

## Do birds of a feather universally flock together? Cultural variation in the similarity-attraction effect

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Three experiments explored the similarity-attraction effect (SAE) among North American and Japanese samples. In all studies, North Americans showed a significantly more pronounced SAE than the Japanese. The North Americans consistently revealed a strong SAE whereas the Japanese effect was only significant in the methods with the most power. The cultural differences emerged across different methods, and for the domains of personality, activities, attitudes and demographics. The cultural difference was mediated by self-esteem, indicating that a motivation for positive self-views is a mechanism underlying the SAE.

*Key words:* attraction, culture, relationships, similarity.

### Introduction

One of the most robust findings in the literature on interpersonal attraction is the similarity-attraction effect (SAE; Byrne, 1971). Simply put, this effect demonstrates that people like those who are similar to them. It is not difficult to find evidence of the SAE. Online dating services, such as *eHarmony*, explicitly match partners based on the similarity of their traits, preferences and interests. A vast tome of psychological research likewise reveals that people are attracted to similar others in a wide variety of domains including attitudes (Newcomb, 1961), personality traits (Griffitt, 1966), activities (Hogan, Hall, & Blank, 1971), name letters (Jones, Pelham, Carvallo, & Mirenberg, 2004) and a variety of demographic variables such as age, education, ethnic background and religion (Buss, 1985), socio-economic status (Byrne, Clore, & Worchel, 1966) and occupation (Bond, Byrne, & Diamond, 1968). In all of these domains, the more similar another is, the more people report being attracted to them. Perhaps the only domain in which people are not explicitly attracted to similar others is in the domain of physical attractiveness (where there tends to be consensual and somewhat universal agreement on who is most attractive (Cunningham, Roberts, Barbee, Druen, & Wu, 1995); yet here too, people tend to end up with partners who are of comparable levels of attractiveness as themselves due to the matching principle (e.g. Berscheid, Dion, Walster, & Walster, 1971). In sum, the psychological database is very clear on one point about interpersonal attraction: people seem to like those who remind them of themselves.

An important question to consider when studying any psychological phenomenon is whether it manifests similarly across cultures (Norenzayan & Heine, 2005). Knowledge of the cultural universality or relativity of psychological phenomena is important for considering the evolutionary origins of such phenomena, and for identifying underlying mechanisms (Heine & Norenzayan, 2006). Given that the SAE is such a central and key finding in the attraction literature, it is particularly important to ascertain how universal this phenomenon is. Recent research in cultural psychology has demonstrated how a number of key phenomena that were hitherto assumed to manifest similarly across cultures often show pronounced variation, such as in preferences for analytical reasoning (Nisbett, Peng, Choi, & Norenzayan, 2001), colour perception (Roberson, Davies, & Davidoff, 2000), eye gaze (Chua, Boland, & Nisbett, 2005), motivations for self-enhancement (Heine, Lehman, Markus, & Kitayama, 1999), preferences for individual choice (Iyengar, Lepper, & Ross, 1999) and social loafing (Earley, 1993), to name a few. That pronounced cultural variation has been identified in domains where it was not expected raises the question of whether people are universally attracted to similar others.

Are there any grounds to question the universality of the SAE? Despite the robustness of the findings on the SAE, there are two features of past research that might lead one to question whether the SAE is a universal feature of human nature. First, despite the widespread recognition that people are attracted to those like themselves there is little consensus regarding the mechanism that is responsible for the effect. Indeed, in a number of textbook descriptions of the SAE, no explanation is offered for it, and it is apparently considered to be a self-evident truth. When explanations are offered for the SAE, a variety of different accounts are considered. For example, the SAE has been attributed to exist because people desire to be accurate, and similar

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others validate their views (Byrne & Clore, 1970). The SAE has also been argued to emerge when the positive feelings that are engendered from smooth and rewarding interactions (which are more common with similar others) are misattributed to the individual's liking for the similar other (e.g. Berscheid & Walster, 1978). Another view is that people are concerned about being liked by others, and similar others are more likely to share reciprocal liking (Condon & Crano, 1988). Furthermore, people have been argued to be attracted to anyone that shares features with themselves because of their own implicit egotism (Jones *et al.*, 2004). Alternatively, there is the view that people's default state is to like everyone, and dissimilarities lead to repulsion (Rosenbaum, 1986). At present it is not clear which of these mechanisms are operating, nor whether each of these mechanisms operates in the same way across cultures. If more than one of the above accounts for the SAE are correct, then the untested possibility that the multiple mechanisms underlying the SAE are psychological universals is considerably less likely than the possibility of any single mechanism being universal.

A second reason to question the universality of the SAE is that, thus far, the majority of the research on this effect has been limited to North Americans. In and of itself, this restricted database does not indicate that there is cultural variability in the SAE (for further discussion on identifying psychological universals see Norenzayan & Heine, 2005; Heine & Norenzayan, 2006); however, the narrow database does leave open the possibility that the SAE is not equally prevalent in all cultures.

### **Past cross-cultural research on the SAE**

Several studies have explicitly explored the SAE in non-Western cultures with respect to people's attitudes. People were found to like those with similar attitudes more than those with dissimilar attitudes among Lebanese (Bleda, 1973), Singaporeans (Singh & Tan, 1992; Tan & Singh, 1995; Singh & Teoh, 1999; Singh & Ho, 2000), Indians (Shaikh & Kanekar, 1994) and Japanese (Fujimori, 1980; Okuda, 1993, 2000). In contrast, in a study of Hong Kong students, Lee and Bond (1998) found no evidence for the SAE among students' preferences for a roommate. In sum, most of these studies found evidence for the SAE in non-Western cultures; however, none of these studies were cross-cultural in design so it is not clear whether the effects were as pronounced as those conducted with Western samples.

