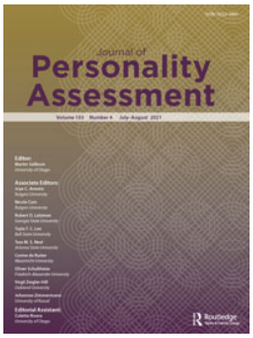

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Cultural Influences on Social Information Processing: Hostile Attributions in the United States, Poland, and Japan

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ABSTRACT

Social information processing (SIP) theory suggests that attributions play a central role in influencing behavior in the course of social-relational exchanges. Within the SIP framework, social context has been shown to impact how social events are perceived. As a key feature of social context, culture likely plays a central role in shaping attributional processing. This study examined differences in hostile attributional patterns in three cultures with varying levels of collectivism, individualism, and power distance: Poland, United States, and Japan ($N = 707$). We used the Ambiguous Intentions and Hostility Questionnaire (AIHQ) to compare attributional patterns across cultures. This measure uses five distinct vignettes to assess attributional responding within a range of interpersonal contexts. We examined whether the five-factor structure of the AIHQ maintained across these three cultures. Additionally, we investigated whether variations in attributional patterns occurred cross culturally in response to these ambivalent situations involving varying types of social relationships. Results confirmed acceptable patterns of measurement invariance across American, Japanese, and Polish samples and indicated that specific social-relational features in the vignettes significantly influenced attributional responding.

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The Social Information Processing (SIP) model (Crick & Dodge, 1994; Larkin et al., 2013; Lemerise & Arsenio, 2000) provides a well-established framework for understanding the ongoing interplay between the emotions, attributions, and beliefs that lead to behavioral responding within a social-relational context. According to this cyclical transactional model (Crick & Dodge, 1994), behavioral responding is the outcome of a six-step cognitive process in which an individual must encode and interpret cues, clarify goals, and identify or construct appropriate behavior responses prior to responding. At each stage of this process, memories, rules, schemas, and social knowledge are presumed to impact the ongoing (but nonlinear) processing. Interpretations of behavior, assignment of responsibility, and inferences about intent are all forms of attributions that play a central and critical role in SIP processing (Crick & Dodge, 1994; Weiner, 1972). Because participants rely upon attributions and inferences to makes sense of social interactions and events (e.g., Crocker et al., 1991; Lange et al., 2019), attributions have significant impacts on SIP outcomes. Research has shown that everyday attributional events are characterized by significant flaws, including preexisting cognitive biases (Jones & Davis, 1965), and these errors have implications for both individual mental health and behavior (e.g., DeCastro et al., 2002; Hu et al., 2016). Ambiguous situations, where clear cues are lacking or contradictory, may be subject to the most notable cognitive biases (e.g., Gutierrez-Garcia & Calvo, 2016).

Because culture represents a key feature of the social context, it is perhaps unsurprising that it plays an essential role in shaping causal reasoning and related attributional processing (Espinoza & Juvonen, 2011; Norenzayan & Nisbett, 2000). For example, there is a long-recognized tendency for Asian cultures to focus on the context of situations to a greater extent than do Westerners (Abel & Hsu, 1949), and the Western tendency for the fundamental attribution error (e.g., tendency to overemphasize dispositional attributions for behavior) has been more difficult to demonstrate in Asian populations (e.g., Choi et al., 1999; Norenzayan & Nisbett, 2000). Furthermore, a "cultural tilt" toward the use of dialectical reasoning in Eastern cultures (Hannush, 2007; Peng & Nisbett, 1999) leads individuals from Eastern cultures (which tend to be more collectivist) to attribute the source of a negative interaction between two individuals to both players rather than a single player. On the other hand, non-dialectical reasoning, which is more characteristic of Western (individualistic) cultures, leads to reduced consideration of contextual cues and increased likelihood of faulting a particular player (Peng & Nisbett, 1999).

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This article has been corrected with minor changes. These changes do not impact the academic content of the article.

Social attributions and behaviors across cultures may also be influenced by cultural variations in social relationships, since cultural norms may promote certain attitudes and behaviors based on social relatedness, while discouraging others (Matsumoto et al., 1997). In countries with predominantly collectivist values, where norms are strongly embedded in tradition, group membership is the central aspect of identity, and self is shaped through social roles (Oyserman et al., 2002). C. H. Hui (1988) has noted that both individualists and collectivists may be concerned for close family members or good friends, but the typical collectivist may show concern for an acquaintance primarily due to a sense of obligation to others (Davidson et al., 1976). A strong connection to in-group members (as in collectivist cultures) may be also associated with more negative feelings toward, and reactions to, out-group members (de Zavala et al., 2009; Mendes et al., 2008; Smith & Wout, 2019). In collectivist cultures, in-group members are protected, while out-group members are often perceived as strangers.

