



Happiness and Hostile Attributions in a Cross-Cultural Context: The Importance of Interdependence

Dorota Jasielska¹ · Radosław Rogoza² · Mary Bower Russa³ · Joonha Park⁴ · Anna Zajenowska¹

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Abstract

Although the association between happiness and a positive attitude towards other people is well documented, little is known about the attributional processes that characterize happy individuals when they are faced with negative social events. Because of the impact of culture on social relationships and self/other-construal, both attributional style and subjective happiness may be influenced by culture. To examine the interplay of factors that may be associated with happiness, we propose a model in which interdependence predicts happiness, but only for individuals who do not have an inclination to make hostile attributions about the others. In order to determine whether the identified patterns are culture specific or culturally universal, we have conducted our study in three culturally diverse countries: the United States, Poland and Japan ($N=707$). We expected that level of happiness would be linked to interdependent self, and that it would be also associated with lower levels of hostile attributions. We also predicted an interaction between levels of interdependent self and hostile attributions in explaining level of happiness. Results mostly confirmed our predictions and remained consistent across all studied countries. We conclude with emphasis on the importance of embracing both negative and positive aspects of experience when studying wellbeing, especially in a cross-cultural context.

Keywords Happiness · Hostile attributions · Interdependent self

✉ Dorota Jasielska
djasielska@aps.edu.pl

¹ Institute of Psychology, Maria Grzegorzewska University, Szczęśliwicka 40, 02-353 Warsaw, Poland

² Cardinal Stefan Wyszyński University, Warsaw, Poland

³ Grand Valley State University, Allendale, USA

⁴ NUCB Business School, Nagoya, Japan

1 Introduction

With the development of positive psychology, scientists have become increasingly interested in traits and processes that contribute to a happy life and the flourishing of individuals, groups and societies (Seligman and Csikszentmihalyi 2000). Happiness has been defined as emotional wellbeing (Kahneman and Deaton 2010), a dominance of positive over negative affect (Diener et al. 1991), and a positive evaluation of one's quality of life (Veenhoven 1999). It is associated with a high frequency of positive emotions (Emmons and McCullough 2003; Fredrickson 2001), optimism (Lyubomirsky et al. 2011) and realization of intrinsic goals (Ryan and Deci 2001). A central source of happiness appears to be satisfactory relationships (Baumeister and Leary 1995; Ryan and Deci 2001), which play a vital role in fulfilling a human need for intimacy, security and affiliation. These relationships can also be a source of social support and emotional comfort, which themselves lead to positive emotion (Christopher et al. 2004). Much of the happiness research stresses the benefits of strong interpersonal ties, and people in relationships appear to be happier than single, divorced or widowed individuals (Myers 2000).

1.1 Happiness and Social Bonds

Substantial research has focused on understanding the social dynamics that distinguish people who are happy from those who are not. Happy people have more friends and spend more time socializing with others (Diener and Seligman 2002; Heidrich and Ryff 1993; Waldinger and Schulz 2010). They also report having more interest in prosocial behaviour, and they spend more time performing altruistic acts and have greater intentions to perform altruistic acts in the future, than people who are not happy (Dunn et al. 2014; Jasielska 2018; Lyubomirsky et al. 2005; Weinstein and Ryan 2010). Happy people are more likely to engage in prosocial spending (using private financial resources to help others), and this effect is significant cross-culturally (Aknin et al. 2013). In terms of interpersonal relationships, happy people are reported to be more trusting, to have a more positive attitude towards others, and to be more open to initiating new contacts (Jasielska 2018; Lyubomirsky et al. 2005). These findings are all consistent with the Broaden-and-Build Theory, which postulates that experiencing positive emotions leads to exploration and initiation of actions to strengthen social bonds in future (Fredrickson 2001). It follows that a happy person would be likely to have a favorable view of others and their motives, which would facilitate making social connections.

However, being a “social animal” has also a dark side. As Jean Paul Sartre said, “Hell is others” (i.e., interpersonal contacts can be a source of distress). Because of the “need to belong” (Baumeister and Leary 1995), signs of rejection or mistreatment, including the experience of ambiguous negative social interactions, can lead to painful emotions such as anger, hostility or hurt (Ayduk et al. 2008). Anger and blame are closely related constructs, with anger appearing to be a more affective response while blame is a more cognitive response (Quigley and Tedeschi 1996). Attributions and related blame significantly impact anger. The relationship between blame and anger appears to be reciprocal; with blame leading to anger, and anger leading to blame, which further increases anger and aggression (Quigley and Tedeschi 1996). Consistent with this view, trait anger and aggression have been shown to increase the inclination to make hostile attributions (Zajenkowska et al. 2018).

