biases.

Implications

The findings have implications for future studies. More autism knowledge predicted less explicit stigma and more positive implicit attitudes (suggestive) toward autism. Therefore, training that increases the accuracy of individuals' autism knowledge may reduce both explicit and implicit stigma toward autism. The association between perceived social norms about assimilation and explicit autism stigma among Koreans implies that ideologies related to ethnic minorities may be associated with stigma toward autistic individuals (at least in ethnically homogeneous countries like South Korea). Informing Koreans about the shortcomings of assimilationist approaches and fostering appreciation of the complexity and plurality of cultures (Alba & Nee, 1997; Rodríguez-García, 2010) may reduce stigma toward autistic individuals. Moreover, as the more recent multicultural paradigm emphasizes social activism as the ultimate goal of multicultural education, moving away from assimilationist perspectives (Sleeter, 1996), autism trainings should seek to be emancipatory, promoting non-autistic individuals' critical thinking and proactive engagement with social justice problems (Nouri & Sajjadi, 2014).

The proportions of variance in implicit biases explained by the predictors measured in this study were relatively small, particularly in the models including Americans or Koreans only, respectively. Although this was not surprising because these predictors had previously been studied in relation to explicit stigma, it emphasizes the need for future studies investigating variables that impact implicit biases toward autism. Such research could further our understanding of why some trainings produce changes in explicit but not implicit attitudes toward autism (Bast et al., 2020; Dickter et al., 2021; Jones et al., 2021) and guide the development of more comprehensive and effective interventions. Furthermore, while a previous meta-analysis of 122 studies that used an IAT and an explicit measure to examine attitudes on various topics (e.g. racial bias, alcohol, drugs, and consumer behaviors) showed that the IAT is more effective than explicit measures in predicting self-reported behaviors, especially in the area of racial prejudice (Greenwald et al., 2009), others have questioned the predictive validity of the IAT (Meissner et al., 2019; Schimmack, 2021). This suggests the need for future studies exploring how the IAT and measures of explicit stigma relate to non-autistic people's actual behaviors around autistic people in real-life circumstances.

Limitation

Several limitations should be considered when interpreting the findings. First, the internal consistency of PAK-M was relatively low, especially among Korean participants, questioning the replicability of the findings concerning autism knowledge among Koreans. The internal consistency of the regular-scored items among Koreans was slightly higher than that of reverse-scored items, but the alpha values for both versions were still too low. Future research is needed to develop an instrument that reliably measures autism knowledge across countries. In addition, socially desirable response may have impacted the association between implicit biases and explicit stigma. However, we did not analyze social desirability due to the corresponding measure's very low internal consistency.

Moreover, we dichotomized cultures (Korean vs American) and did not account for cultural variations within countries. We asked participants about the number of years that they had lived abroad to explore whether this is associated with explicit stigma or implicit biases, but most participants had lived most of their lives in their respective country, limiting further investigation. Thus, we recommend that future work examine how cultural variability within countries (e.g. immigrant status) interacts with the cross-cultural differences in explicit and implicit stigma observed in this study.

Conclusion

This study expands on the findings of previous studies (S. Y. Kim et al., 2022; S. Y. Kim & Gillespie-Lynch et al., 2022) by demonstrating that (a) Koreans reported more negative implicit biases toward autism than Americans, (b) explicit and implicit biases were not associated with each other in both Korea and the United States, and (c) Koreans' perceptions of societal norms about how minority people should behave in their country may contribute to their explicit stigma toward autism. In addition to providing more opportunities to learn about autism and have quality contact with autistic people to both Koreans and Americans, the findings suggest the importance of fostering appreciation of minority cultures and diversity more generally for reducing stigma toward autistic people, especially in ethnically and culturally homogeneous cultural contexts like South Korea. Efforts to understand how national-level public policy and individual-level attitudes are associated with Koreans' perspectives on normalizing different minority groups are needed. Furthermore, this study suggests a generational shift as younger Koreans had more positive implicit attitudes toward autism. Factors contributing to this pattern should also be explored (perhaps via exploring potential cohort effects associated with more exposure to online sources related to cultural awareness and diversity). Given that IATs may more accurately be conceptualized as mirrors for structural inequalities within society than as measures of individual differences (Gawronski & Bodenhausen, 2017; Nosek et al., 2009), longitudinal studies that examine changes in IAT scores in response to societal shifts may illuminate how shifting media representations of autism and policy changes alter community attitudes toward autistic people cross-culturally.