Additionally, it appears that social status (e.g., Mendes et al., 2008; Smith & Wout, 2019) has a significant impact on the dynamics of social exchanges and that these patterns may vary by culture. For example, collective societies generally place more importance on social obligation and the respect of authority than individualist societies (Schwartz, 2006). However, in these collective cultures, social position is often related less to personal style or achievement and more to social ascription, based on seniority and gender (Trompenaars & Hampden-Turner, 2011). In contrast, in individualist countries, interpersonal relations are established primarily through approval and admiration (Kitayama & Markus, 2000), and people more readily openly confront others in both friendships and interactions with authority figures (e.g., bosses or parents). "Power-distance" (which refers to degree of acceptance of a social power hierarchy; Hofstede et al., 2010) may also play an important moderating role in social exchanges. For example, Tyler et al. (1995) suggest that subordinates characterized by low power-distance orientations (in comparison with high-power distance) due to stronger personal connections to authorities may have higher levels of understanding and trust of those authorities.

Finally, the level of responsibility and intentionality that is attributed to an actor in a social exchange significantly influences both evaluation of the situation and subsequent behavior toward that individual. While clearly intentional and unintentional negative social interactions may elicit more predictable interpretations and responding, ambiguous situations, where clear cues are lacking or contradictory, may be subject to the most notable cognitive biases (e.g., Gutierrez-Garcia & Calvo, 2016). Ambiguity tolerance (Furnham & Marks, 2013) most commonly refers to a way of perceiving, evaluating, and responding to these ambiguous stimuli (Budner, 1962), which are often context specific (Herman et al., 2010). Lower tolerance for ambiguity may be linked with interpreting ambiguous situations as sources of threat, whereas higher tolerance for ambiguity as perceiving such situation as more benign. Tolerance for ambiguity is another characteristic that tends to be culturally variables (e.g., Hofstede et al., 2010).

In sum, SIP and attributional processes are significantly influenced by the aspects of the social context, including cultural norms and values (Mischel & Shoda, 1995; Peng & Nisbett, 1999). It follows that culture may also significantly impact the tendency for hostile attributions to emerge in a SIP context. Because of the likelihood that culture interacts with features of social relationship in influencing attributional processing, any attempt to understand social cognition in a cross-cultural context requires measures that are sensitive to person by situation interactions. In order to capture this important person by situation effects in attributional processing, this study focused on hostile attributional processes in response to ambiguous relational events for three different cultures.

It is important to acknowledge that country-specific scores on dimensions such as individualism and hierarchy may or may not fully reflect specific individuals in a particular sample. In fact, the intra-country variance of these values can be greater than the inter-countries variance (Lenartowicz et al., 2003). In spite of this, the participants in our study cannot avoid being steeped in the norms and values of the cultures in which they live. For example, in collective societies, individuals have been demonstrated to be more likely to perceive themselves to be judged by others, because such judgment is critical for social position (Yamagishi et al., 2008). Similarly, in a society in which groups or relationships are important but tend to be closed to outsiders, people who are excluded from their inner circle have been demonstrated to find it much more difficult to join a new group, and the cost of being excluded is greater (Greif, 1994; Yamagishi et al., 1998; Yamagishi & Yamagishi, 1994).

Current study

G. Hofstede et al.'s (2010) work has identified six cultural dimensions on which countries may vary. In working to identify samples that would be culturally variable, we focused on two of these dimensions that our literature review suggested might be influential in SIP and relational attributional processes: power distance (an index of how hierarchical the society is) and individualism versus collectivism (focus on the individual vs. a broader group). We then identified three countries that varied in important ways on these key dimensions: the United States, Poland, and Japan. In comparing these countries, the United States is a very individualistic culture with the lowest degree of social hierarchy (i.e., power distance). In contrast, Poland shows a moderate level of collectivism (vs. high individualism), with a high level of social hierarchy. Finally, Japan shows the highest level of collectivism and a moderate level of social hierarchy (Hofstede et al., 2010). Notably, in comparing Poland and Japan, while embeddedness related to preserving traditional values and social order tends to be less important in Japan than Poland (Schwartz, 2006), in both of these more collectivist cultures, in-group members are protected, while out-group members are often perceived as strangers.