1.2 Interdependence and Attributional Style

Both attributional style and subjective happiness are heavily influenced by cultural factors. Culture and social influences play a central role in the construction of a sense of self, providing a framework for which behaviors and emotions are acceptable and valued, and which are unacceptable and undesirable (Cross and Madson 1997; Markus and Kitayama 1991). Level of community orientation and focus on interpersonal dynamics are also both highly culturally dependent and play a significant role in defining cultural contexts (Hall 1989; Zajenkovska and Zimmerman 2013). In considering norms for social relatedness, communal orientation (Abele and Wojciszke 2007; Markus and Kitayama 1991) refers to an interdependent self-construal in which the primary focus is connectedness among humans and the sense of self as part of a larger social unit (Cross and Madson 1997; Markus and Kitayama 1991). This orientation is often contrasted with a more independent (characteristically Western) construal, where the primary focus is on personal separateness, and the expression of unique personal attributes. For interdependent, “communitarian” individuals, fulfillment stems from relationship with others and a sense of belonging (Guisinger and Blatt 1994; McAdams 1993). This orientation has important implications for behavioral, cognitive, and emotional responding in social contexts. For example, for communitarian individuals, public display of emotions is considered more a means to maintain social harmony than a candid expression of affect, and ego-focused emotions (that foster and create independence, such as anger) are less likely to be experienced and expressed (Markus and Kitayama 1991).

With regard to attributional style, communal orientation has been postulated to decrease perceptions of provocation from others (Zajenkovska and Konopka 2015). Markus and Kitayama (1991) propose that level of anger may be lower in highly contextual and interdependent societies, in part, because the attributions made by individuals are more often situational than dispositional. Indeed, in interdependent societies, global inferences about individuals are not considered to be as informative or useful, since behavior is considered a contextualized feature of a situation rather than an indication of inner dispositional qualities. As a result, when compared to Americans, persons from interdependent societies are much less likely to make dispositional attributions regarding social events (e.g., Shweder and Bourne 1984; Miller 1984). Peng and Nisbett (1999) describe a dialectical style of thinking that is typical in Eastern cultures (i.e., countries under the influence of Confucianism, Taoism or Buddhism). This style of thinking is characterized by tolerating contradictions, and taking into account the relation between elements, events, and the situational context. Contextual attributions can diminish personalizing biases, or the tendency to make attributions that focus on global, inherent, dispositional qualities rather than circumstances (Langdon et al. 2006; Nisbett 2004). This may explain why the fundamental attribution error is more characteristic of individualistic cultures, where high agency can be linked with higher perceived intentionality (Choi and Nisbett 2000; Nisbett et al. 2001). The focus on context and relationship in Eastern cultures may cause individuals in these cultures to be less likely to both feel and express anger (Markus and Kitayama 1991).

1.3 Culture and Happiness

Because of the key role that culture plays in defining sense of self (Markus and Kitayama 1991), and by association, defining sense of the others who are key to social connection,

happiness must be studied with a sensitivity to the cultural context (Kitayama and Markus 2000). Indeed, impact of cultural variations in self-construal on social goals, motivations and dynamics has received considerable research attention (Brewer and Chen 2007; Markus and Kitayama 1991; Singelis 1994). In the independent model of self (also referred to as individualistic, and characteristic for Western cultures), the person is an autonomous entity with unique individual attributes. Creating and maintaining a positive sense of self are basic endeavors, and pursuit of individual success and personal development are highly valued (Ahuvia 2002). In this independent context, interpersonal relations are often established primarily through approval, praise and admiration (Kitayama and Markus 2000). In contrast, in the interdependent model of self (also referred to as collectivistic or socially embedded, and prevalent in the majority of Asian, Latin American and African countries) group membership is the central aspect of identity, and self is shaped through social roles and group responsibilities rather than individual attributes (Oyserman et al. 2002). Maintaining harmonious relationships is more important than high self-esteem in these cultures, and individuals maintain relationships through adjustment, sympathy and compassion (Kitayama and Markus 2000).

Interestingly, Individualism (dominance of an independent sense of self) has long been reported to be a strong predictor of happiness (Diener et al. 1995), but recent research indicates that the pattern is more complicated than originally presumed. While individualism predicts aspects of a country's aggregated level of happiness, it is only a marginal predictor of happiness when social variables such as in-group bias are controlled (Jasielska et al. 2018). Thus, construction of self appears to be socially mediated and to occur in conjunction with construction of social relationships (Kitayama and Markus 2000, see also Krys et al. 2019). These findings highlight the need for increased attention to cultural variations in social relationships (e.g., social attitudes/attributions) in cross-cultural considerations of happiness.