Declaration of conflicting interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: This research was supported by the Yonsei Signature Cluster Program of 2022 (2022-22-0006).

ORCID iDs

So Yoon Kim https://orcid.org/0000-0003-1349-8031
Jeong Eun Cheon https://orcid.org/0000-0003-0133-3109
Kristen Gillespie-Lynch https://orcid.org/0000-0001-7292-3945
Jennifer Grandits https://orcid.org/0000-0002-5028-3972
Young-Hoon Kim https://orcid.org/0000-0002-0167-749X

Supplemental material

Supplemental material for this article is available online.

Notes

1. In terms of standard deviations (*SD*), Americans and Koreans reported relatively similar levels of variability across all variables except for outgroup derogation (SD = 1.66 and 0.98 for Americans and Koreans, respectively; see Table 1 for the SDs of all variables).
2. In addition, we conducted a principal component analysis (PCA) and identified five items that cohered to one construct across countries (see the study by Nelson, 2005, for the rationale for using the PCA to improve alpha reliability). Supplementary Material S3 presents the five items. The alpha internal consistencies of the five-item PAK-M were 0.77, 0.79, and 0.71, and the Kaiser–Meyer–Olkin measures were 0.79, 0.79, and 0.74 in the combined, American, and Korean samples, respectively. All analysis results calculated using the five-item measure were not different from those calculated using the 29-item PAK-M measure.
3. Including the social desirability variable in the main analysis did not change the significance patterns of findings, and social desirability was not a significant predictor in any of the regression models.
4. The number of years participants lived abroad was correlated with more negative implicit biases ($r = -0.11$, $p = 0.01$), but not with explicit attitudes ($r = -0.02$, $p = 0.57$) among Koreans. It was not correlated with implicit biases and explicit stigma among Americans (both $p > 0.05$). We did not include this variable as a main predictor in this study because we collected this information to explore the

demographic characteristics of participants and we did not have *a priori* hypothesis for this variable.

5. Eliminating participants whose response latency was smaller than 300 ms, instead of replacing it, did not change the significance patterns of the findings.
6. Explicit stigma was significantly correlated with implicit biases in the combined sample, $r = -0.18$, $p < 0.001$.
7. Social desirability was not correlated with explicit stigma and implicit biases among Americans ($p > 0.05$). Social desirability was significantly correlated with explicit stigma ($r = -0.13$; $p = 0.004$), but not with implicit biases ($r = -0.01$; $p = 0.92$) among Koreans.
8. When regular regressions were conducted or when outliers were not eliminated, heightened cultural tightness also significantly predicted greater stigma in the combined sample ($p = 0.003$). Including participants who self-identified as autistic made age ($p = 0.009$) and social dominance ($p = 0.008$) suggestive predictors of explicit stigma.
9. When including the reverse-scored version of the PAK-M, which was correlated with explicit stigma in the baseline correlations ($r = -0.18$; $p = 0.006$), as predictors instead of the full PAK-M measure, knowledge did not predict explicit stigma among Americans.
10. Including participants who self-identified as autistic, not eliminating outliers, and conducting regular regressions instead of robust regressions, did not change the patterns of the findings in both American and Korean samples.
11. Conducting regular regressions or not eliminating the outliers did not change the patterns of the finding in the combined sample. When participants who self-identified as autistic were included, only country remained significant ($p < 0.001$), while knowledge ($p = 0.02$) and age ($p = 0.01$) were suggestive predictors ($p = 0.02$ and $p = 0.01$, respectively).
12. Not eliminating outliers and conducting regular regressions did not change the patterns of the findings in both American and Korean samples. When including participants who self-identified as autistic among American participants, none of the variables predicted implicit stigma. The reverse-scored items of PAK-M were not correlated with explicit stigma among Koreans ($r = -0.01$; $p = 0.83$). Including the regular-scored version of the PAK-M did not change the significance patterns among Americans and Koreans.

