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BRIEF REPORTS

A cross-cultural examination of pleasant events and depressive symptoms

Rachel Vanderkruik | Mark A. Whisman

Department of Psychology and Neuroscience, University of Colorado Boulder, Boulder, Colorado, USA

Correspondence
Mark A. Whisman, Department of Psychology and Neuroscience, University of Colorado Boulder, 345 UCB, Boulder, CO 80309-0345, USA.
Email: mark.whisman@colorado.edu

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Abstract

Objectives: To examine the associations between pleasant or reinforcing activities (as they relate to the behavioral theory of depression) and depressive symptoms across cultures.

Methods: We tested for differences in the strength of association between pleasant events and depressive symptoms in probability samples of adults from the United States ($N = 619$) and Japan ($N = 232$).

Results: Results indicate that frequency, enjoyment, and obtained pleasure from pleasant events were significantly and negatively associated with depressive symptoms for both American and Japanese adults, and these associations were significantly greater in magnitude for American adults relative to Japanese adults.

Conclusions: Findings suggest that there is a cross-sectional association between pleasant events and depressive symptoms in both the United States and Japan, and that this association is stronger in the United States.

KEYWORDS

behavior therapy, cross-sectional analyses, cultural differences, depression, pleasant events

1 | INTRODUCTION

Depression is a significant contributor to the global burden of disease. The World Health Organization (WHO) has identified depression as the leading cause of disability (assessed by Years Lived with Disability), and it is expected that depression will move up to second place in terms of Disability Adjusted Life Years by 2020 (Reddy, 2010). Fortunately, a variety of effective treatments for depression exist, including forms of both psychotropic medications and psychotherapy.

Among forms of psychotherapy, there is strong support for behavioral approaches to treating depression, which are grounded on the theory that by altering behavior, it is possible to change depressive symptoms (Dimidjian et al., 2011; Kaiser et al., 2016).

Lewinsohn (1974) was an early leader in the development and testing of behavioral models for depression. His original behavioral model had three key assumptions regarding reinforcement for a depressed individual: (a) low rates of response-contingent positive reinforcement (RCPR) directly elicit depressed behaviors (e.g., sadness and fatigue); (b) reinforcement can be limited due to idiographic factors (e.g., limited range or impact of reinforcement), a low availability of reinforcers in the environment, and an inability to elicit such reinforcement; and (c) the low rate of RCPR is a sufficient explanation for the behavioral patterns of a depressed person (Dimidjian et al., 2011; Kaiser et al., 2016; Lewinsohn, 1974). The key concept in Lewinsohn's behavioral model is captured by the first assumption, which claims that a depressed person receives limited response-contingent reinforcement for a healthy engagement with their environment, and this limited level of reinforcement directly leads to the experience of depression (Dimidjian et al., 2011; Kaiser et al., 2016; Lewinsohn, 1974).

Early approaches to the behavioral treatment for depression were based on Lewinsohn's theory, with the goal to re-establish the rate of RCPR by changing the frequency, quality, and quantity of pleasurable activities and social interactions of the individual (Abreu & Santos, 2008). To aid in the assessment of RCPR, scales have been developed to characterize and measure the behavioral patterns and activities of individuals. The Pleasant Events Schedule (PES) was one of the first tools developed to measure RCPR, and it has been identified as the primary strategy for measuring reinforcement for behavioral treatments, including Behavioral Activation (BA; Manos et al., 2010). The PES contains a list of pleasurable events (e.g., "hearing jokes") that were identified as being highly pleasurable (MacPhillamy & Lewinsohn, 1974, 1982). The PES is intended to provide an approximation of positive reinforcement (MacPhillamy & Lewinsohn, 1974) or as an assessment of the frequency of reinforcing events (MacPhillamy & Lewinsohn, 1982). It is important to note that more contemporary theories underlying current BA approaches tend to also focus on the functional aspects of behavior change; attending to not only whether an event is pleasant or rewarding, but also assessing an individual's specific needs and goals and how certain activities may align with their values (Hopko et al., 2003).