1.4 Current Study

An individual's interpretation of events and interactions may play a critical role in social relationships, and thus, contribute significantly to long term personal happiness (Demir et al. 2019). While attributional processes have long been considered to play a key role in the experience of emotion and well-being, as well as motivation and behavior (e.g., Abramson et al. 1989; Weiner 2018), the relation between attributional processes and happiness has received little research attention. Social dynamics and relationships, which can play an important role in happiness, also appear to be significantly influenced by cultural factors. These cultural factors can shape both self-construal, and expectations for, and reactions to, others. This study focuses on understanding the cross-cultural connection between social attributional processes and happiness, and how these processes may be influenced by self-construal. Using data from three diverse countries, we also examine the extent to which the patterns that derive are culturally sensitive versus universal.

The aim of the present study was to investigate the roles of interdependence and hostility bias (i.e., attributions) as predictors of happiness, and to determine whether the relations of these factors to happiness are cross-culturally stable. We anticipated that interdependence would predict happiness, but only for individuals who did not utilize a hostile attributional style in response to difficult interpersonal encounters. Because we presumed a universal regulative mechanism in this domain, we expected the pattern to be evident in culturally diverse societies. Thus, we conducted our study in three countries with different

cultural background (American, Central-European and East Asian). Because of the importance of strong interpersonal bonds for emotional well-being, we predicted that happiness would be positively associated with interdependent self (Hypothesis 1). In regard to the Undoing Hypothesis (Fredrickson 2001) that positive emotions diminish the effects of negative states, we anticipated that a higher level of subjective well-being would be associated with a more favorable interpretation of ambiguous situations and, as a result, lower levels of hostile attributions irrespective of the situation in which the attribution was made (Hypothesis 2). Studies of social information processing suggest use of a social-cognitive approach to individual differences, particularly when focusing on attributions (Schultheiss et al. 2009; Shoda et al. 1994). Thus, we chose to consider hostile attributions within a series of specific contexts. To facilitate this approach, rather than averaging responses to consider hostile attributions as a continuous variable, we divided participants into groups based on the pattern of hostile attributions they showed across varying contexts. This approach allowed for more person-centered analysis and is consistent with recommendations made by Larkin et al. (2013) or Slotter and Finkel (2011) that stress the importance of analyzing the complexity of the interpretation process, including the context.

In addition, we expected that hostile attributions would moderate the relation between interdependent self and happiness. By definition, a person with a highly developed interdependent self achieves happiness through relationship with others, which requires sensitivity, compassion, and adjustment to the needs of others (Kitayama and Markus 2000). However, even in collectivist societies where interdependent self is common, trust can be low. This is because in such societies, loyalty is typically reserved for in-group members such as immediate family members or friends (Fernández et al. 2005; Fukuyama 2001). We predicted that the impact of interdependent self on happiness would be influenced by level of hostile attributions, such that highest level of happiness would be in the group with a high levels of interdependent self and a low level of hostile attribution, and the lowest level of happiness would be in the group with a low level of interdependent self and a high level of hostile attributions (Hypothesis 3).

2 Method

2.1 Participants and Procedure

The overall sample consisted of 707 individuals from Poland, the United States and Japan. Ages of the participants ranged was 17 to 60 years. The sample consisted of 203 Poles (111 women) aged 19–60 years ($M=25.76$, $SD=7.49$), 230 Americans¹ (172 women) aged 17–36 years ($M=18.67$, $SD=1.81$) and 274 Japanese (54 women) aged 19–25 years ($M=19.83$, $SD=.90$). 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, and no missing data were allowed (i.e., the form was saved only upon completion). American students completed this study as one

¹ In American sample, 2% of participants reported that they were raised outside US. Since removing these observations from the sample did not affect the results, they have been included in the analyzes.

of many alternative options to receive required research participation credits for their Introductory Psychology course. All enrollment for research studies was via an on-line system, and the survey was completed via computer in a private, laboratory setting. Questionnaire measures were completed in the following order: Subjective Happiness Scale, AIHQ and Self Construal Scale. Informed consent was obtained from all participants, and all participants were informed of the anonymity of their responding. All procedures performed in the study 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.