The Ambiguous Intentions and Hostility Questionnaire (AIHQ) was chosen for this study. This instrument was selected because it uses five distinct vignettes or scenarios to assess attributional responding across a variety of interpersonal

contexts. Consistent with C. H. Hui's (1988) observation that type of relationship matters when assessing cross-cultural variations in psychological processes, the AIHQ has yielded a five-factor structure reflecting relational features in the past research (Zajenkowska, Prusik, & Szulawski, 2020). The first aim of this study was to verify that the five-factor structure of the AIHQ could be replicated across countries with differing cultural orientations. Furthermore, we assessed whether the five-factor solution was invariant across the three samples. Finally, to increase understanding of both the person × situation interaction and the role of the cultural context in shaping hostile attributions, we also examined how Poles, Americans, and Japanese participants responded to ambivalent situations characterized by different social-relational features (an authority figure, a close friend, a new acquaintance, a co-worker, and strangers). Our hypotheses are described below.

Because they are more collectivist societies, we expected that Polish and Japanese participants would show lower levels of hostile attribution toward a friend than Americans would (Hypothesis 1). In addition, because collectivism is linked to a tendency for protection of in-group members, while out-group members are more likely to be perceived as strangers (Hofstede et al., 2010), we hypothesized that the attributions of Japanese and Poles would involve less hostility toward an acquaintance and a new co-worker than those of Americans (Hypothesis 2). For the same reason, we expected that the attributions of Japanese and Poles would involve greater hostility toward strangers than Americans (Hypothesis 3). In hierarchical and collectivist cultures, maintaining harmonious relationships and subordination within the social structure is expected, but low-power distance is also related to greater trust between subordinates and authorities (Tyler et al., 1995). Therefore, we hypothesized that hostility toward authority would be the highest among Polish participants (where there is higher power distance), as compared to the US and Japanese participants (Hypothesis 4).

Finally, we wanted to explore the within-country variability in patterns of hostile attributions as a function of social relatedness. Given the higher level of interdependence (collectivism) and social relational hierarchy in Polish and Japanese cultures compared to the American culture, we hypothesized that Polish and Japanese participants might show less hostility toward inner circle members (e.g., friend, acquaintance, or a co-worker) than toward members of their outer circle (e.g., a stranger). Moreover, the rigid social hierarchy in Poland and Japan might result in greater hostility toward an authority figure than toward other non-authority figures.

Method

Participants and procedure

The overall sample consisted of 707 individuals from Poland, the United States, and Japan. [1] Ages of the participants ranged from 17 to 60 years. The sample consisted of 203 Poles (111 women) aged 19–60 years ($M = 25.76$, $SD = 7.49$), 230 Americans (172 women) aged 17–36 years ($M = 18.67$, $SD = 1.81$), and 274 Japanese (54 women) aged 19–25 years ($M = 19.83$, $SD = 0.90$). We did not adjust the data for outliers. Using Little's (1988) MCAR test, we found that AIHQ data were missing completely at random ($\chi^2_{(21)} = 27.19$; $p = .165$); thus, we did not remove any participants from the database. Missing data were handled using full information maximum likelihood. Polish participants were recruited from Facebook groups for university students (researchers posted an invitation to participate in the study in these groups and provided a link to the online survey). There were no incentives for participation. Japanese students participated in the online survey in a lecture setting. Participation was voluntary with no incentives provided for participation. American students completed this study as one of many alternative options to receive required research participation credits for their Introductory Psychology course. Questionnaire measures were completed in the following order: Subjective Happiness Scale, Generalized Trust Scale, AIHQ, and Self Construal Scale. However, for the purpose of this paper, only the AIHQ results were considered. Informed consent was obtained from all participants, and all participants were informed of the anonymity of their responding. All procedures were in accordance with the ethical standards of the relevant Institutional Review Boards and with the 1964 Declaration of Helsinki and its later amendments, or comparable ethical standards.

Measurement of hostile attributions

The AIHQ (Combs et al., 2007) evaluates hostile social cognitive biases. Recent factor analytic research suggests that the AIHQ allows consideration of hostile attributions across a range of interpersonal contexts and can facilitate exploration of the person × situation interactions that shape attributional biases and hostility (Zajenkowska et al., 2018). Participants read five hypothetical, ambiguous situations, imagined the scenario happening to them, and recorded their explanation for why the scenario had occurred. The ambiguous contexts involved a range of players as new co-worker, authority, strangers, acquaintance, and friend.