Only a few studies have explored the magnitude of the SAE across cultures. Gudykunst and Nishida (1984) asked Japanese and American students to imagine being introduced to a hypothetical stranger by a friend, where the stranger varied either in terms of cultural or attitudinal similarity. There were no cultural differences in people's

reported attraction to the stranger; however, the hypothetical nature of the task raises some questions about its generalizability and validity. Likewise, Byrne *et al.* (1971) conducted a cross-cultural study in which participants completed an attitude scale, then received two attitude scales that were apparently completed by other students, and subsequently indicated their liking for the two students. The results revealed that the SAE for attitudes was of comparable magnitude among samples in Hawaii, Texas, Mexico, Japan and India. However, unlike many other previous studies of the SAE, the cross-cultural study by Byrne *et al.* (1971) did not manipulate similarity or liking, but rather provided participants with the profiles of two strangers whom they were asked to evaluate. It is possible that one of the profiles may have appeared more desirable than the other, and this desirability itself might vary considerably across cultures, which would weaken the confidence in conclusions that are drawn from this method.

A look at these studies above would suggest that the SAE is likely a psychological universal. Furthermore, given the cultural invariance found in the Gudykunst and Nishida (1984) and the Byrne *et al.* (1971) studies, it could even be said that the SAE is a candidate for the highest level of universality in psychological processes, an accessibility universal, indicating that the process is equally accessible across all cultures that have been studied (Norenzayan & Heine, 2005). These findings suggest that there is not much reason to look any further for signs of cultural variability.

However, two other cross-cultural studies have been conducted that revealed that the SAE was stronger among Westerners than Japanese. Heine and Renshaw (2002) conducted a study on self-enhancement effects between Americans and Japanese using a self-peer design. In that study, participants from university clubs in the USA and Japan evaluated themselves and their clubmates on a variety of personality traits and indicated their liking for each clubmate. Although the study was designed to assess self-enhancement, the experimental design afforded the opportunity to test the SAE. Specifically, a similarity-index was created between participants' own personality ratings and their ratings for each clubmate and this index was correlated with the participants' self-reported liking for each of their clubmates. The American sample revealed strong evidence for the SAE ( $r = 0.55$ ), whereas the Japanese sample revealed a non-significant SAE ( $r = 0.10$ ) that was significantly weaker than the American correlation. The second study, a recent paper by Schug, Yuki, Horikawa, and Takemura (2009), found that Americans viewed their friends to be more similar to themselves in terms of their personality compared with their acquaintances, and this effect was significantly weaker among Japanese. These studies raise the possibility that the SAE might not be as strong among East Asians (also see Lee & Bond, 1998). We reasoned that there was sufficient ambiguity in the

cross-cultural literature to warrant a more thorough investigation into the SAE among Japanese and North Americans. Is there cultural variability in the magnitude of the SAE?

## Study 1

In an initial attempt to explore cultural variability in the SAE, we sought to do two things. First, we sought to investigate whether the cross-cultural difference in the magnitude of the SAE between Japanese and North Americans would emerge using a method that was different from that used in previous research. Second, we sought to explore whether the cross-cultural difference in the SAE would hold equally in a variety of different domains.

## Method

**Participants.** Participants were 60 (43 female and 17 male) Canadian students and 89 (48 female and 41 male) Japanese students who completed an online questionnaire. A requirement for participation for the Canadian participants was that they were born in Canada and both parents were of Canadian/European descent. The Canadian questionnaire was in English and was advertised in psychology classes at the University of British Columbia. The Japanese participants were all of Japanese descent and they completed the questionnaire in Japanese. They were recruited by advertising in psychology classes at Nara, Kyoto and Gakugei Universities in Japan. All participants were compensated for their participation through entry into a lottery draw.

**Materials.** Participants completed a web-based questionnaire that asked them to rate four targets: (i) themselves; (ii) their best friend; (iii) a person they neither liked nor disliked (termed neutral); (iv) and a person they disliked (termed enemy) in that order. They rated the targets in terms of a number of different domains that were nested underneath each target.

**Personality.** Participants were provided with a list of 12 personality traits selected from Anderson's, (1968) list of personality traits that were pre-tested in both cultures to find four traits that were highly desirable in both cultures (considerate, friendly, dependable and intelligent), four that were low in desirability (rude, cold, boring and mean), and four that were rated as neutral (impulsive, excitable, unconventional and perfectionist). They rated the traits for each target on a nine-point Likert scale ranging from (1) extremely inaccurate to (9) extremely accurate.

**Activities.** Participants were asked to indicate how similar they were to the targets on two items reflecting activity

similarity. The first item was about 'matters of recreation' and the second item was about 'leisure time, interests and activities'. These items were rated on a 15-point Likert scale ranging from (1) not at all similar to (15) very much similar.

**Attitudes.** Participants were asked to indicate how similar they were to the targets on six items assessing attitudes. The attitudes were: 'philosophy of life', 'attitudes towards money', 'major life decisions', 'political attitudes', 'desire for children' and 'marriage plans'. These were rated on the same 15-point Likert scale discussed above.

**Demographics.** Participants were asked to indicate how similar they were to the targets on the same 15-point Likert scale on five items assessing biographical data, life experiences and status. These items were 'religious matters', 'socioeconomic class', 'status', 'education goals' and 'career goals'.