References

Acts on Special Education for Persons with Disabilities. (2007).

Alba, R., & Nee, V. (1997). Rethinking assimilation theory for a new era of immigration. *International Migration Review*, *31*(4), 826–874.

Bast, D. F., Lyons, C., Stewart, I., Connor, T., Kelly, M., & Goyos, C. (2020). The effect of educational messages on implicit and explicit attitudes towards individuals on the autism spectrum versus normally developing individuals. *The Psychological Record*, *70*(1), 123–145. https://doi.org/10.1007/s40732-019-00363-4

Bernardi, R. A. (2006). Associations between Hofstede's cultural constructs and social desirability response bias. *Journal of Business Ethics*, *65*(1), 43–53. https://doi.org/10.1007/s10551-005-5353-0

Bogardus, E. S. (1933). A social distance scale. *Sociology and Social Research*, *17*, 265–271.

Brown, R., Vivian, J., & Hewstone, M. (1999). Changing attitudes through intergroup contact: The effects of group membership salience. *European Journal of Social Psychology*, *29*(5–6), 741–764. https://doi.org/10.1002/(SICI)1099-0992(199908/09)29:5/6<741::AID-EJSP972>3.0.CO;2-8

Buchanan, E. M., & Scofield, J. E. (2018). Methods to detect low quality data and its implication for psychological research. *Behavior Research Methods*, *50*, 2586–2596.

Cadinu, M., & Galdi, S. (2012). Gender differences in implicit gender self-categorization lead to stronger gender self-stereotyping by women than by men. *European Journal of Social Psychology*, *42*(5), 546–551.

Carpenter, S. (2000). Effects of cultural tightness and collectivism on self-concept and causal attributions. Cross-Cultural Research: *The Journal of Comparative Social Science*, *34*(1), 38–56.

Carpenter, T. P., Pogacar, R., Pullig, C., Kouril, M., Aguilar, S., LaBouff, J., Isenberg, N., & Chakroff, A. (2019). Survey-software implicit association tests: A methodological and empirical analysis. *Behavior Research Methods*, *51*(5), 2194–2208. https://doi.org/10.3758/s13428-019-01293-3

Choi, J. (2010). Educating citizens in a multicultural society: The case of South Korea. *The Social Studies*, *101*(4), 174–178. https://doi.org/10.1080/00377990903284153

Crocker, J., Thompson, L. L., McGraw, K. M., & Ingerman, C. (1987). Downward comparison, prejudice, and evaluations of others: Effects of self-esteem and threat. *Journal of Personality and Social Psychology*, *52*(5), 907–916. https://doi.org/10.1037//0022-3514.52.5.907

Crowne, D. P., & Marlow, D. (1964). *The approval motive*. John Wiley.

Dalton, D., & Ortegren, M. (2011). Gender differences in ethics research: The importance of controlling for the social desirability response bias. *Journal of Business Ethics*, *103*(1), 73–93. https://doi.org/10.1007/s10551-011-0843-8

de Vries, M., Cader, S., Colleer, L., Batteux, E., Yasdiman, M. B., Tan, Y. J., & Sheppard, E. (2020). University students' notion of autism spectrum conditions: A cross-cultural study. *Journal of Autism and Developmental Disorders*, *50*(4), 1281–1294.