1. You've been in a new job for three weeks. One day, you see one of your new co-workers on the street. You start to walk up to this person and start to say hello, but she/he passes by you without saying hello.
2. You have an appointment with an important person. When you arrive at your appointment, the secretary informs you that the person is not in; they took the day off.
3. You walk past a bunch of teenagers at a mall and you hear them start to laugh.
4. You are supposed to meet a new friend for lunch at a restaurant but she/he never shows up.
5. You call a friend and leave a message on their answering machine, asking them to call you back. One week passes and they have not called you back.

[1]The data needed to reproduce the results are open and available at: http://apsycholab.pl/downloads/

Participants then used Likert scales to rate whether the other person/s performed the action on purpose (rated from 1 to 6, "*definitely yes*"), how angry it made them feel (rated from 1 to 5, "*very angry*"), and how much they blamed the other person/s (rated from 1 to 5, "*very much*"). The AIHQ has been translated and successfully used in past research in Poland (Zajenkowska et al., 2020). Prior to use in Japan, the instrument was translated and then back translated by an independent, bilingual speaker.

The scoring of the AIHQ often consists of summing blame, intentionality, and anger, resulting in one index of hostile attribution across the five scenarios (Combs et al., 2007). This approach reflects the strong inter-correlation between blame, intentionality, and anger (all *r*'s. > 70; Combs et al., 2007). However, Zajenkowska et al. (2020) demonstrated that the AIHQ actually includes five indices of hostile attributions (one for each of the scenarios, reflecting differences as a function of social relatedness) rather than simply one general hostile attribution dimension. Therefore, we calculated five situational hostile attributions as a mean composite score of the three questions regarding blame, anger, and intentionality per situation.

Additionally, participants answered two open-ended questions about their interpretation of the actor's motive and how the participant would respond to the situation. However, they have not been included, for reasons of unsatisfactory reliability in previous research (Buck et al., 2017).

Results

Factorial structure of the AIHQ

To test the factorial structure of the AIHQ, we ran a confirmatory factor analysis (CFA) on all samples simultaneously; the measurement model is illustrated in Figure 1. To evaluate the model fit to the data, we relied on B. M. Byrne's (1994) recommendations that fit is deemed acceptable when the values of CFI are > .90, and the values of RMSEA are < .08. The fit indices for the analyzed model were at the boundary of a good model fit ($\chi^2_{(80)} = 532.15$; $p < .001$; CFI = .880; RMSEA = .089[.082, .097]). Therefore, we investigated modification indices and sequentially added five pairs of correlations between residuals. All of the added correlations between residuals were entered between the sub-facets of hostile attributions, that is, anger/blame/intentionality. Three of the added correlations regarded the sub-facet of anger, that is, we added two correlations between the situation of new co-worker and strangers/friend, and one between authority and acquaintance. The remaining two correlations regarded the sub-facet of intentionality, that is, we added one correlation between new co-worker and strangers, and the other one between acquaintance and friend. As a result, we reached satisfactory model fit with the following estimates: $\chi^2_{(75)} = 334.82$; $p < .001$; CFI = .931; RMSEA = .070[.062, .078]. Because of gender and age differences across the three samples, we also tested additional model with age and gender as covariates. The fit of the model remained adequate: $\chi^2_{(95)} = 399.22$; $p < .001$; CFI = .926; RMSEA = .067 [.061, .074]. Gender did not appear as important predictor of hostile attributions (*ps* > .088). In turn, age explained some of the variance. Older people scored higher in case of an encounter with a friend ($\beta = 1.62$; $p = .002$) and lower with strangers ($\beta = -0.63$; $p = .002$) and F5 ($\beta = -0.65$; $p = .026$).

The five-factor model presented superior fit as compared to a model in which a single latent factor of hostile attributions was loaded by all items simultaneously ($\chi^2_{(90)} = 2272.65$; $p < .001$; CFI = .185; RMSEA = .185[.179, .192]). We also considered two other measurement models: 1) a bifactor model, with a single hostile attribution factor in addition to the five orthogonal situation factors and 2) a five-correlated factor model with three orthogonal method factors corresponding to blame, anger, and intentionality, where factor loadings were constrained to be equal. The fit indices of the bifactor model ($\chi^2_{(75)} = 575.83$; $p < .001$; CFI = .867; RMSEA = .097) for the total sample were similar to those of the five-factor model. The mean (standardized) factor loading on the bifactor model equaled .46, while those for specific factors (representing subsequent situations) averaged as follows: .50, .57, .70, .53, and .66. In turn, the model with the method factors showed much better model fit ($\chi^2_{(77)} = 183.41$; $p < .001$; CFI = .979; RMSEA = .044), suggesting method variance is an important source of bias in the AIHQ. However, in order to avoid the perils of partialing redux (Sleep et al., 2017), we settled on the five-factor solution. For the factor loadings, factor correlations, correlated residuals, and covariate estimates of the final five-factor model see supplemental material (Tables A1 and B1).