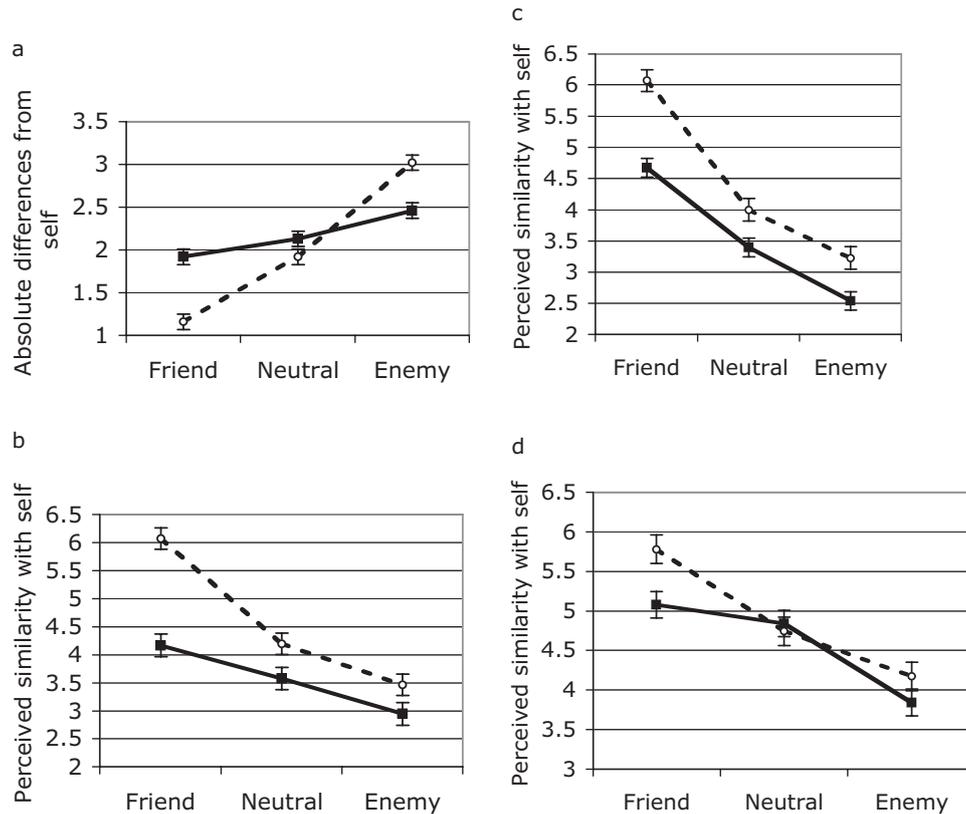
All materials were originally created in English and were translated into Japanese and were carefully checked by two independent bilingual translators. Any discrepancies that were identified between the translators were discussed until a consensual solution was reached.

## Results and discussion

**Preliminary analyses.** The average age of the participants was 19.7 years, which did not differ significantly between cultures,  $F < 1$ . Twenty-eight per cent of the Canadian sample was male in contrast with 46% of the Japanese sample. These proportions are significantly different,  $\chi^2(1, N = 148) = 4.74, p < 0.03$ , and sex was thus included as a covariate in all cross-cultural analyses.

**SAE analyses.** The magnitude of the SAE was calculated for all dependent measures. For personality ratings, the SAE was operationalized as the absolute difference between participants' self-ratings and their ratings for each of the targets. The larger the difference, the less similar people viewed themselves to the target. For the activity, attitude and demographic ratings, the SAE was operationalized as participants' average response on the Likert scale regarding how similar they felt to the target for each item. The larger the rating, the more similar participants viewed themselves compared to the target. The magnitudes of the SAE were contrasted between cultures using a mixed-design ANCOVA for each of the dependent measures. In these analyses, culture was the between-groups variable, target was the within-groups variable and sex was a covariate.

First, analyses were conducted on the absolute difference scores for the personality ratings. The ANCOVA revealed a



**Figure 1** Similarity as a function of target: Study 1. -○-, Canada; -■-, Japan. (a) Personality, (b) preferred activities, (c) attitudes, (d) demographic background.

significant culture by target interaction,  $F(2,140) = 20.0$ ,  $p < 0.001$ ,  $\eta^2 = 0.22$ , indicating that the Canadians showed a more pronounced SAE than did Japanese (Fig. 1a).<sup>1</sup> Simple effect analyses revealed that the SAE (i.e. the difference in the similarity of participants to the three targets) was significant for both Canadians,  $F(2,57) = 21.7$ ,  $p < 0.001$ ,  $\eta^2 = 0.43$  and for Japanese,  $F(2,81) = 7.07$ ,  $p < 0.005$ ,  $\eta^2 = 0.15$ . Both Canadians and Japanese viewed their personalities to be more similar for their best friends than for neutral targets or their enemies, although the effects were significantly more pronounced for Canadians.

Analyses of the SAE for participants' preferred activities also revealed a significant culture by target interaction,  $F(2,145) = 8.45$ ,  $p < 0.001$ ,  $\eta^2 = 0.10$ . Simple effect analyses again revealed that the SAE was significant for both Canadians,  $F(2,58) = 38.7$ ,  $p < 0.001$ ,  $\eta^2 = 0.57$  and for Japanese,  $F(2,87) = 11.4$ ,  $p < 0.001$ ,  $\eta^2 = 0.21$ . Both Canadians and Japanese viewed their preferred activities to be more similar to people they liked than those they disliked, although the relations were more pronounced for Canadians.