2.2 Measures

2.2.1 Happiness

As an indicator of Happiness, we used the Subjective Happiness Scale (SHS; Lyubomirsky and Lepper 1999). This scale consists of four statements related to subjective feelings about one's own happiness (such as "*In general, I consider myself ...*" 1—not a very happy person to 7—a very happy person). Prior to use, the scale was translated into Polish and Japanese and then back translated by a bilingual person. In the present study, SHS showed acceptable reliability estimates ($\omega_{\text{Poland}} = .80$; $\omega_{\text{US}} = .87$; $\omega_{\text{Japan}} = .81$). Accordingly to conventional criteria (Chen 2007), the SHS appeared as having metric invariance across countries (except for loading of item 2 in US), with the absolute difference from configural model equalling .007 in CFI and .009 in RMSEA. Therefore, it was plausible to compare correlates across countries (Davidov et al. 2014).

2.2.2 Hostile Attributions

The Ambiguous Intentions and Hostility Questionnaire (AIHQ) (Combs et al. 2007) evaluates hostile social cognitive biases. Participants read five hypothetical negative situations with ambiguous causes, imagined the scenario happening to them, and recorded their explanation for why the scenario occurred. The ambiguous contexts involved a range of players (e.g., new co-worker, an authority figure, a group of teenagers, a friend or new friend). Below we present the ambivalent situations included in the AIHQ:

1. You've been at 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.

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”). In past research, the AIHQ has allowed researchers to consider hostile attributions across a range of interpersonal contexts and to explore the person \times situation interactions that shape attribution biases and hostility (Zajenkowska et al. 2018). Because attribution bias may be dependent on the context, cross-situational stability can be low (Shoda et al. 1994). Factorial analysis has revealed that the AIHQ structure is not centered on particular questions measuring constructs of hostility, blame, and aggression, but rather on types of contexts or situations described by particular AIHQ scenarios (Zajenkowska et al., 2018). For this reason, it is recommended that AIHQ scenarios be considered independently as an indicator of hostility across various interpersonal contexts (Zajenkowska et al., 2018).

Based on past research using the AIHQ, we interpreted the AIHQ structure as organized around the five specific contexts or situations.² This scale was also translated into Polish and Japanese and then back translated by a bilingual person. The reliability estimates for each situation were mostly good: (Situation1: $\omega_{\text{Poland}} = .81$; $\omega_{\text{US}} = .74$; $\omega_{\text{Japan}} = .68$; Situation2: $\omega_{\text{Poland}} = .75$; $\omega_{\text{US}} = .82$; $\omega_{\text{Japan}} = .74$; Situation3: $\omega_{\text{Poland}} = .83$; $\omega_{\text{US}} = .88$; $\omega_{\text{Japan}} = .87$; Situation4: $\omega_{\text{Poland}} = .82$; $\omega_{\text{US}} = .82$; $\omega_{\text{Japan}} = .78$; Situation5: $\omega_{\text{Poland}} = .89$; $\omega_{\text{US}} = .87$; $\omega_{\text{Japan}} = .86$).

2.2.3 Interdependent Self-Construal

To assess Interdependent Self, we used the Self-Construal Scale (SCS; Singelis 1994; Singelis et al. 1999). This questionnaire measures the strength of an individual’s interdependent versus independent self-construal, as defined by Markus and Kitayama’s model (1991). This scale consists of 30 items, out of which 15 items assessing interdependence were used (e.g., “*Even when I strongly disagree with group members, I avoid an argument*”). Participants responded using 7-item scale. Again, this scale was translated into Polish and Japanese and then back translated by a bilingual person. The interdependence dimension showed acceptable reliability estimates ($\omega_{\text{Poland}} = .78$; $\omega_{\text{US}} = .75$; $\omega_{\text{Japan}} = .80$).

3 Results

3.1 Descriptive Statistics and Country-Level Differences

The descriptive statistics as well as country-level differences of the studied variables are presented in Table 1. Participants from Poland had a lower level of happiness. As Table 1 shows, the level of happiness was lower in Poland than in both the United States and Japan, and the level of interdependence was higher in United States than in Poland and Japan. There are also several differences between the countries in the level of hostile attributions (with regard to Situation 1, the level of hostile attributions was higher in Japan than in Poland and the United States, with regard to Situations 4 & 5 participants from the US obtained higher scores than those from Poland and Japan).

² As assessed by confirmatory factor analysis, the five-factor model yielded a good model fit ($\chi^2_{(76)} = 370.81$; $p < .001$; CFI = .922; RMSEA = .074 [.067–.082]).