Most of the research on pleasant events and depression is based on Western samples, and research on the association between pleasant events and depressive symptoms across cultures, particularly non-Western cultures, would be valuable for evaluating the generalizability of the behavioral model of depression on a global scale. Support for the importance of studying the association between pleasant events and depression in other countries comes from research on cultural differences in other psychological constructs, such as variation in emotions or emotional arousal levels between the East (e.g., Japan) and the West (e.g., United States; e.g., Kitayama et al., 2000; Lim, 2016). Results suggest that Westerners value, promote, and experience high arousal emotions more than low arousal emotions, and vice versa for Easterners (Lim, 2016). Other related research has found that Americans have a higher frequency of experiencing positive emotions than negative emotions compared with Japanese, but that individuals from Japan have a higher frequency for engaged emotions than disengaged emotions compared with Americans (Kitayama et al., 2000).

Researchers have found cultural differences in key constructs underlying BA between Western and Eastern countries. Specifically, Chen et al. (2020) examined the cross-cultural differences in the understanding of BA constructs (i.e., activation, avoidance/rumination, work/school impairment, and social impairment) by investigating item level differences in functioning between the English and Chinese versions of Behavioral Activation for Depression Scale (Kanter et al., 2007). Although there were not significant differences across countries with the activation items, there were cultural differences in the avoidance and impairment constructs, indicated by the larger differential item functioning observed among items in these two constructs across countries. The authors suggest that one possible explanation for these findings is that behaviors considered as avoidance in the United States (e.g., avoiding feeling sadness) may be conceptualized as maladaptive behavior in Western culture, whereas in Eastern cultures, individuals are often encouraged to hide their struggles from others, so such avoidance may

have a less negative connotation (Chen et al., 2020). Such research suggests that activities considered to be positively reinforcing or maladaptive avoidance may vary across countries, and that researchers may need to be sensitive to differences in emotional experiences and preferences within specific cultures when assessing reinforcing activities related to the behavioral model of depression.

There is preliminary support for the behavioral model of depression in Japan, thereby supporting the cross-national generalizability of the theory. For example, depressive symptoms were significantly and negatively associated with a self-report measure of environmental reward in a large sample of Japanese undergraduates (Takagaki et al., 2013) and a self-report measure of reward probability in a large Japanese community sample (Yamamoto et al., 2019). The present study was conducted to build on these prior studies through examining the association between the experience of pleasant events and depressive symptoms in a probability sample of Japanese adults.

Using data from probability samples of adults from the United States and Japan, this study was conducted to (a) examine the association between the experience of pleasant events (i.e., frequency, enjoyment, and obtained pleasure of pleasant events) and depressive symptoms, and (b) test for differences between the United States and Japan in the associations between the experience of pleasant events and depressive symptoms. Consistent with the behavioral model of depression, we hypothesized that frequency, enjoyment, and obtained pleasure of pleasant events would be significantly and negatively associated with depressive symptoms in both Japan and the United States.

2 | METHODS

2.1 | Participants

2.1.1 | United States sample

Participants from the United States were drawn from the Midlife in the United States (MIDUS), conducted by the John D. and Catherine T. MacArthur Foundation Research Network on Successful Midlife Development. The present analyses are based on the random-digit dialing sample of MIDUS, which is a national sample of noninstitutionalized, English-speaking adults 25–74 years old. A 10-year follow-up study was conducted on the original sample in 2004–2006 (the MIDUS 2); biomarker and self-administered questionnaire data, including the data examined in this study, were collected on a subsample of MIDUS 2 respondents (Ryff et al., 2019). Data on 619 people were included in the current study. The racial distribution of the sample was 92% White, 3% Black, and 5% Other.

2.1.2 | Japan sample

Participants from Japan were drawn from the Midlife in Japan (MIDJA; Ryff et al., 2018), which is a probability sample of noninstitutionalized, Japanese-speaking adults aged 30–79 years from the Tokyo metropolitan area. The MIDJA Biomarker study (Markus et al., 2020) obtained biological assessments and self-administered questionnaire data from a subsample of MIDJA participants in 2009–2010. The current analyses are based on data for the 232 people who completed the measures used in this study; all participants were Japanese.