Participants' ratings of the similarity of their attitudes compared with the targets also revealed a significant culture

by target interaction,  $F(2,145) = 4.58$ ,  $p < 0.02$ ,  $\eta^2 = 0.06$ . Again, simple effect analyses demonstrated that the SAE was significant for both Canadians,  $F(2,58) = 75.87$ ,  $p < 0.001$ ,  $\eta^2 = 0.72$  and for Japanese,  $F(2,87) = 60.58$ ,  $p < 0.001$ ,  $\eta^2 = 0.58$ . People from both cultures reported more similar attitudes with their friends than with people they liked less, but the effect was again more pronounced for Canadians.

Last, analyses of the SAE for participants' demographic background again revealed a significant culture by target interaction,  $F(2,145) = 3.95$ ,  $p < 0.03$ ,  $\eta^2 = 0.05$ . Simple effect analyses revealed once more a significant SAE for both Canadians,  $F(2,58) = 17.16$ ,  $p < 0.001$ ,  $\eta^2 = 0.37$  and for Japanese,  $F(2,87) = 18.2$ ,  $p < 0.001$ ,  $\eta^2 = 0.30$ . People from both cultures view the demographic background of people they like to be more similar to themselves than people who they do not like, although this effect is significantly more pronounced for Canadians.

In sum, a cultural difference emerged in the magnitude of the SAE for all four domains that were investigated. Compared with Japanese, Canadians view their friends as more similar than less-liked targets are to themselves, although the effects were consistently present for Japanese as well.

This study thus provides evidence both for the universality and cultural variability in the SAE.

## Study 2

The findings from Study 1 demonstrate that culture shapes the magnitude of the SAE. Confidence in these findings would be increased with a replication that used a very different experimental design. In Study 1 we had varied participants' liking and then measured perceived similarity. In Study 2 we used the 'bogus stranger paradigm' (Byrne, 1971) to manipulate similarity in the laboratory while measuring liking.

Furthermore, although there was a significant cultural difference in the SAE for each of the four domains in Study 1, there was variance in the magnitude of the effect. The largest cross-cultural effect was for personality whereas the smallest cultural effect was for demographics (although we note that there were methodological differences in how we assessed those which could have influenced their respective magnitudes). It is possible that demographics represent a boundary condition to the cross-cultural variance in the SAE, and a more thorough investigation of demographic variables might eliminate the cultural difference in the SAE. In Study 2 we manipulated perceived similarity for both personality and demographic background and contrasted liking between Canadian and Japanese samples.

## Method

*Participants.* One hundred and nineteen (97 females and 22 males) Canadians and 119 (104 females and 15 males) Japanese participated in the study. The Canadian participants were psychology students who were compensated for their participation with course credit. A condition for participation for the Canadian sample was that participants were born in Canada and both parents were born in Canada or a Western country. The Japanese sample consisted of Japanese nationals who had been living in Vancouver for less than 2 years. They were recruited through advertisements and were compensated for their participation with movie vouchers. Canadian participants were recruited, run and debriefed in English, whereas the Japanese participants were recruited, run and debriefed in Japanese.

*Procedure.* Participants were brought to the laboratory for an 'Impression Formation Study' where they were briefly introduced to a confederate of the same sex and nationality as the participant, before being escorted to separate rooms. Participants received one of two versions of a questionnaire to complete. Those assigned to the personality condition evaluated themselves on 10 personality traits (attractive,

cooperative, interesting, loyal, independent, considerate, confident, hard-working, dependable and intelligent). Those assigned to the demographics condition responded to 12 forced-choice items about their demographic background. These items assessed such things as their family background, their college major, where they grew up, their religion and their relationship status. After completing the questionnaire, the experimenter then collected the questionnaire and provided a filler task for the participant to do that was unrelated to the study. Meanwhile, the experimenter used the data from the participant's responses to generate one of two profiles for the confederate. For participants in the high similarity condition, the experimenter created a profile that was identical to 80% of the participant's personality traits (or 75% of the participant's demographic responses). For participants in the low similarity condition, profiles were created that were identical to only 20% of the participant's personality traits (or 25% of their demographic responses). The items that were selected to be different or similar were randomly chosen for each participant. After the participant completed the filler task, they were shown the profile from the confederate. They viewed the profile and then indicated how much they liked the confederate, using a five-item measure of liking. Specifically, these questions asked 'How much do you like this person?', 'How frequently would you interact with this person?', 'How much would you respect this person?', 'How much closer would you want to become to this person?', 'How much would this person like you?', to which participants responded on a five-point Likert scale.

As a manipulation check, to ensure that participants read the profile of the confederate, participants were asked 'How much do you have in common with this person?' on a five-point Likert scale. After they completed the materials, participants were probed for suspicion and were thoroughly debriefed. All materials and the experimenter's script were originally produced in English and translated into Japanese using the same method described in Study 1.

## Results and discussion

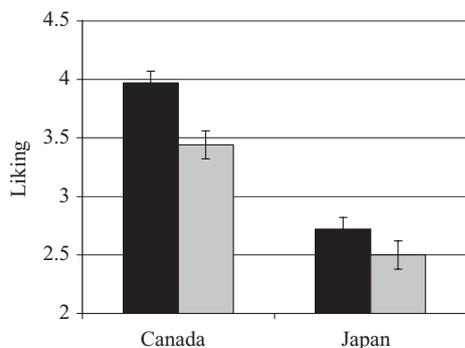
*Preliminary analyses.* Eighteen per cent of the Canadian sample was male in contrast with 13% of the Japanese sample. These proportions are not significantly different,  $\chi^2(1, N = 238) = 1.57, ns$ , and sex was not included as a variable in the analyses. The Japanese sample ( $M = 25.6$ ) was significantly older than the Canadian sample ( $M = 21.2$ ),  $F(1, 232) = 59.4, p < 0.001$ , and age was thus included as a covariate in all analyses.