Table 1 Descriptive statistics and effect sizes of the country-level differences of the studied variables

	Poland <i>M(SD)</i>	US <i>M(SD)</i>	Japan <i>M(SD)</i>	Poland versus US		Poland versus Japan		US versus Japan	
				<i>d</i>	<i>t</i>	<i>d</i>	<i>t</i>	<i>d</i>	<i>t</i>
Happiness	4.38 (.94)	4.59 (.66)	4.61 (.86)	-.26	-2.69**	-.26	-2.78**	-.03	-.33
Interdepend- ent self	4.39 (.73)	4.87 (.60)	4.43 (.67)	-.69	-7.55**	-.06	-.62	.66	7.72**
<i>Hostile attributions</i>									
Sit. 1	2.52 (.96)	2.48 (.84)	2.71 (.92)	.04	.44	-.20	-2.21*	-.25	-2.91**
Sit. 2	3.15 (.87)	2.89 (.97)	3.04 (1.01)	.28	2.91**	.11	1.17	-.15	-1.75
Sit. 3	2.24 (.98)	2.50 (1.16)	2.31 (1.19)	-.24	9.78**	-.06	-.64	.16	1.79
Sit. 4	2.92 (.97)	3.12 (.97)	2.87 (1.08)	-.20	-2.16*	.05	.46	.24	2.69**
Sit. 5	2.34 (1.10)	2.73 (1.07)	2.59 (1.11)	-.35	-3.79**	-.23	-2.46*	.13	1.49

* $p < .05$; ** $p < .01$

3.2 Hypothesis 1: Relation Between Happiness and Interdependence

As expected, Happiness was correlated with Interdependence, across all respondents, in all countries ($r = .21$; $p < .001$). We also tested these effects in each country. The link between Happiness and Interdependence was significant in Poland and Japan ($r_s = .34, .28$, respectively; both $p < .001$), but only on a trend level in United States ($r = .122$, $p = .07$). Thus, the first hypothesis was confirmed for the general sample and mostly confirmed for each country.

3.3 Hypothesis 2: Happiness and Level of Hostile Attributions

In order to test the second hypothesis, Latent Class Regressions (LCR) were used. In this approach, classes (i.e., groups) of participants are distinguished and external variables are used as predictors of class membership. The LCR approach has advantages over a more traditional approach in which groups are created based on simple variables scores (e.g., low, medium, high), as LCR allows statistical data to fully inform the identification of groups rather than using more arbitrary groupings. In the current example, we used hostile attribution scores in different scenarios as the classifying variable, and Happiness was a predictor of class membership. To determine the underlying number of classes, we evaluated (1) the Bayesian Information Criterion (BIC; Schwarz 1978), which is a frequently used statistic to compare nested models. With BIC, the lowest value suggests the best-fitting number of classes that account for the most variation in the analysed data (Li et al. 2009); (2) models using the Lo-Mendel-Rubin test (LRT), where significant values suggest that the previous model may be rejected; (3) the manifest allocation to classes, which should be characterized by overall certainty (i.e., having similar values of model entropy, which might be interpreted as reliability of the class membership assignment) and moreover, (4) we assessed whether the distinguished classes were interpretable and their size was sufficient. The results of these analyses are presented in Table 2.

We compared five distinct models with one to five latent classes. According to the BIC values, the four class model explained the most information, but the results of the LRT

Table 2 Comparison underlying latent classes

Number of classes	<i>N</i>	Entropy	BIC	LRT
1	1 = 707	–	11995.68	–
2	1 = 275 2 = 432	.63	9860.76	414.93*
3	1 = 142 2 = 176 3 = 389	.71	9745.82	157.44***
4	1 = 161 2 = 158 3 = 357 4 = 31	.74	9708.59	81.39
5	1 = 118 2 = 161 3 = 305 4 = 30 5 = 85	.70	9714.17	39.49