2.2 | Measures

For MIDJA participants, study measures were administered in Japanese. Multiple rounds of translation and back-translation were conducted to establish equivalence of meaning between cultures on study measures (Curhan et al., 2014).

2.2.1 | Frequency and enjoyment of pleasant events

Frequency and enjoyment of activities in one's environment were measured using the PES (MacPhillamy & Lewinsohn, 1982). The PES is a self-report measure of the experience of commonly rewarding events. Items were rated first on a 3-point frequency scale during the past month (0: did not happen, 1: happened a few times, and 2: happened often) and then on a 3-point enjoyment scale (0: not pleasant, 1: somewhat pleasant, and 2: very pleasant). The MIDUS and MIDJA studies included the Mood Related (MR) subscale of the original 320-item PES (Lewinsohn & Amenson, 1978; MacPhillamy & Lewinsohn, 1982). The MR subscale consists of 49 PES items that were significantly correlated with reported mood during mood and activity self-monitoring in a previous study (Lewinsohn & Graf, 1973). The item "Having peace and quiet" was not included in the MIDJA survey and therefore this item was also not included in the scoring of the MIDUS survey. In addition, 10 of the original MR items were replaced in the MIDUS and MIDJA surveys, and the wording of four items was substantially revised; these 14 items were dropped from the scale, resulting in 34 items for both surveys. Sample items include "Being with friends" and "Seeing beautiful scenery." Frequency and enjoyment scales were created by computing the mean of the items (scales have a range of 0–2). Higher scores reflect more frequent participation in potentially rewarding activities and greater enjoyment derived from these activities, respectively. An obtained pleasure score was created by multiplying each item's frequency score by its enjoyment score and computing the mean (scale has a range of 0–4). Obtained pleasure is an approximate measure of RCPR (Lewinsohn & Amenson, 1978; MacPhillamy & Lewinsohn, 1982). The frequency, enjoyment (i.e., pleasantness), and obtained pleasure (i.e., mean cross-product) scales are the typically scored subscales on the PES (MacPhillamy & Lewinshon, 1982).

2.2.2 | Depressive symptoms

Depressive symptoms were measured with the Center for Epidemiologic Studies Depression Scale (CES-D; Radloff, 1977), which is a 20-item measure developed for use in community samples. Items were rated on a 4-point scale for the frequency of occurrence during the past week, and a summary score was computed by reverse scoring the positive items and computing the sum of the items, with higher scores indicating greater depression severity. A score of ≥16 has been used to indicate clinically elevated levels of depressive symptoms.

2.3 | Data analysis

Linear regression analyses were conducted to examine the association between the experience of pleasant events and depressive symptoms, and to examine whether the strength of the association between pleasant events and depressive symptoms differed between the United States and Japan. In these analyses, depressive symptoms were regressed on country, pleasant events, and the Country × Pleasant Events interaction term. Separate analyses were conducted for the three PES scales, and the PES scales were mean deviated (i.e., centered) before creating the interaction term (Whisman & McClelland, 2005).

3 | RESULTS

There were no significant differences between the United States and Japan samples with respect to gender, $\chi^2(1) = 3.53$, $p = .06$, or age, $t(363) = 0.92$, $p = .36$. The final sample was 55% female and participants were 55.5 years old on average ($SD = 11.9$ years). Descriptive information on pleasant events and depressive symptoms for participants from the United States and Japan are presented in Table 1. The percentage of people with clinically

TABLE 1 Descriptive information on study measures by country

	United States		Japan	
Variable	**Mean**	***SD***	**Mean**	***SD***
Pleasant Events Schedule				
Frequency	1.28	0.26	0.93	0.25
Enjoyment	1.62	0.27	1.40	0.33
Obtained Pleasure	2.44	0.59	1.89	0.63
Depressive Symptoms	8.23	7.87	11.71	5.51

significant elevations of depressive symptoms (≥16 on the CES-D) was 14.4% in the United States and 19.8% in Japan.

