

Factually-based autism awareness campaigns may not always be effective in changing attitudes towards autism: evidence from British and South Korean nursing students

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Abstract

This study explored the relationship between autism knowledge, autistic traits, frequency of contact with autistic people and attitudes towards these individuals in British and South Korean student nurses and whether these relationships were affected by the presence of autistic traits. In total, 331 participants (156 South Korean and 175 British) completed self-report measures of autism knowledge, attitudes towards autistic people, frequency of contact with these individuals and autistic traits. Although British participants demonstrated greater knowledge and more favourable attitudes, significant knowledge deficiencies were noted in both groups. Among British participants, knowledge was found to be a significant, but a very marginal, predictor of attitudes, whereas neither knowledge nor frequency of contact were predictive of attitudes among South Korean participants. Contrary to previous research findings, cultural differences in the presence of autistic traits were not noted, nor were these traits found to correlate with attitudes towards autistic people. The findings suggest that awareness initiatives which aim to address attitudes towards autism need more than simply increasing factual knowledge. More importantly, the results suggest that Western-developed autism awareness initiatives may be ineffectual if cultural idiosyncrasies are not considered.

Introduction

Over the past few decades, autism awareness has been promoted through strategic action plans (e.g., Department of Health, 2015), the development of professional training programmes (Ashworth & Tully, 2017; Giannopoulou, Pasalari, Korkoliakou, & Douzenis, 2018), peer acceptance training (Gillespie-Lynch et al., 2015) and health promotion campaigns such as the United Nations-led World Autism Awareness Month. A range of legislative changes in the U.K., and other countries, have also aimed to increase autism awareness (Autism Act 2009; Autism Act Northern Ireland 2011; Autism Spectrum Disorder Bill 2017; Combating Autism Act 2006). Many of these measures have been accommodated by substantial increases in funding allocation and charitable donations (Ritchey & Nicholson-Crotty, 2015; Tager-Flusberg, Joseph, & Folstein, 2001).

Autism awareness campaigns aim to increase factually accurate knowledge regarding autism spectrum conditions (ASCs)¹. The rationale for this type of campaign is that it is assumed that increased knowledge will result in improved attitudes towards autistic² people. However, the capacity of these initiatives to improve attitudes has been criticised for pathologising difference rather than embracing neurodiversity (McGuire, 2012; Robertson, 2009). More importantly, the efficacy of these policies has been disputed by studies showing no increase in favourable attitudes following knowledge training (Matthews, Ly, & Goldberg, 2015; White, Hillier, Frye, & Makrez, 2016). Therefore, it is vital to ensure that such initiatives are developed and delivered in a manner which maximises both factually

¹ The terms “ASCs” and “autism” are used interchangeably throughout this paper.

² Among the autism community in the United Kingdom, the adjective “autistic” is preferred to person-first language (Kenny et al., 2016). In line with this preference, identity-first language will be used throughout this paper.

accurate knowledge of autism and favourable attitudes. In turn, it is important to ensure that unfavourable attitudes do not persist despite awareness initiatives, especially considering that autism awareness training remains largely unregulated (National Autistic Society, 2012).

The Relationship between Autism Knowledge, Attitudes and Frequency of Contact

A major aim of awareness campaigns is to improve attitudes towards autism (Alsehem, Abousaadah, Sairafi, & Jan, 2017). Allport's (1954) intergroup contact theory proposes that increased knowledge of the outgroup leads to reduced prejudice. As stated earlier, although several studies have provided empirical support to this claim in the domain of autism research (Mavropoulou & Sideridis, 2014; Pettigrew & Tropp, 2008), others have found no significant relationship between autism knowledge and attitudes towards autistic people (Gardiner & Iarocci, 2014; Matthews et al., 2015; McManus, Feyes, & Saucier, 2011; White et al., 2016) which suggests that increased factual knowledge alone may not help improving attitudes. The development of positive attitudes may also need contact with autistic people, as suggested by Makas' (1993) contact hypothesis. This theory has received empirical support in studies exploring teachers' (Tindall, MacDonald, Carroll, & Moody, 2015) and healthcare professionals' (Au & Man, 2006; Stachura & Garven, 2007) attitudes towards disabled individuals.

An additional factor to consider when designing autism awareness campaigns is the target audience. Of particular importance are healthcare professionals, as it has long been acknowledged that autistic people regularly encounter many such professionals before a diagnosis (Farber & Capute, 1984), and there is growing

expectation for these professionals to be sufficiently knowledgeable about autism (Berney & Belshaw, 2011). Although there is a considerable body of literature examining specialist healthcare providers' knowledge of autism (Heidgerken, Geffken, Modi, & Frakey, 2005; Rhoades, Scarpa, & Salley, 2007; Stone, 1987; Zerbo, Massolo, Qian, & Croen, 2015), the topic has been less thoroughly examined among front-line healthcare professionals such as nurses. Since the path to diagnosis often includes contact with nurses, these professionals should be adequately informed about the aetiology, symptomatology, diagnosis, management and epidemiology of ASCs and the impact it may have on the family unit (Lutz, Patterson, & Klein, 2012). It also appears important to further explore ASCs knowledge and attitudes among student nurses as preliminary evidence suggests that they may hold less favourable attitudes towards autistic patients compared to other healthcare disciplines (Tervo & Palmer, 2004; Werner, 2011).