We conducted a manipulation check separately for each culture. We compared how much in common participants felt they had with the confederate. People from both cultures felt they had more in common with the highly similar

stranger than the dissimilar one (both  $ps < 0.001$ ), and the magnitude of the manipulation did not vary across cultures ( $p > 0.05$ ). The manipulation was thus successful in manipulating participants' perceived similarity with the stranger.

**Similarity analyses.** This study used a 2 (Canada vs Japan) by 2 (high vs low similarity) by 2 (personality vs demographics) design (all independent variables were between-subject factors). The dependent variable was participants' reported liking for the confederate. This liking variable was a composite variable that consisted of the average of the five liking items. These five items had adequate reliability (Cronbach's alphas = 0.85 and 0.75, within Canadian and Japanese samples, respectively).

An analysis of covariance revealed a significant two-way interaction between the similarity condition and culture,  $F(1,230) = 6.45$ ,  $p < 0.02$ ,  $\eta^2 = 0.03$  (Fig. 2). None of the other interactions approached significance. We followed up the interaction with simple effect analyses. The Canadian sample showed a significant effect for the similarity condition,  $F(1,115) = 12.00$ ,  $p = 0.001$ ,  $\eta^2 = 0.10$ . Canadians in the high similarity condition liked the stranger more than those in the low similarity condition, demonstrating a clear SAE. This effect was evident both in the personality condition,  $F(1,56) = 8.83$ ,  $p < 0.01$ ,  $\eta^2 = 0.14$ , and in the demographics condition,  $F(1,57) = 3.92$ ,  $p = 0.05$ ,  $\eta^2 = 0.06$ . Similar strangers were more attractive to Canadians than dissimilar strangers. In contrast, the Japanese participants' feelings towards the stranger did not vary as an effect of the similarity condition,  $F < 1$ , and thus they showed no evidence for the SAE. This null effect was evident both in the personality condition and in the demographics condition, both  $Fs < 1$ . Regardless of whether participants viewed the stranger's personality or demographic profile, Canadians liked the similar stranger more than the dissimilar one, whereas Japanese liked the two strangers equally.



**Figure 2** Liking as a function of similarity: Study 2. ■, High similarity; □, low similarity.

It is worth noting that, regardless of condition, Canadians ( $M = 3.70$ ) indicated more liking for the stranger than did Japanese ( $M = 2.68$ ),  $F(1,230) = 97.6$ ,  $p < 0.001$ . Although speculative, this finding could be indicative of the greater distinction between ingroup and outgroup members of people with more interdependent views of self (Earley, 1993; Iyengar *et al.*, 1999; but note that the nature of intergroup comparison appears to have a different basis among Westerners and East Asians; e.g. Brewer & Yuki, 2007). It might take more time than a brief meeting and a review of one's profile before Japanese are likely to consider someone a desirable relationship partner (also see Schug *et al.*, 2009). Alternatively, this main effect for liking across cultures might reflect the unusual circumstances of the Japanese sample, in which everyone had recently moved to Canada. It would be informative to see whether a similar pattern emerged in a bogus stranger paradigm conducted in Japan.

In sum, Study 2 replicated Study 1 in finding a cross-cultural difference in the SAE using an entirely different method. Once more, the cultural differences emerged regardless of domain. The one difference in the findings from the two studies was that in Study 1 Japanese showed a consistent SAE for each domain whereas in Study 2 they did not show a SAE in either domain. We speculate that the lack of a SAE among Japanese in Study 2 is due to the between-groups experimental design having less power than the within-groups design used in Study 1. This conclusion is supported by the consistently much smaller effect sizes for both Canadians and Japanese in Study 2. Specifically, the effect sizes for Study 2 were  $\eta^2 = 0.14$ , 0.06, 0.01, 0.00 for Canadian effects of the SAE for personality and demographics, followed by the same effects for Japanese, respectively. In contrast, the corresponding effect sizes for Study 1 were  $\eta^2 = 0.43$ , 0.37, 0.15, 0.30. That is, the design in Study 2 appears to be less sensitive for detecting the SAE compared with the design used in Study 1, and the difference between the two methods represents approximately an effect size of  $\eta^2 = 0.30$  (although it is possible that other differences between the studies contribute to the smaller effect sizes in Study 2).

### Study 3

The findings from Studies 1 and 2 converge to suggest that there is a reliable cross-cultural difference in the SAE. The SAE is weaker among Japanese than it is among Canadians; however, at this point we have only provided data that converge on the finding regarding a cultural difference in the magnitude of the SAE. We have not provided any data or offered any theory regarding why the cultures might differ in the bases of their attraction. Why are Japanese less attracted to similar others compared with Canadians?

Although there are multiple accounts for the SAE, we sought to test one possible mediator of the SAE.