Before examining whether the strength of the association between pleasant events and depressive symptoms differed between the United States and Japan, we first examined the factor structure of the CES-D in the two data sets. Radloff (1977) found evidence for a 4-factor solution for the CES-D. We conducted a confirmatory factor analysis (CFA) of the 4-factor model of the CES-D using EQS 6.1 separately in the MIDUS and MIDJA samples. Because the χ^2 test is sensitive to sample size, we evaluated model fit with the Comparative Fit Index (CFI), the Standardized Root Mean Square Residual (SRMR), the McDonald's Non-centrality Index (NCI), and the Root Mean Square Error of Approximation (RMSEA) and its 90% confidence interval (CI). CFI values ≥ 0.95, SRMR values ≤ 0.08, NCI values ≥ 0.90, and RMSEA values ≤ 0.06 are viewed as evidence for a well-fitting model (Hu & Bentler, 1999). For CFI, NCI, and RMSEA, we report the robust versions of these indices, which are robust to violations of the normality assumption. For the MIDUS sample, the CFI was 0.95, the SRMR was 0.04, the NCI was 0.93, and the RMSEA was 0.03 (90% CI = 0.02–0.04); corresponding figures for the MIDJA sample were 0.73, 0.07, 0.81, and 0.05 (90% CI = 0.04–0.06), respectively. Therefore, all four fit indices met the criteria for a well-fitting model based on the MIDUS data, whereas two fit indices met the criteria for a well-fitting model for the MIDJA data. A review of the Lagrange Multiplier (LM) test statistics in the MIDJA sample did not suggest any marked misspecifications, so no modifications were made to Radloff's (1977) 4-factor model. We conclude that the 4-factor model provides a reasonable fit to the data for both the American and Japanese samples.

We then proceeded to test whether the factor loadings on the CES-D were invariant across the two samples. Until such factor loading invariance (also called metric invariance or weak factorial invariance; Meredith & Teresi, 2006; Vandenberg & Lance, 2000) is established, it cannot be known whether any observed differences between groups in the correlates of the CES-D are true differences or due to psychometric differences in item responses. We conducted a multigroup confirmatory factor analysis using EQS 6.1 to see if the factor loadings for Radloff's (1977) four-factor model were equivalent across the two groups. Following the analytic strategy outlined by Byrne (2006, 2008) and Vandenberg and Lance (2000), we compared (a) a model in which the same factor structure was estimated simultaneously for both groups but no between-group constrains were placed the parameter estimates (i.e., configural model), with (b) a model in which we forced equal factor loadings across groups. Researchers have suggested a variety of fit indices for evaluating invariance, given that changes in χ^2 have been criticized as being highly sensitive to sample size. Cheung and Rensvold (2002) recommended that change in the CFI should not exceed −0.01 and change in the NCI should not exceed −0.02, whereas Chen (2007) recommended that change in CFI should not exceed −0.010, change in RMSEA should not exceed 0.015, and change in SRMR should not exceed 0.030; we used robust versions of the CFI, NCI, and RMSEA. Results yielded values of −0.008 for ΔCFI, −0.009 for ΔNCI, 0.000 for ΔRMSEA, and 0.016 for ΔSRMR. Because these values were all below recommended cutoff values, we conclude that the CES-D had invariant factor loadings across groups. An important implication of demonstrating invariance with respect to factor loadings (i.e., metric invariance) is that associations between the measure and

TABLE 2 Regression analyses predicting depressive symptoms

	PES Subscale		
Variable	**Frequency**	**Enjoyment**	**Obtained Pleasure**
Country[1]	0.61	2.11***	1.54**
PES Subscale	−13.14***	−11.78***	−5.71***
Country × PES	6.83***	7.49***	3.03***

Note: [1]United States was the reference category.
Abbreviation: PES, Pleasant Events Schedule.
**$p < .01$.
***$p < .001$.

other variables can be compared across groups (Chen et al., 2005). Therefore, we proceeded to test whether the association between the experience of pleasant events and depressive symptoms differed between the United States and Japan.