Dickter, C. L., Burk, J. A., Anthony, L. G., Robertson, H. A., Verbalis, A., Seese, S., Myrick, Y., & Anthony, B. J. (2021). Assessment of Sesame Street online autism resources: Impacts on parental implicit and explicit attitudes toward children with autism. *Autism*, *25*(1), 114–124. https://doi.org/10.1177/1362361320949346

Dickter, C. L., Burk, J. A., Zeman, J. L., & Taylor, S. C. (2020). Implicit and explicit attitudes toward autistic adults. *Autism in Adulthood*, *2*(2), 144–151. https://doi.org/10.1089/aut.2019.0023

Dovidio, J. F., Kawaakami, K., Johnson, C., Johnson, B., & Howard, A. (1997). On the nature of prejudice: Automatic and controlled processes. *Journal of Experimental Social Psychology*, *33*(5), 510–540.

Fein, S., & Spencer, S. J. (1997). Prejudice as self-image maintenance: Affirming the self-through derogating others. *Journal of Personality and Social Psychology*, *73*(1), 31–44. https://doi.org/10.1037/0022-3514.73.1.31

Field, A. (2016). *Discovering statistics using IBM SPSS statistics*. SAGE.

Fischer, R., & Derham, C. (2016). Is ingroup bias culture-dependent? A meta-analysis across 18 societies. *Springer Plus, 5*, 70.

Gardiner, E., & Iarocci, G. (2014). Students with autism spectrum disorder in the university context: Peer acceptance predicts intention to volunteer. *Journal of Autism and Developmental Disorders*, *44*(5), 1008–1017. https://doi.org/10.1007/s10803-013-1950-4

Gawronski, B., & Bodenhausen, G. V. (2017). Beyond persons and situations: An interactionist approach to understanding implicit bias. *Psychological Inquiry*, *28*(4), 268–272.

Gelfand, M. J., Raver, J. L., Nishii, L., Leslie, L. M., Lun, J., Lim, B. C., Duan, L., Almaliach, A., Ang, S., Arnadottir, J., Aycan, Z., Boehnke, K., Boski, P., Cabecinhas, R., Chan, D., Chhokar, J., D'Amato, A., Ferrer, M., Fischlmayr, C., . . . Yamaguchi, S. (2011). Differences between tight and loose cultures: A 33-nation study. *Science*, *332*(6033), 1100–1104. https://doi.org/10.1126/science.1197754

Gillespie-Lynch, K., Brooks, P. J., Someki, F., Obeid, R., Shane-Simpson, C., Kapp, S. K., Daou, N., & Smith, D. S. (2015). Changing college students' conceptions of autism: An online training to increase knowledge and decrease stigma. *Journal of Autism and Developmental Disorders*, *45*, 2553–2566.

Gillespie-Lynch, K., Daou, N., Sanchez-Ruiz, M., Kapp, S. K., Obeid, R., Brooks, P. J., Greenwald, A. G., McGhee, D. E., & Schwartz, J. L. (2022). If you want to develop an effective autism training, ask autistic students. *Autism*, *26*(5), 1082–1094.

Gillespie-Lynch, K., Daou, N., Sanchez-Ruiz, M., Kapp, S. K., Obeid, R., Brooks, P. J., Someki, F., Silton, N., & Abi-Habib, R. (2019). Factors underlying cross-cultural differences in stigma toward autism among college students in Lebanon and the United States. *Autism, 23*(8), 1993–2006.

Goffman, E. (1963). *Stigma: Notes on the management of spoiled identity.* Simon & Schuster.

Greenwald, A. G., & Banaji, M. R. (1995). Implicit social cognition: Attitudes, self-esteem, and stereotypes. *Psychological Review*, *102*(1), 4–27. https://doi.org/10.1037/0033-295x.102.1.4

Greenwald, A. G., McGee, D. E., & Schwartz, J. L. K. (1998). Measuring individual differences in implicit cognition: The implicit association test. *Journal of Personality and Social Psychology*, *74*(6), 1464–1480. https://doi.org/10.1037/0022-3514.74.6.1464

Greenwald, A. G., Nosek, B. A., & Banaji, M. R. (2003). Understanding and using the Implicit Association Test: I. An improved scoring algorithm. *Journal of Personality and Social Psychology*, *85*(2), 197–216.