Autism Knowledge among Nursing Professionals and Students

Nurses will frequently be approached by families seeking information regarding autism and will, therefore, play a vital role in helping families during the post-diagnosis process to reduce the stress which is sometimes associated with the delivery of a diagnosis (Elder & D'alessandro, 2009; Moh & Magiati, 2012; Stuart & McGrew, 2009). Despite this evidence, few studies have examined nurses' knowledge of autism. Those that have, consistently show concerning gaps of autism knowledge across the globe. For instance, Strunk (2009), in an investigation of U.S. nurses, identified knowledge gaps regarding communication skills, behavioural interventions and strategies for dealing with challenging behaviour. These knowledge deficiencies may be explained by inadequate professional development for U.S.

nurses tasked with the clinical management of autistic patients (Giarelli, Guttenberg, & Segal, 2012). Similarly, within the Nigerian context, knowledge of autism has been shown to be insufficient among paediatric and psychiatric nurses (Bakare & Munir, 2011; Igwe, Ahanotu, Bakare, Achor, & Igwe, 2011). More worryingly, Bakare et al. (2009) revealed that 41% of paediatric nurses in Nigeria attributed the aetiology of ASCs to preternatural or supernatural causes. Hence, these findings suggest that autism-specific content in some nursing training programmes is insufficient to dispel common misconceptions.

University-level training may not adequately prepare nursing students to deal with autistic individuals. Tipton and Blacher (2014) found that prevalent misconceptions among U.S. university students included information regarding autism heritability, the causative influence of vaccines and the homogeneity of poor eye contact. Similarly, evidence from the Nigerian context demonstrated lower knowledge of ASCs among final year nursing students compared to medical students (Igwe et al., 2010). This finding brings into question the effectiveness of professional training programmes in preparing nursing students for roles which will involve contact with autistic people. Addressing inadequate knowledge of autism among nursing students is a pertinent concern since knowledge deficiencies may negatively affect attitudes towards autistic people and their families.

Attitudes towards Autistic People among Professionals and Students

The existence of a pervasive negative bias towards disabled individuals (Paris, 1993; Wright, 1988), as well as the adverse consequences of unfavourable professional attitudes towards specific groups for service delivery (Kaplan, 1982), have long been acknowledged. The adverse consequences of such unfavourable

attitudes may include barriers to care (Heflinger & Hinshaw, 2010), the perpetuation of harmful stereotypes, devaluation and discrimination (Mukolo, Heflinger, & Wallston, 2010). Although there is a research gap regarding nurses' attitudes towards autism, research suggests that U.S. and U.K. nurses hold less favourable attitudes towards patients with disabilities when compared to occupational therapists and physical therapists (White & Olson, 1998) and they demonstrate fewer positive emotions towards patients with learning difficulties compared to patients with physical disabilities (Lewis & Stenfert-Kroese, 2010; McConkey & Truesdale, 2000).

There is a limited body of research regarding nursing students' attitudes towards autistic people, and this has been conducted exclusively in Western countries. As is the case with autism knowledge, this research suggests that university-level training is inadequate. For instance, in a qualitative exploration of healthcare students' attitudes towards working with autistic people, Werner (2011) found that, compared to other healthcare majors, nursing students infrequently rated this work as important and underemphasised the importance of training. When examining more broadly nursing students' attitudes towards disabled individuals, Tervo and Palmer (2004) found that U.S. nursing students held more negative attitudes towards individuals with disabilities than those of the established norms. The researchers concluded that negative attitudes may stem from viewing individuals through the lens of clinical pathology and disregarding patients' abilities. Since research regarding autism knowledge deficiencies and attitudes among practising and student nurses are limited to several studies within specific cultural contexts (Bakare et al., 2009; Igwe et al., 2010; Strunk, 2009; Werner, 2011), expansion of the current research body is required.

Cross-cultural Research regarding ASCs

Another contributing factor influencing attitudes is the presence of pre-existing preconceptions or stereotypes, which vary significantly across cultures; yet research studies rarely make methodologically consistent cross-cultural comparisons. The need for culturally informed research regarding ASCs has been stressed by Kang-Yi, Grinker and Mandell (2013), who highlight its importance for psychological and educational services in countries where autism may be misunderstood. However, since most studies exploring attitudes towards and knowledge of ASCs have relied on data from Western participants, the findings of this research may not be readily extrapolated to other cultures. A comprehensive understanding of autism needs consideration of socio-cultural influences (López, 2015). Hence, it seems important to examine the relationship between knowledge and attitudes in different cultures, as the relationship between these may vary cross-culturally.