We assessed whether the five-factor model is invariant across countries using multi-group confirmatory factor analysis (MGCFA). In brief, in MGCFA one compares three models, where each subsequent model is more constrained. Frequently, these are referred as the configural model (unconstrained), the metric model (with factor loadings constrained to be equal across groups), and the scalar model (with factor loadings and item intercepts constrained to be equal across groups; Meredith, 1993). To evaluate whether the subsequent model is well fitted, one usually assesses the differences in CFI values (Chen, 2007). If the configural model is well fitted to the data, the difference between the configural and metric models, as well as between the metric and scalar models, does not exceed .010. Using this approach, the configural model was well fitted ($\chi^2_{(225)} = 549.99$; $p < .001$; CFI = .923) and showed high congruence with the metric model ($\chi^2_{(245)} = 594.37$; $p < .001$; CFI = .917). While we failed to show full scalar invariance ($\chi^2_{(265)} = 763.23$; $p < .001$; CFI = .882), we were able to achieve partial scalar invariance through examination of the modification indices and freeing non-invariant item intercepts (adding one at a time). Ultimately, we freed five out of 45 compared intercepts (i.e., 11.11%: intercepts 6 and 12 in Poland, and 3, 8, and 15 in Japan – all of them related to blame, except for number 8 – anger), leading to an improved model fit ($\chi2_{(260)} = 637.11$; $p < .001$; CFI = .910). Additionally, we once again examined the effects of age and gender as covariates within the partial scalar model. The effects of gender were again negligible, with the

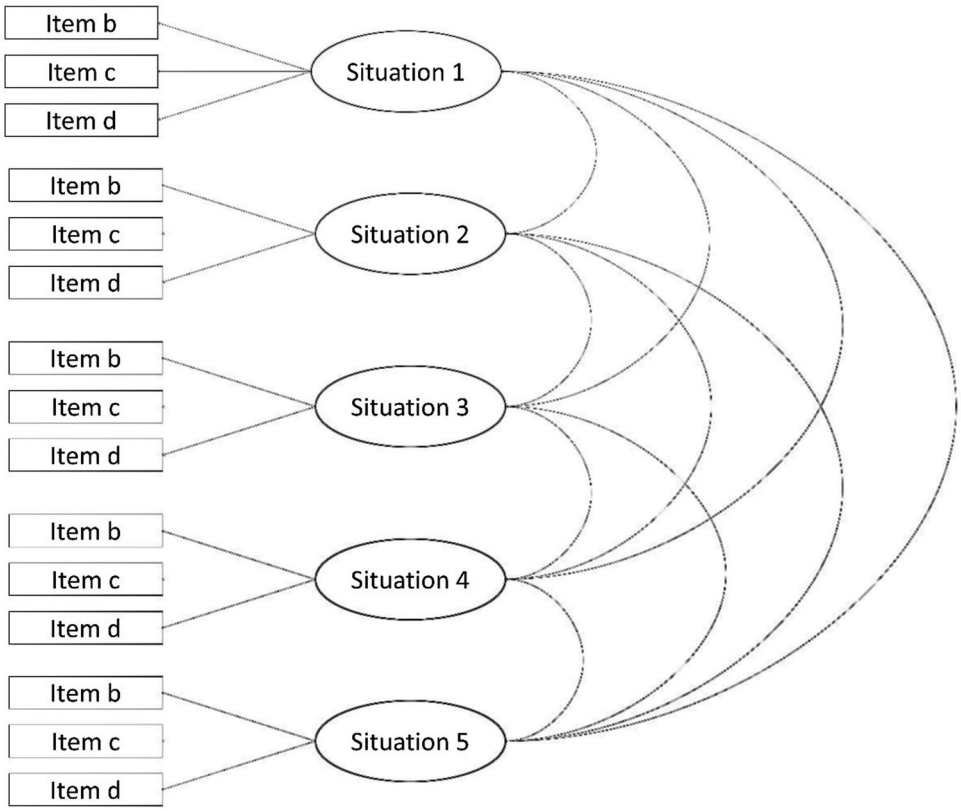

Figure 1. Hypothesized five-correlated factors measurement model of the AIHQ.

Table 1. Means, SD, and 95% confidence intervals as a function of social relationship.