Results from the linear regression analyses predicting depressive symptoms from pleasant events are presented in Table 2. As can be seen in this table, the Country × Pleasant Event interaction terms were statistically significant for frequency, enjoyment, and obtained pleasure. Because United States was the reference category (i.e., the category coded 0) in these analyses, the coefficient for pleasant events represents the association between pleasant events and depressive symptoms for people in the United States. As can be seen in Table 2, results indicate that the frequency, enjoyment, and obtained pleasure scales from the PES were significantly and negatively associated with depressive symptoms in the United States. We then re-ran the analyses with Japan as the reference category. In these analyses, the coefficients for country and the interaction term were identical in magnitude but differed in sign. The coefficients for pleasant events differed in these analyses relative to the first set of analyses, as they reflect the associations between pleasant events and depressive symptoms for people from Japan (i.e., the reference category, coded 0). Results indicate that the frequency ($B = -6.31$, $p < .001$), enjoyment ($B = -4.29$, $p < .01$), and obtained pleasure ($B = -2.68$, $p < .001$) scales from the PES were significantly and negatively associated with depressive symptoms in Japan. Therefore, for both the United States and Japan, higher levels of frequency, enjoyment, and obtained pleasure were associated with lower levels of depressive symptoms. Furthermore, the coefficients for the United States as the reference category were all larger than the corresponding coefficients for Japan as the reference category, indicating that the cross-sectional associations between pleasant events and depressive symptoms were significantly greater in magnitude for people from the United States than they were for people from Japan.[1]

4 | DISCUSSION

This current study was conducted to examine the association between the frequency and enjoyment of potentially rewarding activities with depressive symptoms in probability samples of adults from the United States and Japan. Results indicated that the frequency, enjoyment, and obtained pleasure from pleasant events were significantly and negatively associated with depressive symptoms for both samples from the United States and Japan, and these associations were significantly greater in magnitude for American adults relative to Japanese adults.

The findings that frequency, enjoyment, and obtained pleasure of pleasant events were significantly and negatively associated with depressive symptoms for both samples is consistent with predictions from the behavioral theory of depression. The results are noteworthy in that they are the first findings known to us to demonstrate that the experience of pleasant events is significantly and negatively associated with depressive

symptoms in adults from Japan, which is particularly important given that the MIDJA sample is a probability sample and therefore the results are likely to be highly generalizable. Such findings provide support for the application of the behavioral theory of depression in demonstrating that the experience of pleasant events is negatively associated with depressive symptoms in both Eastern (i.e., Japan) and Western (i.e., United States) countries.

Furthermore, the strength of the associations between the experience of pleasant events (i.e., frequency, enjoyment, and perceived pleasure of pleasant events) and depressive symptoms were significantly greater for Americans relative to Japanese. There are at least two primary interpretations of these findings. First, it may be that people in Japan experience pleasant events differently than people in the United States, and that pleasant events are less strongly associated with depressive symptoms for Japanese relative to Americans. This interpretation is consistent with the idea that Westerners value, promote, and experience high arousal emotions more than low arousal emotions, whereas the opposite pattern is true for Easterners (Lim, 2016), and that relative to Japanese, Americans have a higher frequency of positive emotions than negative emotions and a lower frequency for engaged emotions than disengaged emotions (Kitayama et al., 2000). In addition, some research suggests that Americans are more likely to seek to maintain independence from others and follow their own pursuits whereas people from Asian countries are more likely to emphasize attending to others and pursue harmonious interdependence with them (Markus & Kitayama, 1991), although there have been mixed findings from research regarding the commonly held view that Japanese are more collectivistic and Americans are more individualistic (Noguchi, 2007). Because the items on the PES are conceptually associated with the experience of pleasure (i.e., positive affect), and furthermore given that most of the events on the PES are focused on individual (i.e., independent) activities, it seems reasonable that adults in Japan may devote less effort to the pursuit and enjoyment of pleasant events as defined by the PES and that the experience of these events may be less strongly associated with their mental health relative to adults in the United States. Thus, one interpretation of the findings from this study relates to how pleasant events are *experienced* between the two cultures.