Autistic-like Traits: Relationship with Attitudes and Cultural Differences

An overlooked factor that may impact on attitudes towards autistic people is that of perceived similarity. Early studies recognised the role of perceived similarity in the formation of attitudes towards neurodiverse individuals (Novak & Lerner, 1968; Siperstein & Chatillon, 1982), and this theory has more recently been supported in relation to people with learning difficulties (Li, Wu, & Ong, 2014; Ouellette-Kuntz et al., 2003) and mental illness (Fox, Meyer, & Vogt, 2015). However, few studies have explored the role of perceived similarity in the formation of attitudes towards autistic people. In line with the view that perceived similarity may impact on attitudes towards autistic people, based on functional brain imaging and behavioural research, Komeda et al. (2015) proposed the similarity hypothesis. This hypothesis

posits that autistic individuals may empathise with and offer support to other autistic individuals more readily than they would to neurotypical individuals. However, the studies reviewed by Komeda et al. had significant limitations including small sample sizes and an absence of cross-cultural comparisons.

There is considerable support for the existence of a broader autism phenotype in which clinical autism diagnoses represent extreme scores on this dimension (Piven, Palmer, Jacobi, & Childress, 1997). The broader autism phenotype may, therefore, be understood as the sub-clinical presence of autistic-like traits in the general population. However, there are just two studies examining the relationship between autistic traits and attitudes towards autistic people. In one study, Nevill and White (2011) found that U.S. science and engineering students with more autistic traits, as measured by the Adult Autism-spectrum Quotient (AQ) (Baron-Cohen, Wheelwright, Skinner, Martin, & Clubley, 2001), did not demonstrate more favourable attitudes towards autistic peers. In a similar study of U.S. psychology students, Gardiner and Iarocci (2014) also found the relative presence of autistic traits and attitudes towards autistic people to be unrelated. However, the relationship between autistic traits and attitudes towards autistic people has not been studied in Eastern cultures.

Emerging evidence suggests that autistic traits are higher in Eastern cultures. For instance, higher autistic traits have been detected in Japanese participants (Wakabayashi, Baron-Cohen, Wheelwright, & Tojo, 2006) and Indian and Malaysian participants (Freeth, Sheppard, Ramachandran, & Milne, 2013) relative to British participants. Hence, it is possible that in the presence of greater autistic traits—as may be the case in Eastern cultures—the relationship between perceived similarity (i.e., autistic traits) and attitudes may become of significance and inform culturally specific guidelines on attitude change initiatives.

Study Aims

This study has two aims. Firstly, to explore the best predictors of positive attitudes towards autism and address the dearth of research with nursing students. Specifically, the study will examine the relationship between knowledge of autism, attitudes towards autistic people, frequency of contact with these individuals and the presence of autistic traits in British and South Korean nursing students. Secondly, and to tackle the cultural imbalance within autism research, the study will investigate potential cross-cultural differences between British and South Korean nursing students in these variables and the inter-relationship patterns. In terms of cultural differences, and in view of previous research, it was predicted that Korean participants would score significantly higher on autistic traits. Given the lack of previous research in a Korean context, we could not make clear predictions regarding the presence of cultural differences on measures of autism knowledge, autism attitudes and frequency of contact with autistic people. In terms of relationships between variables, it was predicted that, for both nation groups, positive correlations would be detected between, firstly, attitudes towards autism and autism knowledge and, secondly, attitudes towards autism and frequency of contact with autistic people.

Method

Research Design

This cross-sectional study employed a between-subjects design with one independent variable (nation group) and four dependent variables. The dependent variables were the scores of the Autism Survey Questionnaire (ASQ), the Openness Scale (OS), the Frequency of Contact Scale (FCS) and the Adult Autism-spectrum

Quotient (AQ). The study also involved a correlational component to determine whether there was a significant association between the four dependent variables

Participants

The inclusion criterion required participants to be enrolled in an undergraduate or postgraduate nursing programme. The target sample size was computed with G*Power (Faul, Erdfelder, Lang, & Buchner, 2007). Previous research with undergraduates has indicated a weak correlation ($r = .26$) between knowledge of and attitudes towards peers with special educational needs (Bekle, 2004). Therefore, using these data, it was determined that 111 participants would be needed to detect weak effect sizes ($r = .26$, α (two-tailed) = .05, power = .80). Data from 331 participants were included in the statistical analyses. Of these, 156 participants were South Korean (29 males and 127 females) and 175 British (7 males and 168 females), with a mean age of 23.8 (South Korean: $M = 19.7$, $SD = 1.7$; British: $M = 27.4$; $SD = 7.8$). The large majority of participants ($n = 325$) were undergraduate students (South Korean = 156; British = 169) with only 6 postgraduate students (South Korean = 0; British = 6). All South Korean participants were enrolled in a general nursing course while the majority of British participants were enrolled in an adult nursing course (76%), or a mental health (10%), paediatric (10%), learning disability (2%) or general nursing course (1%). The participants' location was verified by their IP addresses. South Korean participants were identified using a combination of non-probability cluster sampling and convenience sampling, whereas British participants were identified using convenience sampling. Participants who selected a nationality other than British or South Korean were prompted to provide the age at which they emigrated to the United Kingdom or South Korea. Participants who emigrated after

early childhood (eight years) were excluded since numerous studies have demonstrated that age of arrival is a significant predictor of acculturation (Cheung, Chudek, & Heine, 2011; Kuo & Roysircar, 2004). This criterion led to the exclusion of data from nine participants.