Greenwald, A. G., Poehlman, T. A., Uhlmann, E., & Banaji, M. R. (2009). Understanding and using the Implicit Association Test: III. Meta-analysis of predictive validity. *Journal of Personality and Social Psychology*, *97*(1), 17–41.

Grinker, R. R. (2020). Autism, "stigma," disability: A shifting historical terrain. *Current Anthropology*, *61*(S21), S55–S67.

Grinker, R. R., & Cho, K. (2013). Border children: Interpreting autism spectrum disorder in South Korea. *Journal of the Society for Psychological Anthropology*, *41*(1), 46–74.

Guimond, S., de la Sablonnière, R., & Nugier, A. (2014). Living in a multicultural world: Intergroup ideologies and the societal context of intergroup relations. *European Review of Social Psychology*, *25*(1), 142–188. https://doi.org/10.1080/10463283.2014.957578

Hinshaw, S. P., & Stier, A. (2008). Stigma as related to mental disorders. *Annual Review of Clinical Psychology*, *4*, 367–393.

Hofmann, W., Gawronski, B., Gschwendner, T., Le, H., & Schmitt, M. (2005). A meta-analysis on the correlation between the Implicit Association Test and explicit self-report measures. *Personality and Social Psychology Bulletin*, *31*(10), 1369–1385.

Hong, W. (2010). Multicultural education in Korea: Its development, remaining issues, and global implications. *Asia Pacific Education Review*, *11*(3), 387–395. https://doi.org/10.1007/s12564-010-9089-x

Jang, J., & Shin, H. (2011). Development of self-esteem stability scale. *The Korean Journal of Counseling and Psychotherapy*, *23*(3), 635–654.

Jones, D. R., DeBrabander, K. M., & Sasson, N. J. (2021). Effects of autism acceptance training on explicit and implicit biases toward autism. *Autism*, *25*(5), 1246–1261. https://doi.org/10.1177/1362361320984896

Kang-Yi, C. D., Grinker, R. R., & Mandell, D. S. (2013). Korean culture and autism spectrum disorders. *Journal of Autism and Developmental Disorders*, *43*(3), 503–520.

Kapp, S. K., Gillespie-Lynch, K., Sherman, L. E., & Hutman, T. (2012). Deficit, difference, or both? Autism and neurodiversity. *Developmental Psychology*, *49*(1), 59–71.

Karpinski, A., & Steinman, R. B. (2006). The single category implicit association test as a measure of implicit social cognition. *Journal of Personality and Social Psychology*, *91*(1), 16–32. https://doi.org/10.1037/0022-3514.91.1.16

Kim, N. H.-J. (2015). The retreat of multiculturalism? Explaining the South Korean exception. *American Behavioral Scientist*, *59*(6), 727–746.

Kim, S. H., & Kim, S. (2016). National culture and social desirability bias in measuring public service motivation. *Administration & Society*, *48*(4), 444–476. https://doi.org/10.1177/0095399713498749

Kim, S. Y., Cheon, J. E., Gillespie-Lynch, K., & Kim, Y. H. (2022). Is autism stigma higher in South Korea than the United States? Examining cultural tightness, intergroup bias, and concerns about heredity as contributors to heightened autism stigma. *Autism*, *26*(2), 460–472. https://doi.org/10.1177/13623613211029520

Kim, S. Y., & Gillespie-Lynch, K. (2022). Do autistic people's support needs and non-autistic people's support for the neurodiversity movement contribute to heightened autism stigma in South Korea vs. the U.S.? *Journal of Autism and Developmental Disorders*. Advance online publication. https://doi.org/10.1007/s10803-022-05739-0

Kim, Y. S., Leventhal, B. L., Koh, Y. J., Fombonne, E., Laska, E., Lim, E. C., . . .Grinker, R. R. (2011). Prevalence of autism spectrum disorders in a total population sample. *The American Journal of Psychiatry*, *168*(9), 904–912.