Variables	*M*	*SD*	95% CI
New co-worker	2.57	.03	2.50; 2.64
Authority	3.02	.03	2.95; 3.09
Strangers	2.35	.04	2.26; 2.43
Acquaintance	2.97	.03	2.89; 3.04
Friend	2.55	.04	2.47; 2.63

Table 2. Means, SD, and 95% confidence intervals for social relationships in Poland, the United States, and Japan.

Variables		*M*	*SD*	95% CI
PL	New co-worker	2.52 (0)*	.96 (68)	2.39; 2.64
	Authority	3.15 (0)	.87 (78)	3.02; 3.28
	Strangers	2.24 (0)	.98 (55)	2.09; 2.40
	Acquaintance	2.91 (0)	.97 (04)	2.77; 3.05
	Friend	2.34 (0)	1.09 (72)	2.19; 2.49
US	New co-worker	2.48 (–.010)	.83 (.56)	2.36; 2.60
	Authority	2.88 (.21)	.96 (.67)	2.76; 3.01
	Strangers	2.49 (.23)	1.16 (.92)	2.35; 2.64
	Acquaintance	3.12 (–.02)	.96 (.51)	2.99; 3.25
	Friend	2.73 (.28)	1.07 (.90)	2.59; 2.87
JP	New coworker	2.71 (-.02)	.92 (.57)	2.60; 2.82
	Authority	3.04 (.01)	1.01 (.70)	2.92; 3.15
	Strangers	2.31 (.02)	1.19 (.93)	2.17; 2.44
	Acquaintance	2.87 (.37)	1.07 (.52)	2.75; 2.99
	Friend	2.58 (.29)	1.10 (.89)	2.45; 2.71

*latent means in brackets.

exception of encounter with a friend in the Polish sample with females scoring slightly lower ($\beta = -.08$; $p = .043$). The effects of age were significant only in the US sample, where older participants scored higher in case of an encounter with an authority ($\beta = 0.28$; $p = .030$). Finally, we also constrained age and gender effects to be equal across samples, finding evidence of their invariance ($\Delta\chi^2_{(20)} = 35.45$; $p = .018$; $\Delta\text{CFI} = .004$).

Role of social relationship

Because we achieved only partial scalar invariance, comparisons between groups must be made with significant caution. The analyses presented below are conducted on factor scores extracted from the partial scalar model. To determine whether participants in Poland, the United States, and Japan showed different levels of hostile attribution based on the type of social relationship presented in the scenario, a univariate repeated-measures ANOVA was conducted. For this analysis, type of social relationship in the vignette (five types: new colleague from work, stranger, authority, acquaintance, and friend) was included as the within-subject variable, and country of origin of the participant was the between-subject variable.

The analysis revealed a main effect of the type of relationship ($F(4, 701) = 15.213$, $p < .001$, $\eta^2_p = .021$) and an interactive effect of country and the type of relationship ($F(8, 1404) = 15.469$, $p < .001$, $\eta^2_p = .042$). *Post hoc* tests using Bonferroni correction showed that level of hostile attribution differed; the scenes involving an authority figure elicited the lowest degree of hostile attribution ($p < .01$). Situations involving an acquaintance, a new colleague from work, or a stranger did not differ in the degree of hostile attribution ($p = 1.00$). The situation with a friend elicited the greatest hostile attributions; however, it was not different

from the situations with strangers and a co-worker (p <.01). All means are presented in Tables 1 and 2.

Post hoc tests with Bonferroni correction indicated that Poles showed a lower degree of hostile attribution in response to the scenario with a friend than that of both American ($p < .05$) and Japanese participants ($p < .05$). There were no differences between Americans and Japanese ($p = 1.00$). Japanese participants showed a greater degree of hostile attribution toward the co-worker than Americans and Poles ($p < .001$). There were no differences between Poles and Americans ($p < .001$). Americans showed a higher level of hostile attribution in the scenario with the acquaintance than the Japanese and Polish respondents ($p <$ .01). There were no differences between Poles and Japanese ($p = 1.00$). Americans showed more hostile attribution in the scenario with strangers than the Japanese and Polish respondents ($p < .05$). There were no differences between Poles and Japanese ($p = 1.00$). Finally, there were no differences among Japanese, American, and Polish participants in response to the scenario with the authority figure ($p > .19$).

Attributional patterns by country

To determine whether Polish, Japanese, and American participants showed different patterns of hostile attribution based on the type of social relationship presented in the scenario, we used the composite scores and conducted a univariate repeated-measures ANOVA. The analysis revealed a main effect of the type of relationship ($F(4, 699) = 83.988$, $p < .001$, $\eta^2_p = .107$) and an interaction between country and type of relationship ($F(8, 1400) = 7.402$, $p < .001$, $\eta^2_p = .021$).