Ethics

This study was reviewed and approved by the Department of Psychology Ethics Committee at the University of Portsmouth. As the researcher was employed by the university at which some of the South Korean participants were recruited, to minimise ethical issues, these participants were informed that their participation was voluntary, and that data would be entirely anonymous so that their decision to participate would have no bearing on grades or on the student-instructor relationship.

Materials

An online questionnaire was created to address the research questions using the Qualtrics research platform (Qualtrics Inc.). The questionnaire comprised four scales and a demographics section. Data were collected between March 22nd, 2018 and May 4th, 2018.

Demographics Questionnaire

A demographics section was used to collect data regarding age, nationality (British, South Korean or “other”), gender (male, female or “prefer not to say”), level of current studies (undergraduate or postgraduate), year of study (1st, 2nd, 3rd or 4th), and nursing specialisation (general, adult, paediatric, mental health, learning disability or “other”). Since a traditional system of age reckoning referred to as *nai* (나이) is

predominantly used in South Korea (see Meinschmidt & Tegethoff, 2015), it was specified that South Korean participants should report their international age.

Openness Scale (OS)

An adapted version of the Openness Scale (Nevill & White, 2011) was used to determine nursing students' attitudes towards autistic people. The construct validity of this scale has been supported through principal component analysis (Nevill & White, 2011) and it uses the empirically validated tripartite model of attitudes (Breckler, 1984; Rosenberg & Hovland, 1960). The internal consistency of the scale was acceptable ($\alpha = .80$). The scale required participants to respond to statements regarding a fictionalised vignette character who has difficulties with social imagination, social engagement and social communication, and engages in restricted and repetitive behaviours. This scale was adapted by replacing a gender-specific name of the vignette character with a gender-neutral name, both in Korean (Kim) and in English (Pat). The vignette was followed by 7 statements which assessed affective, behavioural and cognitive attitudes towards autistic people. Each statement was rated on a 5-point Likert scale from Strongly Agree [1] to Strongly Disagree [5]. Scores for Items 2 and 6 were reversed and then all items were summed to yield an attitude index between 7 and 35, with higher scores denoting more favourable attitudes towards autistic people.

Autism Survey Questionnaire (ASQ)

An adapted version of the Autism Survey Questionnaire (Imran et al., 2011) was used to determine nursing students' knowledge of autism. Only Items 1–22, which assess general beliefs regarding autism, were included as this section of the

scale has been shown to be the most psychometrically rigorous (Campbell, Reichle, & Van Bourgondien, 1996). Campbell et al. demonstrated acceptable internal consistency ($\alpha = .74$) and validated the scale using multiple comparison tests. The scale was adapted by the removal of two culture-specific statements which would be irrelevant to the countries in the present study since they referred to the Pakistani context (Items 9 and 11). In addition, although Item 8, “*Most autistic children have special talents or abilities*”, was included in the scale, this question was not included in statistical analyses due to the high variability in reports of special talents, ranging from 1 in 200 (Hermelin, 2001) to 1 in 3 (Bennett & Heaton, 2012; Howlin, Goode, Hutton, & Rutter, 2009). Finally, the term “mentally retarded” was replaced with the preferred term in the U.K., “learning disability” (Item 4). Participants were instructed to choose from three options for each item, “Agree”, “Don’t Know” or “Disagree”. Correct responses were scored as [1], and incorrect or “Don’t Know” responses were scored as [0]. Scores were then summed to yield a knowledge index between 0 and 19, with higher scores indicating greater knowledge of ASCs.

Frequency of Contact Scale (FCS)

Participants were asked to report the number of autistic people with whom they had regular contact. This scale was influenced by Holmes, Corrigan, Williams, Canar and Kubiak (1999), however, an important scoring adaption was made. Holmes et al. made assumptions of frequency of contact based on type of relationship. For instance, a higher frequency of contact score was assigned to respondents who reported having an autistic relative compared to an autistic co-worker. This method of scoring is problematic as, conceivably, a respondent may have more frequent contact with a co-worker than a distant relative. Due to this limitation, the present

study asked respondents to report the number of people with whom they had regular contact. Responses of “None” were scored as [0], and a score of [1] was assigned to respondents who reported regular contact with someone from the following categories: “Immediate Family”, “Extended Family”, “Friends”, “Classmates” or “Work”. Scores for each item were summed to yield a frequency of contact index between 0 and 5, with higher scores indicating a higher frequency of contact with autistic people.