Kim-Rupnow, W. (2005). Disability and Korean culture. In J. H. Stone (Ed.), *Culture and disability: Providing culturally competent services* (pp. 115 -138). SAGE Publications.

Kteily, N. S., Sidanius, J., & Levin, S. (2011). Social dominance orientation: Cause or "mere effect?" Evidence. *Journal of Experimental Social Psychology*, *47*(1), 208–214. https://doi.org/10.1016/j.jesp.2010.09.009

Lalwani, A. K., Shavitt, S., & Johnson, T. (2006). What is the relation between cultural orientation and socially desirable responding? *Journal of Personality and Social Psychology*, *90*(1), 165–178. https://doi.org/10.1037/0022-3514.90.1.165

Lampropoulos, D., & Apostolidis, T. (2018). Social dominance orientation and discrimination against people with schizophrenia: Evidence of medicalization and dangerousness beliefs as legitimizing myths. *Spanish Journal of Psychology*, *21*, E37. https://doi.org/10.1017/sjp.2018.46

Lee, H., & Yoo, T. (2018). The relationship between social dominance orientation and contextual performance. *Korean Journal of Industrial and Organizational Psychology*, *31*(4), 795–829. https://doi.org/10.24230/kjiop.v31i4.795-829

Lewis, L. F. (2016a). Exploring the experience of self-diagnosis of autism spectrum disorder in adults. *Archives of Psychiatric Nursing*, *30*(5), 575–580. https://doi.org/10.1016/j.apnu.2016.03.009

Lewis, L. F. (2016b). Realizing a diagnosis of autism spectrum disorder as an adult. *International Journal of Mental Health Nursing*, *25*(4), 346–354. https://doi.org/10.1111/inm.12200

Liang, B., Commins, M., & Duffy, N. (2010). Using social media to engage youth: Education, social justice, & humanitarianism. *Prevention Researcher*, *17*(5), 13–16.

Link, B. G., & Phelan, J. C. (2001). Conceptualizing stigma. *Annual Review of Sociology*, *27*, 363–385.

Lipson, J., Taylor, C., Burk, J. A., & Dickter, C. L. (2020). Perceptions of and behavior toward university students with autism. *Basic and Applied Social Psychology*, *42*(5), 354–368. https://doi.org/10.1080/01973533.2020.1785468

Luís, S., & Palma-Oliveira, J. (2016). Public policy and social norms: The case of a nationwide smoking ban among college students. *Psychology, Public Policy, and Law*, *22*(1), 22–30. https://doi.org/10.1037/law0000064

Meissner, F., Grigutsch, L. A., Koranyi, N., Muller, F., & Rothermund, K. (2019). Predicting behavior with implicit measures: Disillusioning findings, reasonable explanations, and sophisticated solutions. *Frontiers in Psychology*, *10*, Article 2483.

Ministry of Education. (2020). *Special Education Statistics 2020*.

Nelson, L. R. (2005). Some observations on the scree test, and on coefficient alpha. *Journal of Educational Research and Measurement*, *3*(1), 1–17.

Nosek, B. A., & Smyth, F. L. (2007). A multitrait-multi-method validation of the Implicit Association Test: Implicit and explicit attitudes are related by distinct constructs. *Experimental Psychology*, *54*(1), 14–29.

Nosek, B. A., Smyth, F. L., Sriram, N., Lindner, N. M., Devos, T., Ayala, A., . . .Greenwald, A. G. (2009). National differences in gender–science stereotypes predict national sex differences in science and math achievement. *Proceedings of the National Academy of Sciences of the United States of America*, *106*(26), 10593–10597.

Nouri, A., & Sajjadi, S. M. (2014). Emancipatory pedagogy in practice: Aims, principles and curriculum orientation. *International Journal of Critical Pedagogy*, *5*(2), 76–87.