An alternative interpretation of the findings that the experience of pleasurable events among Japanese is less strongly associated with their mental health relative to Americans has to do with the *assessment* of pleasant events used in the current study. Specifically, these findings raise the question of whether or not the PES is capturing events that are considered pleasurable or positive in the Japanese culture. The PES was developed based on research conducted with a sample of individuals from Oregon in the United States in the early 1970s (Lewinsohn & Graf, 1973) and thus may not reflect the type of events that are more meaningful and generalizable on a global scale. The PES has been described as "highly culture-bounded" by Bakht et al. (2015, p. 247), who developed and validated a checklist of pleasant events that could be more culturally compatible for an Iranian population. It may be helpful for researchers to conduct cross-cultural comparison and validations of the PES, or to develop culturally specific version of the PES for use in other countries, including Japan. Thus, a second possible explanation for the findings relates to how pleasant events are *measured*.

Our findings reinforce the consideration of cross-cultural differences in therapeutic approaches and research on such interventions. Research has shown that for a psychological intervention to be acceptable, it has to be culturally appropriate, contextually relevant, and useful to the target population (Atif et al., 2016; Chowdhary et al., 2014). Preliminary research supports the effectiveness of behavioral treatments for depression, such as BA, in reducing depressive symptoms in Japan (Takagaki et al., 2016). Our findings align with such research supporting the behavioral theory of depression underlying behavior interventions for depression (i.e., BA) in a Japanese sample, and also suggest that there may be benefit of attending to cultural considerations and differences when implementing such interventions.

There are several strengths and limitations to consider when interpreting the results from the current study. Strengths of the study include the collection of parallel measures of pleasant events and depressive symptoms in probability samples from one Western and one Eastern country and the first examination of the cross-sectional associations between pleasant events and depressive symptoms in Japan. However, there are also several limitations of the study. First, the cross-sectional design of the study means that we cannot infer causality or directionality of these findings. Second, the measure of pleasant events (the PES) is only an approximate measure of RCPR underlying the behavioral theory of

depression (e.g., Lewinsohn et al., 1988). Other measures have been developed to improve on the PES as a measure of RCPR or that focus on BA and avoidance behaviors relevant to contemporary behavioral theories of depression (for a review, see Manos et al., 2010). Cross-cultural and cross-national research on differences in means and associations with depression using such measures would be an important topic for future research. Support for the importance of these measures in Japan comes from studies that have found that BA and avoidance were associated with depressive symptoms in cross-sectional analyses involving Japanese undergraduates (Shudo et al., 2017; Takagaki et al., 2013) and adults (Yamamoto et al., 2019), and that behavioral avoidance but not activation predicted residual change in depressive symptoms eight weeks later in Japanese undergraduates (Shudo et al., 2017). In addition, although the current study utilized a probability sample from both the United States and Japan, the results from the current study may not be generalizable to non-White racial/ethnic groups in the United States (92% of the United States sample was White) or to clinical populations. Finally, the MIDUS and MIJA samples included a fairly small number of individuals with elevated depressive symptoms, and thus future studies should examine the associations between pleasant events and depression in a sample with greater severity of depressive symptoms or diagnoses of depressive disorders (MacPhillamy & Lewinsohn, 1982).

5 | CONCLUSIONS

This study suggests that there is a cross-sectional association between the experience of pleasant events (as measured by the PES) and depressive symptoms in both the United States and Japan, and that the association between these variables is stronger in the United States. It may be informative to examine the PES in different countries to explore how the activities identified in the PES map onto identified key pleasant events in other countries. It may be important to further explore what types of pleasant activities are most strongly associated with depressive symptoms in different cultures, and to ensure that measures of pleasant events capture the events that are most relevant to a given culture or community. It may also be valuable to conduct longitudinal studies to evaluate the degree to which there are cultural differences in the strength of the association between pleasant events and depressive symptoms over time. Specifically, longitudinal studies with frequent assessments would be helpful to understand the nature of the longitudinal association between pleasant events and depressive symptoms. Our findings also may inform how therapeutic approaches stemming from the behavioral theory of depression, such as BA, are implemented and evaluated on a global scale.

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CONFLICT OF INTERESTS

The authors declare that there are no conflict of interests.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

ENDNOTE

[1]Similar results were obtained when analyses were based on the 48-item version of the PES.

ORCID

Rachel Vanderkruik http://orcid.org/0000-0002-6997-7894
Mark A. Whisman https://orcid.org/0000-0003-1821-7569

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