* $p < .05$; *** $p < .001$

BIC Bayesian Information Criterion; LRT Lo-Mendel-Rubin test

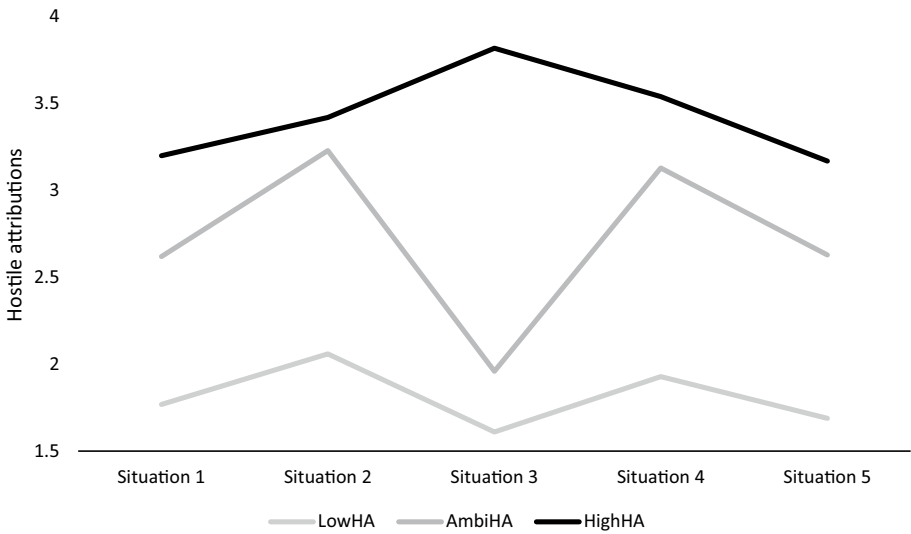


Fig. 1 Latent class profiles of the different classes of hostile attributions. *Note* LowHA = low hostile attributions; AmbiHA = ambivalent hostile attributions; HighHA = high hostile attributions

test supported the three factor model. The entropy values were similar across all compared groups, suggesting that participants could be classified into the subgroups with high certainty. Because the difference in BIC between the three and four factor models was low, and moreover—the fourth class was comprised of only 31 participants, we decided to retain the three classes. The profiles of the distinguished classes are presented in Fig. 1.

The first class, which was the least common (21.82%), was characterized by individuals who scored low on hostile attributions (LowHA), regardless of situation. The second

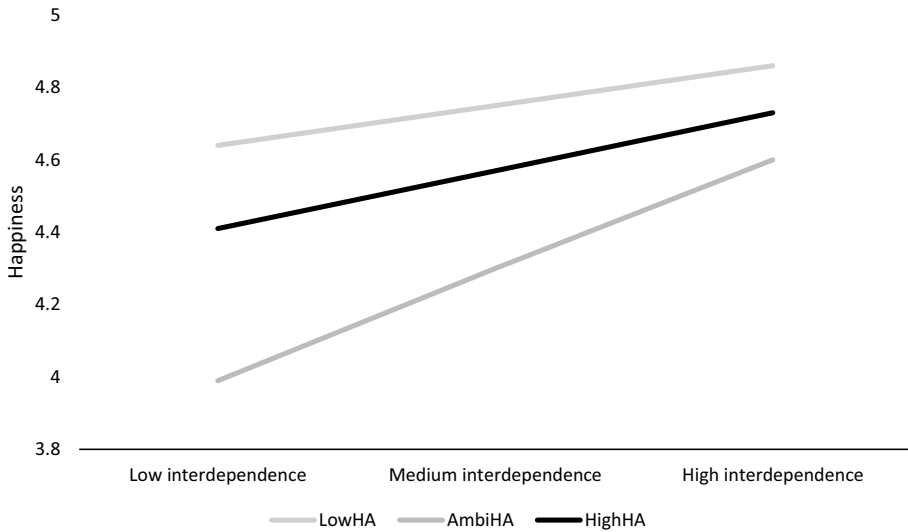


Fig. 2 Moderation of Hostile attributions on the relation between Happiness and Interdependence. * $p < .05$; ** $p < .01$

class, which contained the majority of the respondents (52.92%), was characterized by individuals who had ambiguous reactions (AmbiHA), such that in some situations they demonstrated hostile attributions, and in other situations they did not. The last class was similar in size to the first class (25.26%), however it was characterized entirely by individuals who scored high on hostile attributions in all situations (HighHA). Although Happiness turned out to be a non-significant predictor of LowHA and AmbiHA group ($\beta = .28$; $t = 1.74$; $p = .083$), it successfully differentiated individuals with LowHA and HighHA ($\beta = -.62$; $t = -3.42$; $p < .001$) as well as these from AmbiHA and HighHA group ($\beta = -.34$; $t = -2.09$; $p = .037$). Gender appeared as non-significant predictor of class membership, whereas age negatively predicted membership to the HighHA group, both in regard to LowHA ($\beta = -.17$; $t = -2.63$; $p = .009$) and AmbiHA ($\beta = -.18$; $t = -2.09$; $p = .007$) classes, suggesting that younger participants were characterized by higher levels of hostile attributions. The distinguished classes turned out to be culturally universal, i.e., there were no statistical differences in the proportion of class membership by country ($\chi^2_{(4)} = 7.67$; $p = .105$). Thus, the second hypothesis was mostly confirmed.