Adult Autism Quotient (AQ)

The AQ was developed to quantify the presence of autistic traits among neurotypical individuals and has demonstrated robust psychometric properties (Baron-Cohen et al., 2001). Baron-Cohen et al. demonstrated that the scale had acceptable test-retest reliability and all subscales had moderate to high internal consistency. The scale contains 50 items in the domains of social skills, executive functioning, attention to detail, communication and imagination. The scoring for this scale followed the original guidelines (Baron-Cohen et al., 2001). Items were scored in a binary manner on a 4-point scale where responses indicating mild or strong autistic traits were scored as [1]. Responses were then summed to yield an index of autistic-like traits between 0 and 50, with higher scores indicating a greater presence of autistic traits. The clinical cut-off recommended by Baron-Cohen et al. is 32.

Translation

The back-translation technique described by Brislin (1970) was employed to produce a Korean language version of the questionnaire. First, the questionnaire was professionally translated from English to Korean. Next, the translated version of the questionnaire was translated back into English by a bilingual Korean speaker who was

fluent in English. Finally, the original and back-translated versions of the questionnaire were examined to confirm linguistic equivalence.

Results

Data Screening

There was a large group disparity in the number of participants who met the clinical cut-off score of 32, with 13 (7.0%) British participants and 1 (0.6%) South Korean participant reaching this level. A chi-squared test suggested that this discrepancy was statistically significant ($\chi(1) = 7.84, p = .005$). The phi coefficient ($\phi = .151$) indicated a weak effect. For these reasons, it was decided that the participants who had reached the clinical cut-off would be excluded from statistical analyses. Next, incomplete responses and responses completed in under five minutes were removed from the raw data set, producing a final data set of $N = 331$ participants. Box-plot analysis revealed no problematic outliers in any of the dependent variables³. Age was found to differ significantly by nation group ($F(1, 329) = 145, p < .001$). A chi-squared test indicated a significant gender difference between nation groups ($\chi(1) = 17.911, p = .001$). Given that including gender as a further variable in the analyses would have weakened the power of the analyses and that the phi coefficient ($\phi = .151$) indicated a weak effect, we opted not to examine gender effects.

³ Although scores on the Frequency of Contact Scale were non-normally distributed (skewness = 1.80 ($SE = 0.13$), kurtosis = 3.45 ($SE = 0.26$)), two of the statistical tests performed in this study, ANCOVA and Pearson product-moment correlation, are robust to univariate violations of normality. The large sample size ($N = 331$) ensured the hierarchical multiple regression and t-test analyses were also robust to such violations (Schmidt & Finan, 2017).

Cultural Differences in Knowledge, Attitudes, Frequency of Contact and Autistic Traits

Descriptive statistics for the ASQ, OS, FCS and AQ by nationality group are summarised in Table 1. Previous research has detected weak negative correlations between age and attitudes towards autistic people (Campbell, Ferguson, Herzinger, Jackson, & Marino, 2004; Park & Chitiyo, 2011). Hence, since significant age differences were noted between nation groups in the present study, a series of one-way ANCOVAs were conducted to compare the results by nation group while controlling for age. However, age significantly covaried only with frequency of contact, so we report the results of the ANCOVA for this variable and for the three remaining variables the results of t-tests analyses. Significant nation differences were found for knowledge scores ($t(328) = 14.08; p < .001$), attitude scores ($t(328) = 14.90; p < .001$) and frequency of contact ($F(1, 328) = 50; p < .001; \eta_p^2 = .13$), with British participants scoring significantly higher on each of these dependent variables. No significant differences were obtained for scores on the overall score of the AQ ($t(328) = 1.07; p = .285$).

Table 1: Means and standard deviations (in brackets) for the Openness Scale, Autism Knowledge, Frequency of Contact Scale and Autism Quotient by nationality group.

Nationality	Age	Gender	OS**	ASQ**	FCS**	AQ
South Korean (N = 156)	<i>M</i> = 19.7 <i>SD</i> = 1.7	29 males 127 females	23.40 (3.74)	8.98 (3.20)	0.07 (.26)	17.03 (5.27)
British (N = 175)	<i>M</i> = 27.4 <i>SD</i> = 7.8	7 males 168 females	29.07 (3.18)	13.69 (2.88)	.75 (.82)	16.33 (6.61)

** Denotes a nationality difference at $p < .001$

Relationship between Attitudes, Knowledge, Frequency of Contact and Autistic Traits