Post hoc tests with Bonferroni correction indicated that when attributional patterns were considered by country, in Poland, the highest level of hostile attribution was in regard to the authority figure ($p < .05$). The situation with a friend was assessed as less hostile than the situation with an acquaintance or authority figure ($p < .001$). The situation involving a new co-worker elicited more hostility than the situation with a stranger, but less than with an acquaintance ($p < .01$) or an authority figure ($p < .001$). The situation with strangers elicited the least hostility ($p < .001$), but there was no difference between this situation and that of a friend ($p < .001$).

In Japan, the highest level of hostile attributions was in regard to an authority figure ($p < .001$) but it was not different from the scenario with an acquaintance ($p = .085$). The scenario with a friend elicited a level of hostile attribution that was only higher than of an encounter with stranger ($p < .05$) and was lower than the other scenarios ($p < .01$), except for that of a new co-worker ($p = .684$). The scenario involving strangers elicited the lowest levels of hostile attribution ($p < .01$).

In the United States, the highest level of hostile attribution was in regard to an acquaintance ($p < .01$). The situation involving an authority figure elicited more hostility than situations with co-worker and strangers ($p < .01$), less compared with an acquaintance, and there was no difference as compared to the situation with a friend ($p = .586$). The situation with a friend elicited more hostility than the situation with a co-worker ($p < .010$), but less hostility than the situation with the acquaintance ($p < .001$)

Discussion

The first goal of our study was to determine whether the five-factor structure for the AIHQ could be used to compare the results of respondents from different countries. Results confirmed acceptable patterns of metric invariance across the American, Japanese, and Polish samples, and specific social-relational features in the vignettes significantly influenced attributional responding. However, in order to achieve partial scalar invariance intercepts were released showing that mainly some blame item intercepts were non-invariant across countries.

These findings provide a degree of support for a five-factor structure for the AIHQ across cultures (Zajenkowska et al., 2020); however, given our inability to achieve full scalar invariance, subsequent group comparisons must be interpreted with caution. That is, mean differences across countries may have been influenced by variations in how the different samples used or interpreted the items/scales. Future cross-cultural research focusing on hostile attributions might benefit from considering cultural understanding of blame, intentionally, and anger more fully, as it is plausible that the understanding of these constructs is context or culture specific. In addition, perceived threshold for intentionality may vary culturally, as Americans show higher levels of perceived agency of actors on social encounters (Menon et al., 1999). With this caveat acknowledged, we proceed with caution to consider our findings, which provide preliminary evidence that hostile attributional style may be both culture and context dependent, and that it may vary as a function of social relationship (Mischel & Shoda, 1995)

Our study focused on examination of cross-cultural differences in hostile attributions as a function of social relationship. We tested four hypotheses regarding hostile attributions that were shaped by social relationship and culture. Based on a higher level of interdependence (i.e., collectivism) and social relational hierarchy in Polish and Japanese cultures compared with the American cultures, we expected that Polish and Japanese participants would show less hostility toward a friend (Hypothesis 1), an acquaintance, and a co-worker (Hypothesis 2) than would Americans. Also, we expected that Polish and Japanese participants would show more hostility toward strangers (Hypothesis 3) and an authority figure (Hypothesis 4) than Americans would. Our results provide partial supports for these hypotheses.

As expected, hostile attributions toward a friend were greater in the United States than Poland. However, Japanese participants' attributions showed no apparent difference from those of American participants. This was unexpected given the assumption that the collectivism that characterized Poland and Japan would result in less hostility toward friends in these cultures than in the United States. Given

that Japan is typically considered even more collectivist than Poland (Hofstede et al., 2010), cultural factors other than collectivism may be playing role, or collectivism may influence attributional processes differently than we imagined. Alternatively, the Japanese may define a smaller in-group (e.g., limited to family, which tends to receive more special treatment, and hence less hostility) than Poles.

Regarding attributions toward an acquaintance among Japanese and Polish participants, both Poles and Japanese appeared to show less hostility than Americans did. There were no significant differences between Poles and Japanese regarding attributions toward an acquaintance, suggesting that hostile attributional responding in the context of social relationships may be somewhat similar in these cultures. However, contrary to our expectations, Japanese participants appeared to respond with greater hostility toward a co-worker than did both Americans and Poles. This may reflect a greater intolerance for perceived rudeness of coworkers in a culture in which the good of the group is viewed to be more important than individual needs and desires. Contrary to our expectations, Americans appeared to respond with greater hostility than both Poles and Japanese to the strangers.