3.4 Hypothesis 3: Hostile Attribution Moderation of the Relations Between Happiness and Interdependence

To test the last hypothesis, the classes were used as moderators of the relation between Happiness and Interdependence. The moderation model yielded good fit ($F_{(5,700)} = 12.98$; $p < .001$) and explained a fair amount of the variance ($R = .29$; $R^2 = .08$). Interdependence remained a significant predictor for the AmbiHA ($\beta = .44^{**}$ [.24, .63]) and HighHA ($\beta = .23^{**}$ [.11, .34]) group but not for the LowHA class. ($\beta = .16$ [-.01, .33]). The moderation effect of Hostile attributions on the relation between Happiness and Interdependence are depicted on Fig. 2. The largest effects were observed for the low interdependence

condition (i.e., those who were previously classified into the LowHA class were generally happier). The introduction of age and gender as additional moderators did not influence the obtained results. Thus, the third hypothesis was confirmed.

4 Discussion

Our study examined the role of interdependence in the prediction of happiness, and the extent to which these patterns were influenced by a tendency for hostile attributions. We gathered data from three different countries to assess the pattern across diverse cultures. Happiness was positively associated with interdependent self in two of the three studied cultures. This finding is consistent with previous evidence that positive relationships with others are important for happiness (Rego and Souto 2009), and that interdependence requires a positive attitude toward others.

4.1 Happiness and Attributional Style

As we predicted, happiness was associated with interpretation of ambiguous situations. Participants with a high level of hostile attributions were less happy than those with low and ambiguous tendencies for this negative bias. Given the correlational nature of this study, the direction of effect is unclear. It is possible that people who ascribe negative intentions to others simply are less happy because of the negative emotions experienced in interpersonal contexts. However, it is also possible that low levels of happiness create an unpleasant emotional state that facilitates negative bias (Carretié et al. 2001). As a result, unhappy people may be prone to interpret ambiguous situations in an unfavorable way, which may lead to experiencing negative emotions (e.g., anger) that further diminish happiness (Zajenkowska et al. 2018). Finally, the presence of a cognitive bias consisting of a lack of interpersonal optimism may lead to more hostile attributions and lower levels of happiness such that the underlying lack of optimistic attributions is actually responsible for the connection between attributions and psychological well-being (Kleiman et al. 2017).

4.2 Cultural Similarities and Differences

Several cultural differences were observed among the studied countries in the level of happiness (higher in US and Japan than in Poland) and interdependence (higher in US than in Japan and Poland) and there were situational variations in levels of hostile attributions. Some of these differences are counterintuitive. For example, Poland and Japan are generally considered to be more collectivistic than the US. However, it is important to note that results obtained for individuals should not be directly used to make inferences about national-level differences (Jasielska et al. 2018), especially when the sample is not fully representative of the population. National characteristics are a source of information about predominant values in particular cultures that can, for example, affect social and interpersonal interactions. In spite of this, individuals often differ in terms of the degree to which they identify with these values (in fact, researchers have noted that this attention to this intra-cultural variation is often neglected in cross-cultural studies, Au 1999). Our samples were comprised primarily of young adults studying at the university, and this young and generally well educated group may have their own unique cultural values and norms that do not necessarily reflect those of other sociodemographic groups within the same country.

However, the aim of the study was not to examine cultural variation within these three countries, but to explore whether the relation between the variables was invariant across Japan, the US and Poland. The three classes of hostile attributions (low, high, and ambivalent) were similar across all three countries studied. In addition, these patterns were present in comparable proportions across all three cultures, in spite of fact that these countries vary with regard to cultural characteristics (Hofstede et al. 2010). This pattern suggests that a tendency for hostile attributions is likely to be more universal (perhaps based on personal attributes) and less culturally dependent than some might imagine.

4.3 Happiness, Hostile Attributions and Interdependence

As expected, hostile attributions influenced the relation between happiness and interdependence. Interdependence predicted happiness for participants with high and ambiguous levels of hostile attributions, but not for those with low level of negative attribution bias. In fact, the latter group was the happiest of all. The results were particularly strong for the low interdependence condition, where low level of hostile attributions was linked with the highest level of happiness. This pattern suggests that interdependence may be particularly beneficial for happiness for individuals with strong hostile attribution biases. Because interdependence involves a fostering of interpersonal bonds, increased empathy and understanding, and readiness to take others' perspectives (Kitayama and Markus 2000), those who are more interdependent may find it easier to deal with unpleasant emotions related to ambiguous negative social experiences. In contrast, low interdependence combined with hostile attributions may increase the likelihood of negative, dispositional attributions—such as believing that people are unfriendly. This may lead to increased likelihood of negative emotions in future interpersonal contexts, and as a result, decreased levels of happiness. However, it is also possible that lower levels of happiness result in a negative attitude toward others, which itself leads to higher level of hostility.