A pre-analysis revealed that age correlated significantly with all the variables of interest except autistic traits (all $r > .350$, $p < .01$), therefore, partial correlations between all variables were computed to control for age. As predicted, correlation coefficients yielded moderate positive correlations between attitudes (OS) and knowledge (ASQ) ($r = .42$, $n = 331$, $p < .01$), between knowledge and frequency of contact (FCS) ($r = .40$, $n = 331$, $p < .01$) and between attitudes and frequency of contact ($r = .31$, $n = 326$, $p < .01$). However, the pattern of correlations differed between nationality groups (see Table 2). As predicted, among British participants, there were significant positive correlations between attitudes and knowledge ($r = .27$, $n = 187$, $p < .01$), attitudes and frequency of contact ($r = .20$, $n = 187$, $p < .01$) and knowledge and frequency of contact ($r = .35$, $n = 187$, $p < .01$). Among South

Korean participants, there were significant positive correlations between attitudes and knowledge ($r = .15, n = 156, p < .05$) and between knowledge and frequency of contact ($r = .14, n = 156, p = .05$). A significant negative correlation was detected between autistic traits and frequency of contact ($r = -.14, n = 156, p < .05$).

Table 2: Correlation Matrix for the dependent variables across nationality groups.

Nationality		Autism Quotient	Frequency of Contact	Autism Knowledge
South Korean	Openness	.077	.034	.150*
	Autism Quotient		-.133*	-.058
	Frequency of Contact			.144*
British	Openness	-.026	.200**	.268**
	Autism Quotient		.073	-.023
	Frequency of Contact			.349**

** $p < .01$, * $p < .05$

Predictors of Favourable Attitudes

A two-stage hierarchical multiple regression was performed entering age on the first step and knowledge and frequency of contact on the second to determine whether they significantly predicted attitudes towards autistic people while controlling for age⁴.

⁴ Prior to performing the regression analyses, the main assumptions of this statistical procedure were tested. First, the sample size exceeded the minimum recommendation of Sekaran (2003). Second, an examination of standard residuals indicated no outliers in either the South Korean (Std. Residual Min. = -2.42, Std. Residual Max. = 2.90) or British (Std. Residual Min. = -2.72, Std. Residual Max. = 2.02.) samples. Third, tests of the assumption of collinearity indicated that multicollinearity was not a concern in either the South Korean (ASQ, tolerance = .90, VIF = 1.11; FCS, tolerance = .97, VIF =

Although a significant regression equation was obtained for British participants ($F(3, 171) = 5.72, p = .001$), the low R^2 change value of .08 suggests that the regression model only accounted for 8% of the attitude scores. While knowledge of autism significantly contributed to the model ($\beta = .24, p = .005$), frequency of contact did not ($\beta = .4237, p = .082$). The same multiple regression model for South Korean participants failed to reach significance ($F(3, 152) = 2.11, p = .10$, adjusted $R^2 = .02$). Hence, among British participants, knowledge of autism was a significant but marginal predictor of attitudes towards autistic people. Among South Korean participants, neither knowledge of autism nor frequency of contact were predictive of favourable attitudes towards autistic people.

Discussion

This study sought to explore cultural differences in knowledge of autism, attitudes towards autistic people, frequency of contact and the presence of autistic traits. In addition, the study aimed to explore the predictive value of knowledge, frequency of contact, and autistic traits on attitudes towards autistic people. The data indicated that, compared to South Korean participants, British participants were more knowledgeable about autism, held more favourable attitudes and had a greater frequency of contact with autistic people. Among British participants, there was a positive correlation between attitudes both with knowledge and frequency of contact, however, only knowledge of autism emerged as a significant, but marginal predictor. In contrast, among South Korean participants, the only significant correlation with

1.03) or British (ASQ, tolerance = .88, VIF = 1.14; FCS, tolerance = .87, VIF = 1.16) samples (Hair et al., 1995). Fourth, the data were found to meet the assumption of independent errors (South Korean, Durbin-Watson value = 2.16; British, Durbin-Watson value = 2.12). Finally, an examination of the normal P-P plot of standardised residuals suggested that the data contained normally distributed errors, and the scatterplot of predicted values supported the assumptions of homogeneity of variance and linearity.

attitudes was knowledge of autism, however, a very weak effect was detected.

Finally, contrary to previous research findings (Freeth et al., 2013; Wakabayashi et al., 2006), no cultural differences were noted in the presence of autistic traits. The results also failed to support the similarity hypothesis (Komeda, 2015) as autistic traits did not correlate with attitudes scores in either nation group.

Knowledge of Autism

Significant knowledge deficiencies were noted among British participants. For instance, 60% were unsure or disagreed with Item 15, “*Autism is a developmental disorder*” and 37% were unsure or disagreed with Item 10, “*Autism is a communication disorder*”. The finding that over a third of British student nurses are unaware of the communicative difficulties which characterise autism is troubling given that autistic patients may require concrete, unambiguous explanation and reassurance about what will take place in clinical settings (Maloret & Scott, 2018). Such explanations are unlikely to occur if healthcare professionals are unaware of these communicative difficulties. Interestingly, compared to South Korean participants, more British nursing students overestimated the presence of exceptional abilities in autistic people in Item 8, “*Most autistic children have special talents or abilities*” (47% v. 60%). The adverse effects of this stereotype have been widely noted (Happé & Frith, 2009; Jarrett, 2014; Quirici, 2015), and should be addressed in nursing curricula.