There were no apparent cultural differences in hostile attributions toward authority as a function of country. However, when responses to authority figures were considered in the context of the pattern of hostile attributions within each country, in Poland and Japan, the highest level of hostility was elicited by the scenario involving an authority figure. Notable within-country patterns also emerged for other types of social relationships. In Japan, as predicted, the situation with a friend elicited less hostility than most other situations, and this was also the case in Poland. Interestingly in the US group, the behavior of an acquaintance elicited the highest level of hostile attributions, but hostile attributions for an acquaintance were also very high in Poland and Japan. It is worth noting that the scenario with an acquaintance also describes being stood up in a public place, so cultural influences on degree of, and response to, public embarrassment might have influenced this pattern of responding. More explicit examination of differences in attributional responding for public versus private events is a possible direction for future research.

There are other variables beyond those that we have considered that may also influence attributional processing during social scenarios. For example, level of trust and perceived obligation in interpersonal relations, and/or social norms regarding treatment of strangers, may influence tendency for hostile attributions. People from interdependent (i.e., collectivist) cultures may be more sensitive to hostile experiences with a co-worker or friend because they have higher expectations regarding acceptable behaviors for those types of relationships than for strangers. Perceived commitment as a function of the nature of the interpersonal relationship may also have significant influence on attributional patterns. Future studies might consider whether a hostile attribution style is more characteristic in countries with high trust and egalitarian norms in comparison with countries with a lower trust level trust that are more collectivist (Jasielska et al., 2020).

Limitations

There are several limitations of our study that warrant mention. Most importantly, we were able to achieve partial scalar invariance by releasing mainly blame item intercepts, which suggests that this construct is non-invariant across countries. Thus, while hostility may be a consequence of the specific situation, responding may also reflect a unique interactive understanding of blame/internationally/anger in the particular context. Further, because attributions are a dynamic construct that can vary over time (Bentall, 2001), investigations of temporal stability within cultural context would be useful. Finally, because we were not able to achieve full scalar invariance, respondents from different cultures might be interpreting or responding to items or response scales differently. As a result, our comparison of cross-sample means must be interpreted with caution.

Sample and method differences that may have influenced our findings should also be acknowledged. For example, while the US and Japanese participants were recruited via their university attendance, the Polish sample was recruited via Facebook. As a result, the American and Japanese samples may have been more affluent or more well educated than the comparison Polish group. The Polish group was also somewhat older than the other two groups, and the Japanese group was more heavily male than the groups in the other two counties. These sample differences may have influenced our findings, and it is important to replicate these findings in more comparable samples using more consistency in sample recruitment. In this vein, it is important to mention that age to some extent was related to hostile attributions, namely older people scored higher in case of an encounter with an authority figure and lower when interpreting situations with strangers and a friend. It is possible that with getting older a person expects greater respect from authority figures and therefore attributes more hostile once they cause harm. Likewise getting older would relate to giving more credit to close others; however, these notions as well as the relation between age and hostile attribution need further investigation. Additionally, it is possible that the age and gender differences could influence the invariance results (Marsh et al., 2013). Some studies suggest that women tend to attribute less intent to the harmdoer (Quigley & Tedeschi, 1996). That is why further research is necessary to investigate this notion.

Additionally, our study was based on individual self-report. While all respondents were assured that their responding was anonymous and confidential, to the extent that respondents felt pressure to present themselves in a particular way (e.g., to not endorse angry or hostile responses), this may have influenced our results. If this tendency was systematically influenced by culture, it may have introduced confounds to the data that would make interpretation of results more complicated. However, our assurance of anonymity and the fact that each of our samples

reported a range of emotional responses to the vignettes provides a degree of assurance that respondents did not systematically misrepresent themselves.

Conclusions

In contemporary society, increases in technology and the development of global businesses have made cross-cultural interactions more common than they have ever been before. As a result, understanding cultural variations in attitudes, emotions, and behavior is increasingly critical. This research highlights the significance of attributional processes and situational context when exploring cultural differences. Attributional processes have wide ranging impacts, from self-perception and mental health (e.g., Gutierrez-Garcia & Calvo, 2016; Hu et al., 2016) to propensity for aggression and violence (Davis & Reyna, 2015), and progress toward social justice (Smith & Wout, 2019). Because attributions are the foundation of all social interactions, illuminating variations in attributional processing can only lead to improvement in social understanding. Our research suggests that true understanding of the complexity of attributional processes in what has become a global world requires attention to both cultural differences and situational context. By considering such interactive effects, future research can provide increasingly nuanced, cultural understanding in a rapidly evolving, global world.

Open Scholarship

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