The notion that the type of person that one finds most attractive is someone just like oneself would seem to reflect a motivation for self-enhancement. Hence, we reasoned that one variable that might mediate the cultural difference in the SAE was self-esteem. On average, people from Western cultures tend to self-enhance considerably more than those from East Asian cultures (a meta-analysis of all published studies reveals that the average  $d$  for the cross-cultural differences in comparisons of a variety of measures of self-enhancement is 0.84, Heine & Hamamura, 2007). Apparently, Westerners are more motivated to view themselves positively than are East Asians, and this finding has been discussed and explained elsewhere (Heine *et al.*, 1999; Heine, 2005). We suggest that a motivation to view oneself positively is related to the SAE because people's positive views of themselves should generalize to those who share the same features as themselves. For example, consider Person A and Person B, two male students who have a similar sense of humour, have pro-choice attitudes regarding abortion, and have a Christian background. Imagine that A has high self-esteem. Given his high self-esteem, we would expect that A would tend to evaluate many of his characteristics positively (Brown, Dutton, & Cook, 2001). He might think that his sense of humour is charming, his pro-choice attitudes reflect thoughtfulness, and he might be proud of his Christian background. In sum, his positive evaluation of himself might spill over and colour his evaluations of his other attributes. If A then met B, we would expect that A would like B, because A would view B as having desirable and attractive attributes – the same attributes that A views so positively in himself. Now, in contrast, assume that B has very low self-esteem. We might expect that his relatively negative evaluation of himself might generalize to his evaluations of his various attributes, such that he comes to view his sense of humour, pro-choice attitudes, and Christian background as undesirable. If B met A, who shares these same attributes that B views as undesirable in himself, we would expect that B might not be that attracted to A. Self-esteem would thus seem to be potentially related to the SAE. Variants on this self-enhancing account for the SAE have been proposed elsewhere (Karylowski, 1976; Jones *et al.*, 2004; but see Griffitt, 1966, for a different perspective). According to this view, the SAE could be seen as an indirect measure of self-enhancement.

In Study 3 we explored whether the cultural differences in the SAE might derive in part from cultural differences in self-esteem. We thus investigated whether self-esteem would mediate any observed cultural differences in the SAE.

Study 3 was a variation on Study 1. Canadian and Japanese participants were asked to indicate how similar they

were to two targets (the two people that they liked the most and the least) regarding a set of personality traits, attitudes and demographic variables. Participants were also asked to complete a measure of self-esteem which was then included in a mediational analysis.

## Method

**Participants.** The Canadian sample consisted of 50 students (24 females and 26 males) from the University of British Columbia, whereas the Japanese sample consisted of 49 Japanese nationals (25 females and 24 males) who were studying or working temporarily in Vancouver. A condition for participation for the Canadian sample was that participants were born in Canada and both parents were born in Canada or a Western country. Canadian participants were approached in libraries and cafeterias and were offered chocolate bars or coupons for a bookstore in compensation for completing a questionnaire. The Japanese sample had all been living in Vancouver for less than 2 years. They were recruited through advertisements and were compensated for their participation with movie vouchers.

**Materials.** Participants were asked to identify the person that they liked the most and the least. Participants then were asked to indicate, using a seven-point Likert scale, how well a set of 12 personality traits (attractive, cooperative, interesting, loyal, independent, considerate, confident, hard-working, dependable, intelligent, friendly and understanding), 12 attitudes (regarding various preferences for activities, art and political beliefs) and 12 demographic variables (the same ones used in Study 2), accurately described themselves, their favourite person, and their least favourite person. The list of attitudes was the same as that used by Byrne *et al.* (1971), as we wished to explore whether the null cross-cultural difference between Americans and Japanese that they had found with those items would be replicated with the different method that we use here. Last, participants completed the 10-item Rosenberg Self-Esteem Scale (Rosenberg, 1965) using a seven-point Likert scale, and some demographic items. All materials were originally produced in English and translated into Japanese using the same method described in Study 1.

## Results and discussion

**Preliminary analyses.** The two samples did not differ in their proportion of each gender,  $\chi^2 < 1$ , and sex was not included as a variable in the analyses. The Canadian sample ( $M = 26.2$ ) was significantly older than the Japanese sample ( $M = 20.3$ ),  $F(1,96) = 24.7$ ,  $p < 0.001$ , and age was thus included as a covariate in all analyses. A number of

participants did not respond to all questions (particularly those about the background of their least favourite person), so the degrees of freedom vary somewhat across analyses, and may affect the conclusions that can be drawn.

**SAE.** The magnitude of the SAE was operationalized as the similarity of the self with one's favourite person compared with the similarity of the self with one's least favourite person. A SAE index was created for each domain by first calculating the sum of the absolute differences in the ratings between the self and each target. The difference scores between the self and favourite person were then subtracted from the difference scores between the self and least favourite person. A larger value indicates a greater SAE.

Regression analyses were conducted with culture and age as predictors and each of the three similarity indices as criterion variables. Significant cultural differences in the SAE emerged both for personality,  $\beta = 0.33$ ,  $t(92) = 3.09$ ,  $p < 0.01$ , and attitudes,  $\beta = 0.28$ ,  $t(75) = 2.32$ ,  $p < 0.05$ .<sup>2</sup> A cultural difference for the SAE for demographic background did not reach significance,  $\beta = 0.20$ ,  $t(70) = 1.57$ ,  $p = 0.12$ . The positive beta weights indicate that the effects were all in the direction of the SAE being more pronounced for Canadians than for Japanese. Within-culture analyses (i.e. was the SAE different from zero?) revealed that the SAE was significant for Canadians for each of personality,  $t(46) = 7.13$ ,  $p > 0.001$ ,  $d = 1.09$ , attitudes,  $t(35) = 5.47$ ,  $p > 0.001$ ,  $d = 0.93$ , and demographics,  $t(41) = 3.72$ ,  $p = 0.001$ ,  $d = 0.58$ . The Japanese also showed a significant SAE for personality,  $t(46) = 2.47$ ,  $p < 0.05$ ,  $d = 0.37$ , and attitudes,  $t(40) = 2.77$ ,  $p < 0.01$ ,  $d = 0.44$ , but not for demographics,  $t < 1$ ,  $d = 0.15$ . In sum, the SAE pattern obtained in Study 3 generally replicated that observed in Study 1, except for the non-significant effect for demographics. In sum, with the exception of the null result for demographics for the Japanese sample, people from both cultures felt more similar to their friends than to their enemies, although this effect was more pronounced for Canadians than Japanese.