Our findings show that the strongest effects were observed for the group with the ambivalent level of hostile attributions, where interdependence was a significant predictor of happiness and yet, the levels of happiness were the lowest. This result can be interpreted as consistent with the Cognitive–Affective Personality System (CAPS), which proposes ways in which the social environment may activate an individual's inner affective, cognitive and motivational processes (Mischel and Shoda 1995). Within this concept, if the social context is predictable, consistent behavioral patterns can emerge. However, if the context is ambiguous, the selection of a proper response becomes more problematic. The result may be uncertainty—a state where the organism lacks information about how or why something has happened (Bar-Anan et al. 2009). Similarly, an inconsistent pattern of hostile attributions may be related to higher levels of uncertainty in interpersonal contacts. In contrast to people who consistently ascribe negative intentions to others (i.e., expect “the worse”) in ambiguous interpersonal contexts, this group's variable and inconsistent pattern of interpretations may lead to more variance in emotional responding to social events (Bar-Anan et al. 2009) and more overall distress. Such an interpretation is consistent with the observed interaction between interdependence and happiness—the greater the interdependence, the higher the happiness in this ambivalent group. For those who ascribe lower importance to interpersonal relations and experience this uncertainty regarding social events, the level of happiness is the lowest. This interesting result confirms the importance of studying hostile attributions within specific social contexts in order to provide a more complex understanding of the interplay of factors affecting interpersonal processes (Roche et al. 2014).

Our data also indicate that low interdependence is not necessarily linked with lower levels of happiness; instead, this pattern follows only when interdependence is combined with hostility bias. In fact, level of interdependence was not associated with level of happiness for participants with the lowest level of hostile attributions. This result is consistent with previous cross-cultural work demonstrating the importance of negative attitudes toward others in explaining the relationship between happiness and cultural dimensions (Jasielska et al. 2018).

5 Limitations and Future Recommendations

This study increases our understanding of the association between happiness and interpersonal attributions based on data drawn from three different cultures; however, the study does have some limitations. First, our approach was correlational, and as a result, we are limited in our ability to determine causal relationships between hostile attributions and well-being. Unfortunately, these research questions are not easily amenable to experimental designs, which could more cleanly demonstrate cause and effect. However, the fact that our findings are consistent with extant theoretical and empirical literature, and that this pattern was found in a cross-cultural sample suggests that these patterns might be generalizable. Nevertheless, it is important to note that latest data from large studies on individualism–collectivism, based on nationally representative samples (Beugelsdijk & Welzel 2018; Minkov 2018), imply that there is more similarity across the three studied countries than previous research (Hofstede et al. 2010) has indicated. Hence, any sweeping cross-cultural conclusions should not be driven at this stage, as data from a bigger number of diverse countries are needed. It should be also noted that ages and gender distributions in the three country samples showed some variability, with Poles showing the widest age range and Japan having a skewed gender distribution. Replication of these findings with more comparable samples could provide reassurance that findings were not influenced by sample variations.

Future studies might also explore the possibility that low interdependence may be associated with a tendency to experience loneliness. If such an association were established, the question of whether the pattern exists cross-culturally and the extent to which loneliness might influence a tendency for hostile attributions would warrant further investigation. For example, this question might be explored via experimental induction of a state of loneliness to examine its impact on hostile attributional processes in cross-cultural samples. Finally, although our initial findings suggest that these patterns maintain cross-culturally, this assumption might be tested by extending this research to incorporate an even wider range of cultural groups, particularly those that show variability in interdependence, in order to confirm that these findings are not specific to our particular samples.

6 Conclusion

Our study contributes to improved understanding of the complex interplay between culture, individual characteristics, and social contexts that are involved in psychological well-being, an area which has recently been labelled the “second wave “of positive psychology” (PP 2.0). This newest movement in positive psychology stresses the need for research to consider both positive and negative factors contributing to well-being (Lomas and Ivrtzan

2016). In the study presented above, we examine both brighter and darker sides of the psyche as predictors of happiness. Our findings suggests that lower levels of interdependence are not necessarily associated with lower levels of happiness, unless they coexist with high proneness to make hostile attributions. This pattern was consistent across cultures. These findings illustrate that psychological well-being likely derives from a complex interplay among a range of factors. Continued examination of the interactive patterns that are predictive of well-being may allow a more nuanced understanding of how happiness derives across cultures.

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Compliance with Ethical Standards

Conflict of interest On behalf of all authors, the corresponding author states that there is no conflict of interest.

Ethical Approval The study was carried out in accordance with the recommendations of the 1964 Helsinki declaration and its later amendments or comparable ethical standards. All subjects gave written informed consent in accordance with the Declaration of Helsinki. The study was approved by Maria Grzegorzewska University Academic Ethical Review Board.

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