Nyborg, K. (2003). The impact of public policy on social and moral norms: Some examples. *Journal of Consumer Policy*, *26*(3), 259–277. https://doi.org/10.1023/A:1025622223207

Obeid, R., Bisson, J. B., Cosenza, A., Harrison, A. J., James, F., Saade, S., & Gillespie-Lynch, K. (2021). Do implicit and explicit racial biases influence autism identification and stigma? An implicit association test study. *Journal of Autism and Developmental Disorders*, *51*(1), 106–128. https://doi.org/10.1007/s10803-020-04507-2

Obeid, R., Daou, N., DeNigris, D., Shane-Simpson, C., Brooks, P. J., & Gillespie-Lynch, K. (2015). A cross-cultural comparison of knowledge and stigma associated with autism spectrum disorder among college students in Lebanon and the United States. *Journal of Autism and Developmental Disorders*, *45*(11), 3520–3536. https://doi.org/10.1007/s10803-015-2499-1

Pantelis, P. C., & Kennedy, D. P. (2016). Estimation of the prevalence of autism spectrum disorder in South Korea, revisited. *Autism*, *20*(5), 517–527.

Phelan, J. C., Link, B. G., & Dovidio, J. F. (2008). Stigma and prejudice: One animal or two? *Social Science & Medicine*, *67*(3), 358–367.

Pratto, F., Sidanius, J., Stallworth, L. M., & Malle, B. F. (1994). Social dominance orientation: A personality variable predicting social and political attitudes. *Journal of Personality and Social Psychology*, *67*(4), 741–763. https://doi.org/10.1037/0022-3514.67.4.741

Puckett, J. A., Zachary DuBois, L., McNeill, J. N., & Hanson, C. (2020). The association between social dominance orientation, critical consciousness, and gender minority stigma. *Journal of Homosexuality*, *67*(8), 1081–1096. https://doi.org/10.1080/00918369.2019.1603493

Reynolds, W. M. (1982). Development of reliable and valid short forms of the Marlowe-Crowne Social Desirability Scale. *Journal of Clinical Psychology*, *38*(1), 119–125. https://doi.org/10.1002/1097-4679(198201)38:1<119::AID-JCLP2270380118>3.0.CO;2-I

Richetin, J., Costantini, G., Perugini, M., & Schönbrodt, F. (2015). Should we stop looking for a better scoring algorithm for handling Implicit Association Test data? Test of the role of errors, extreme latencies treatment, scoring formula, and practice trials on reliability and validity. *PLOS ONE*, *10*(6), Article e0129601. https://doi.org/10.1371/journal.pone.0129601

Rodriguez-Garcia, D. (2010). Beyond assimilation and multiculturalism: A critical review of the debate on managing diversity. *Journal of International Migration and Integration*, *11*, 251–271.

Rosenthal, L., & Levy, S. R. (2010). The colorblind, multicultural, and polycultural ideological approaches to improving intergroup attitudes and relations. *Social Issues and Policy Review*, *4*(1), 215–246.

Rosenberg, M. (1965). Rosenberg Self-Esteem Scale (RSE). *Acceptance and Commitment Therapy. Measures Package*, *61*, 52.

Ryan, A. M., Bradburn, J., Bhatia, S., Beals, E., Boyce, A. S., Martin, N., & Conway, J. (2021). In the eye of the beholder: Considering culture in assessing the social desirability of personality. *Journal of Applied Psychology*, *106*(3), 452–466.

Schimmack, U. (2021). Invalid claims about the validity of implicit association tests by prisoners of implicit social-cognition paradigm. *Perspectives on Psychological Science*, *16*(2), 435–442.

Sleeter, C. E. (1996). *Multicultural education as social activism*. State University of New York.