**Self-esteem analyses.** Replicating much past research, Canadians ( $M = 5.64$ ,  $SD = 1.02$ ) had significantly higher self-esteem than Japanese ( $M = 4.35$ ,  $SD = 1.05$ ),  $F(1,95) = 22.04$ ,  $p < 0.001$ ,  $\eta^2 = 0.19$  (possible range varies from 1 to 7, with 4 being the midpoint of the scale). Positive self-views as operationalized by the Rosenberg Self-Esteem scale (1965) are thus more common among Canadians than Japanese. Correlational analyses across the whole sample revealed that self-esteem was significantly positively correlated with the SAE for personality,  $r(95) = 0.48$ ,  $p < 0.001$ , and for attitudes,  $r(78) = 0.36$ ,  $p = 0.001$ , but there was no correlation between self-esteem and the SAE for demographic background  $r(73) = -0.05$ ,

*ns*. The correlations within each culture were 0.25 and 0.48 for personality, and 0.33 and 0.18 for attitudes, for Canadians, and Japanese, respectively; neither pairs of correlations vary significantly across cultures (both  $ps > 0.10$ ). The significant cultural differences in self-esteem, and in the SAE for personality and attitudes, together with the significant positive correlations between these variables, indicated that these were suitable candidates for mediational analyses.

**Mediational analyses.** We conducted mediational analyses for both the cultural differences in the SAE for personality and attitudes. Adding self-esteem to the regression analysis significantly reduced the effect of culture on the SAE for both personality, Sobel's test = 3.15,  $p < 0.01$ , and attitudes, Sobel's test = 2.43,  $p < 0.05$ . Culture was no longer a significant predictor of the SAE for either personality,  $\beta = 0.18$ ,  $t = 1.60$ ,  $p = 0.11$ , or attitudes,  $\beta = 0.17$ ,  $t = 1.35$ ,  $p = 0.18$ , when self-esteem is accounted for. Thus, self-esteem significantly mediates the cultural difference in the SAE for personality and attitudes.

An alternative way of considering the relations between the SAE for personality and self-esteem is to assess how self-esteem predicts the positivity of one's ratings of the targets within each country. Among Canadians, self-esteem was positively correlated with self-ratings of personality ( $r = 0.50$ ,  $p < 0.001$ ) and with their ratings of their friend ( $r = 0.49$ ,  $p < 0.001$ ), but not with their ratings of their enemy ( $r = 0.11$ , *ns*). This is evidence that Canadians with higher self-esteem view their friends (but not their enemies) more positively than those with lower self-esteem and this can help to unpackage the SAE for personality. Among Japanese, self-esteem was positively correlated with self-ratings of personality ( $r = 0.56$ ,  $p < 0.001$ ), and nominally so with friend-ratings, although the correlation was not significant ( $r = 0.22$ ,  $p = 0.14$ ), but self-esteem was not positively correlated with enemy-ratings ( $r = -0.01$ , *ns*). Among Japanese, then, there was the trend for a similar pattern as found with Canadians, although the correlation between self-esteem and friend-ratings was weaker among Japanese than among Canadians, indicating that self-esteem is not the only factor underlying the Japanese SAE. These results suggest that self-esteem is related to the SAE, as people with higher self-esteem tend to evaluate themselves and their friends more positively (although this latter correlation did not reach significance among Japanese).

In sum, Study 3 provides further convergent evidence regarding cultural variation in the SAE. Moreover, this study offers one explanation for that observed cultural difference: Canadians show a more pronounced SAE than Japanese because they have higher self-esteem. The significant correlations between self-esteem and the SAE reveal that liking similar others is more common for people with high self-esteem than for those with low self-esteem.

Preferring the company of similar others appears to be an indirect means for individuals to enhance their selves.

## General discussion

Recent research has revealed that many psychological phenomena sometimes appear in quite distinct ways across cultures (for reviews see Heine and Norenzayan 2006; Kitayama & Cohen, 2007). The present studies reveal that there is also pronounced cultural variation in what has been viewed to be one of the most fundamental bases of people's feelings of attraction: the SAE. Similarity is not equally attractive in all cultures. Across three studies Canadians showed a more pronounced SAE than did Japanese. These findings converged across the different methods used in the studies and across the domains of personality, attitudes, activities and demographics (although it is noteworthy that demographics offered the weakest SAE among Canadians across the studies, and the effect was non-significant for Japanese in both Studies 2 and 3, suggesting that demographics may be of less importance in similarity judgments for people of both cultures). It is plausible that there are domains in which there are either no cultural differences in the SAE, or there might be domains in which the SAE is more pronounced among East Asians than among Westerners; however, the findings from the present studies did not provide any clues as to what those other domains might be. At present, the cultural variation in the SAE appears to be largely domain-general.

Looking across the three studies, the cross-cultural differences were significant in eight out of nine analyses (the lone exception being the null effect for demographics in Study 3). Canadians showed a pronounced SAE which was significant in nine out of nine analyses, and seven of those nine indicated a large effect size (Cohen, 1988). These studies thus replicated the clear pattern of people preferring similar others among North Americans that has been identified in the previous literature. The Canadian SAE effect was extremely reliable and robust across methods. In contrast, the Japanese pattern was more complex. Japanese showed a significant SAE in six out of nine analyses, and two of the nine effects were large in magnitude. The Japanese thus appear to show a relatively weak SAE that reaches statistical significance only in the most powerful designs.