Despite the significant knowledge gaps highlighted in the previous paragraph, the results also demonstrated almost no conflation of autism and schizophrenia (fewer than 1% of British participants) and an overwhelming consensus against the psychogenic, parent-blaming perspective (99%) among British participants. These

findings reflect positively upon the capacity of nursing training programmes to dispel inaccurate beliefs regarding autism since lay endorsement of the psychogenic perspectives still occasionally occurs in the United Kingdom (Furnham & Buck, 2003; Runswick-Cole, 2016).

Significant knowledge deficiencies were also noted among South Korean participants. For instance, just 40% of these nursing students agreed that autism does not develop into schizophrenia in adulthood, just 20% agreed that autism is a lifelong condition, and only 47% disagreed with the notion that autism is caused by parents. Since nurses will frequently treat autistic children and consult with their parents, it is important that the content of nursing programme curricula in South Korea is revised to address these misconceptions.

These findings should be contextually interpreted as autism is, at least partly, a socioculturally contingent phenomenon (Mandell & Novak, 2005; Perepa, 2014). There are several cultural considerations which may explain the perception among many South Korean nursing students that passive parenting causes autism. Firstly, a common alternative diagnosis to ASCs in South Korea is reactive attachment disorder (RAD) which shares much of its symptomatology with autism, but whose aetiology is attributed to insecure mother-child attachment (Hong, 2006; Shin, Lee, Min, & Emde, 1999). In fact, ASCs and RAD are often incorrectly used synonymously (Kim, 2012) which goes some way to explain why their aetiology may be conflated. A diagnosis of RAD is often favoured because ASCs are frequently confounded with learning difficulties, a condition which has a particularly negative connotation in the highly academically and professionally competitive South Korean society (Grinker & Cho, 2013; Seth, 2002). Secondly, ethnographic research in South Korea suggests that although endorsing a psychogenic perspective unduly stigmatises the mother,

endorsing genetic theories stigmatises past, present and future generations (Grinker, 2007), and this phenomenon may be magnified by the cultural emphasis on respect and obedience to family members and ancestors (Sung, 1994, 1995).

Attitudes towards Autistic People

Significantly higher mean scores on the Openness Scale suggests that British nursing students may hold more favourable attitudes towards autistic people compared to their South Korean counterparts. Although these findings support several reviews of attitudes towards mental illnesses in other Asian countries (Kurumatani et al., 2004; Lauber & Rossler, 2007; Ng, 1997), many of the studies which were reviewed used Western-developed scales which had not been validated for target populations. Similarly, there are several conceptual, methodological and cultural considerations, which cast doubt upon the findings of the present study. The results should, therefore, be interpreted tentatively.

As an illustrative example, responses to Item 2, *“This person is probably as smart as I am”* may have reflected different cultural notions of intelligence, not attitudes towards autistic people. Numerous studies have found that East Asian cultures emphasise social intelligence more than Western cultures (Azuma & Kashiwagi, 1987; Keats, 2000; Yang & Sternberg, 1997a), and these conceptualisations are believed to be influenced by ancient Confucian and Taoist philosophies (Yang & Sternberg, 1997b). Conversely, Western conceptions of intelligence may stem from the psychometric industry’s *“blindly empirical”* preoccupation with logico-mathematical and linguistic intelligence, and neglect of other domains (Gardner, 1983, p. 17). The triad of impairments (Wing & Gould, 1979) and the DSM-5 (American Psychiatric Association, 2013) characterise autism

in terms of social deficits, and these deficits were reflected in the fictionalised vignette character portrayed in this study. Hence, it is unsurprising that, given the emphasis on social intelligence within East Asian cultures, South Korean nursing students would disagree with Item 2.

Another cultural concept that may partially explain the attitudes towards autistic people in the South Korean sample is the concept of *nunchi* (눈치). *Nunchi* may be understood as the capacity to accurately discern others' intentions and emotions by interpreting implicit cues and is a particularly important concept in collectivist cultures where self-development is contingent upon inter-personal development (Hofstede, 2011; Yim, 2017). Hence, in South Korea, people displaying autistic characteristics are rarely medicalised, but rather, are described as lacking *nunchi*. The vignette character portrayed in the Openness Scale may have been perceived by South Korean participants more as a person transgressing social norms, and hence lacking *nunchi*, than as an autistic peer. An important line of future study will be to examine whether giving the vignette character an explicit diagnostic label would moderate attitudes because, although there is considerable evidence that diagnostic labelling is correlated with unfavourable attitudes in Western countries (Angermeyer & Dietrich, 2006; Haydon-Laurelut, 2015; Hodge, 2005), there is a limited body of evidence that suggests that this may not be the case in East Asian cultures (Angermeyer, Buyantugs, Kenzine, & Matschinger, 2004).