Someki, F., Silton, N., Abi-Habib, R., Gillespie-Lynch, K., Daou, N., Sanchez-Ruiz, M. J., Kapp, S. K., Obeid, R., Brooks, P. J., Someki, F., Silton, N., & Abi-Habib, R. (2019). Factors underlying cross-cultural differences in stigma toward autism among college students in Lebanon and the United States. *Autism*, *23*(8), 1993–2006. https://doi.org/10.1177/1362361318823550

Sriram, N., & Greenwald, A. G. (2009). The brief implicit association test. *Experimental Psychology*, *56*(4), 283–294. https://doi.org/10.1027/1618-3169.56.4.283

Statistics Korea. (2020). *Statistics on multicultural population*. https://kostat.go.kr/portal/korea/kor_nw/1/1/index.board?bmode=read&aSeq=414976

Stone, W. L. (1987). Cross-disciplinary perspectives on autism. *Journal of Pediatric Psychology*, *12*(4), 615 -630.

Strunk, D. R., & Chang, E. C. (1999). Distinguishing between fundamental dimensions of individualism–collectivism: Relations. *Personality and Individual Differences*, *27*(4), 665–671. https://doi.org/10.1016/S0191-8869(98)00258-X

Suárez-Alvarez, J., Pedrosa, I., Lozano, L. M., García-Cueto, E., Cuesta, M., & Muñiz, J. (2018). Using reversed items in Likert scales: A questionable practice. *Psicothema*, *30*(2), 149–158.

UCLA Advanced Research Computing Statistical Methods and Data Analytics. (n.d.). *Regression with Stata Chapter 2 - Regression Diagnostic*. Retrieved April 25, 2022, from https://stats.oarc.ucla.edu/stata/webbooks/reg/chapter2/stata-webbooksregressionwith-statachapter-2-regression-diagnostics/

Vigil-Colet, A., Navarro-González, D., & Morales-Vives, F. (2020). To reverse or to not reverse Likert-type items: That is the question. *Psicothema*, *32*(1), 108–114.

Waisman, T. C., Williams, Z. J., Cage, E., Santhanam, S. P., Magiati, I., Dwyer, P., Stockwell, K. M., Kofner, B., Brown, H., Davidson, D., Herrell, J., Shore, S. M., Caudel, D., Gurbuz, E., & Gillespie-Lynch, K. (2022). Learning from the experts: Evaluating a participatory autism and universal design training for University Educators. *Autism*. https://doi.org/10.1177/13623613221097207

VanDaalen, R. (2021). *Development and validation of neurodiversity attitudes scale* [Doctoral dissertation]. Arizona State University.

Walton, J. (2018a). "I am Korean": Contested belonging in a "multicultural" Korea. In C. Halse (Ed.), *Interrogating belonging for young people in schools* (pp. 113–140). Palgrave Macmillan.

Walton, J. (2018b). The limits of multiculturalism without diversity: Multiethnic students and the negotiation of "difference" in South Korean schools. *Ethnic and Racial Studies*, *43*(5), 29–47.

Wasserstein, R. L., Schirm, A. L., Lazar, N. A., Kuffner, T. A., & Walker, S. G. (2019). Why are P-values controversial? *The American Statistician*, *73*(1), 1–3. https://doi.org/10.1080/00031305.2016.1277161

Whitley, B. E., & Webster, G. D. (2019). The relationships of intergroup ideologies to ethnic prejudice: A meta-analysis. *Personality and Social Psychology Review*, *23*(3), 207–237. https://doi.org/10.1177/1088868318761423

White, D., Hillier, A., Frye, A., & Makrez, E. (2019). College students' knowledge and attitudes towards students on the autism spectrum. *Journal of Autism and Developmental Disorders*, *49*, 2699–2705.

Wilson, M. C., & Scior, K. (2014). Attitudes towards individuals with disabilities as measured by the implicit association test: A literature review. *Research in Developmental Disabilities*, *35*(2), 294–321.

Yamagishi, T., Jin, N., & Miller, A. S. (1998). Ingroup bias and culture of collectivism. *Asian Journal of Social Psychology*, *1*, 315–328.