The considerable cross-cultural variation in the SAE between North Americans and Japanese that this research reveals demonstrates that the SAE fails the test of being an accessibility universal (i.e. the effect is not equally accessible across cultures). However, the studies revealed a number of similarities across the cultures as well. People from both cultures tended to show a positive SAE, the effect showed a similar pattern in the four domains that were studied, and the SAE correlates with self-esteem in each

culture, suggesting that the SAE is a candidate for being considered a functional universal (i.e. similarity serves a similar function across cultures; Norenzayan & Heine 2005). This latter claim would be bolstered further if the SAE was identified, and showed comparable relations with self-esteem, in a variety of other cultural contexts – especially in contexts that are more divergent from the ones studied here (e.g. subsistence societies; Henrich *et al.*, 2005).

Learning that cultures vary in the SAE is of significance for understanding why people are attracted to similar others. Many previous discussions of the SAE describe it as a truism of human nature – explanations for it are often not provided, and when they are there is not a clear consensus regarding what the best theoretical account is for it. The present findings demonstrate that this truism is in need of some qualification. At least for the domains studied here, there is something about participating in Canadian culture that leads one to be more attracted to similar others than participating in Japanese culture.

The present research suggests that one reason why Canadians are more attracted to similar others than are Japanese is that they have more positive views of themselves and their attributes. The findings of this study indicated that the SAE is influenced by people's self-esteem. People appear to be more attracted to similar others to the extent that they have positive views of themselves. This tendency to be attracted to people who are like oneself might perhaps be viewed as the ultimate form of egotism. It appears that this particular conceit is more often expressed in North America than in Japan. However, given that the correlations between self-esteem and the SAE were not significant in all cases for the two cultures, more research is necessary to gain a better understanding of the role that self-esteem plays in people being attracted to similar others.

The finding that self-esteem mediated the present SAE findings serves as an example of how cultural variation in a psychological process can be useful for identifying underlying mechanisms in that process (Heine & Norenzayan, 2006). That is, discovering that Japanese and Canadians vary in the SAE led to the exploration of another variable on which Japanese and Canadians also vary, their self-esteem, and this variable was demonstrated to be a potential mechanism of the SAE. Cultural variation can thus serve as a spotlight that can help identify where one might productively search for mechanisms.

Although self-esteem did mediate the observed findings here, we suggest that there may well be other mechanisms, perhaps even more powerful ones than self-esteem, that also underlie cultural variation in the SAE (also see Singh, Yeo, Lin, & Tan, 2007; Singh, Ng, Ong, & Lin, 2008). As we noted above, there have been a number of different explanations for the SAE, and it is possible that there are multiple reasons why people from different cultures vary in the

magnitude of their attraction to similar others. For example, Schug *et al.* (2009) demonstrate that relational mobility; that is, the sense that one has opportunities to forge new relationships, has been shown to importantly mediate the cultural differences in the similarities of friends between Japan and the USA. In 'open relationship markets' such as the USA, people have many opportunities to form new relationships and, because of this, they attend closely to the types of features that attract them to others, such as similarity. In contrast, in more closed relationship markets, such as Japan, there are few opportunities to form new relationships outside of one's more enduring ingroups. In these types of markets, people attend less to those features that might attract them to another (also see Adams, 2005; Anderson, Adams, & Plaut, 2008). Hence, there is evidence that the cultural difference in the SAE can be understood both in terms of cultural differences in self-esteem and in relational mobility.

This cultural difference in the SAE has implications that might prove to be profitably explored in other research. People's attraction to similar others has been perceived to be a fundamental basis of interpersonal relations within North America, and it can shape the types of choices that people make. How are those choices made differently if similarity is less of a concern? For example, the formation of intimate relationships and subsequent marital satisfaction are importantly based on similarity in North America (White & Hatcher, 1984). Perhaps satisfaction in intimate relationships is based more on other concerns in Japan. Alternatively, it is possible that Japanese are less likely than North Americans to join organizations based on their perceived similarity with other members (see Yuki, 2003). It would seem that in whatever situations people seek similar others there might well be some important cultural variation.

In sum, why we come to like the people that we do can partially be explained by our cultural backgrounds. People participating in North American cultural contexts come to find similarity to be especially attractive, and the perceived relationship between similarity and attraction is so strong that it is often viewed as self-evident. In contrast, although the present research reveals that Japanese are also often attracted by similarity, this relation is far weaker, and is less consistently found. This raises the question of whether Japanese might base their feelings of attraction more on information other than on similarity (e.g. perhaps people are more attracted to those who are consensually recognized as possessing desirable features) or whether attraction plays a smaller role in the formation of some types of relationships in Japan.

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## End notes

1. An alternative set of analyses was conducted operationalizing the SAE for personality as the average within-participant correlation between each participant's self-ratings and the ratings of targets across the 12 personality traits. The findings were essentially the same as those of the absolute differences, with a significant interaction emerging between culture and target,  $F(2,138) = 19.40$ ,  $p < 0.001$ ,  $\eta^2 = 0.22$ . Simple main effect analysis revealed that although the Euro-Canadian SAE,  $F(2,58) = 72.80$ ,  $p < 0.001$ ,  $\eta^2 = 0.72$  was stronger than that of the Japanese, the Japanese showed evidence of a significant SAE as well  $F(2,80) = 6.14$ ,  $p < 0.01$ ,  $\eta^2 = 0.13$ . That both sets of analyses converge on the same findings highlights the robustness of the effect.
2. We note that the cultural difference that was observed in attitudes does not replicate the null effect between Americans and Japanese identified by Byrne *et al.* (1971) using the same list of attitudes. We speculate that this is because the present method allowed participants to consider real targets, rather than the profiles of two fictitious targets, which might have varied across cultures in terms of their desirability.

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