Predictors of Attitudes towards Autistic People

This study questions the efficacy of autism awareness initiatives which prioritise increasing factually-accurate information in changing attitudes towards autism. Despite finding that knowledge of autism is a significant predictor of

favourable attitudes in the British sample, it only accounted for 8% of the variance in attitude scores. This finding adds to existing literature failing to find a significant relationship between knowledge and attitudes (Gardiner & Iarocci, 2014; Matthews et al., 2015; McManus et al., 2011; White et al., 2016). This result suggests that considerable improvements in favourable attitudes will require more sophisticated approaches than simply dispelling autism misconceptions. For instance, there is preliminary evidence that mindfulness (Li, Wong, Sum, & Yu, 2019) and school relationship with an autism network (Rodriguez, Saldana, & Moreno, 2011) are predictive of favourable attitudes towards autistic students among pre-service teachers. As this paper has highlighted, however, less is known about predictors of favourable attitudes in healthcare settings. Hence, future research efforts should aim to address this research gap.

The development of novel approaches to improving attitudes is pertinent because, as the diagnostic prevalence of autism increases in the United Kingdom (Baron-Cohen, 2009), more families and individuals will be affected by unfavourable attitudes. Moreover, autism funding in the United Kingdom has been described as inadequate and there is a broad public consensus that autism research should be applied to areas which will improve people's daily lives (Pellicano, Dinsmore, & Charman, 2014). Furthermore, campaigns which pathologise autism may produce counterproductive results (McGuire, 2012). Hence, it is imperative to manage limited autism funding in a manner which will achieve the goal of improving autistic people's lives by employing evidence-based campaigns which will maximally impact professional attitudes.

However, U.K.-based approaches may not be readily extrapolated to other cultural contexts. An important finding of this study was the lack of a relationship

between knowledge and attitudes in the South Korean sample, with the correlation between these two variables almost approaching zero. The stigma attached to disabilities and mental health conditions is highly culture-dependent (Angermeyer et al., 2004). Hence, strategies aimed at improving attitudes towards autism must necessarily consider cultural idiosyncrasies. The findings of this study suggest that exporting Western-developed strategies will be an ineffective misuse of limited autism funding.

Autistic-like Traits: Relationship with Attitudes and Cultural Differences

This study provides cross-cultural confirmation for two previous studies (Gardiner & Iarocci, 2014; Nevill & White, 2011) which found no correlation between the presence of autistic traits and attitudes towards autistic people in Western cultures. Hence, although perceived similarity is thought to be predictive of attitudes towards neurotypicals (Montoya, Horton, & Kirchner, 2008; Novak & Lerner, 1968), people with learning difficulties (Li et al., 2014; Ouellette-Kuntz et al., 2003) and people with mental illnesses (Fox et al., 2015), there is no evidence that perceived similarity is predictive of attitudes towards autistic people.

This was the first study to explore the presence of autistic traits among South Korean participants. Contrary to previous findings which indicated cross-cultural differences (Freeth et al., 2013; Wakabayashi et al., 2006), overall scores on the AQ indicated no cross-cultural differences. Interestingly, although overall mean scores did not differ across groups, of the 14 participants who reached the clinical cut-off of 32 points, just one participant was South Korean. These data suggest that Freeth et al.'s speculation of higher prevalence of autistic traits in Eastern cultures based on data from Japanese and Malaysian participants may be an over-generalisation.

Limitations

As discussed above, the results of this study should be taken with caution due to some design and methodological limitations. Firstly, structural equivalence was not demonstrated in this study, so it is unclear whether the nature of the psychological constructs which were measured was equivalent across British and South Korean populations. For instance, the measurement of attitudes may have overlapped with familiarity, social desirability or extraversion within the South Korean context. With regard to familiarity, compared to their British counterparts, South Korean students have lower familiarity with students with special educational needs due to less inclusive education (Florian, Rouse, & Black-Hawkins, 2016; Kwon, 2005). Secondly, although the Mandarin Chinese and Japanese language versions of the AQ have been psychometrically validated (Kurita, Koyama, & Osada, 2005; Zhang et al., 2016), such validation had not been conducted for South Korean populations at the time of data collection in the present study. However, the AQ has recently been validated for this population (Ko et al, 2018), although there are minor translation differences in the version used in the present study. Although back-translation (Brislin, 1970) is the most commonly adopted translation technique in cross-cultural research, appropriate translation necessitates consideration of psychological, linguistic and cultural aspects of the scales (Van de Vijver & Tanzer, 2004). For instance, as previously discussed, the connotations of the word “smart,” which appeared in the Openness Scale, is likely to differ considerably across cultures. Finally, in the literature review for this study, only English language studies were reviewed. A collaborative approach with Korean-speaking researchers would minimise the risk of cultural bias.

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