

The Longitudinal Association Between Playfulness and Resilience in Older Women Engaged in The Red Hat Society

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Abstract

The purpose of this study was to investigate the relationship between playfulness and resilience in women over the age of 50 who were participating in The Red Hat Society (RHS), a leisure group for older women. The Broaden-and-Build Theory (Fredrickson, 2001), which describes the benefits of positive emotions, was used as a rationale to test the proposition that playfulness through leisure activities, such as those enjoyed in the RHS, can contribute to resilience in later life. Longitudinal data were collected online from 167 RHS members, and multilevel modeling (MLM) employed in the data analysis to see if playfulness contributed to these women's resilience, while controlling for age, education, marital status, years of RHS membership, physical and mental health. The results indicated that playfulness contributed to the women's resilience growth over time, and that this relationship differed by persons. The results supported the Broaden-and-Build Theory regarding the positive effects of playfulness on resilience growth. The findings suggested that frequent experiences of playfulness can facilitate resilience in older women who participate in the unique social context of The Red Hat Society.

Keywords: *Older adults, multilevel modelling, Broaden-and-Build Theory, physical functioning*

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Resilience is defined as the ability to bounce back from adversity, risk, and loss (Ong, Bergeman, & Boker, 2009; Smith et al., 2008; Tugade & Fredrickson, 2004) and is viewed as an outcome of positive development across the life span (Strurgeon & Zautra, 2010). Fredrickson's (2001) Broaden-and-Build Theory provides a comprehensive explanation for this growth process: positive emotions are believed to broaden an individual's momentary thought-action repertoire, which allows for flexible attention and behaviors (Tugade, Fredrickson, & Barrett, 2004), and builds enduring resources over time (Fredrickson, 2000; 2006). When developing the Broaden-and-Build Theory, Fredrickson (2003; 2005) used playfulness scales to explore the link between positive emotions, playfulness and an individual's retention of mental and physical resources. The findings from Fredrickson et al.'s recent studies (e.g., Conway, Tugade, Catalino, & Fredrickson, 2013; Fredrickson, 2013b; Vacharkulksemsuk & Fredrickson, 2013) suggest that positive resources (e.g., physical health and psychological well-being) can be built when individuals broaden their minds by experiencing playfulness. However, Mitás, Qian, Yarnal, and Kerstetter (2011) have provided the only leisure research indicating that playfulness may build resilience among older women, notably in the leisure-based context of The Red Hat Society, thus supporting the Broaden-and-Build Theory. While their research finding provided preliminary evidence to support this theory in the leisure-based context, the authors called for a longitudinal study to explore how the broaden and build process operates over time.

Leisure researchers have examined the association between positive emotions and the building of personal resources among older adults (Mitas et al., 2011). Indeed, leisure activity is an engaging experience that can provide older adults an opportunity to continue their personal growth and development (cf. Kleiber & Nimrod, 2009). However, few leisure researchers have examined this growth in an older population in a longitudinal study. Therefore, the purpose of this study, guided by the Broaden-and-Build Theory, was to examine the longitudinal effects of playfulness on resilience, in a sample of older women in The Red Hat Society (RHS). The RHS is an international, leisure-focused social organization of women over age 50. Founded by Sue Ellen Cooper in 1998, the society provides an opportunity for older women to socialize, play, and act "silly" (<http://www.redhatsociety.com/>) for fun and relaxation. Specifically, we collected longitudinal data for one year from a number of women in The Red Hat Society to determine if their playfulness (a) contributes to their resilience (within-person change) and (b) if their personal characteristics (e.g., age, education, marital status, and health) influence the process (between-person differences).

Playfulness in Older Age

Playfulness is an individual difference characteristic that positively influences individuals' leisure experiences (Barnett, 2011). Lieberman (1977) indicated that playfulness in childhood has five behavioral dimensions: physical spontaneity, cognitive spontaneity, social spontaneity, manifest joy, and a sense of humor (Barnett, 1990; Schaefer & Greenberg, 1997). Other researchers have suggested comparable dimensions in adult playfulness: creativity, curiosity, pleasure, and a sense of humor (Guitard, Ferland, & Dutil, 2005), and fun (Glynn & Webster, 1992). Basically, playfulness is the predisposition to engage in play (Barnett, 2007).

Playfulness also entails situational or state-based stimuli. The function of playfulness may change across the life span and life stages (Qian & Yarnal, 2011; Yarnal & Qian, 2011). That is, playfulness may be influenced by demographic factors such as age and gender (Proyer & Ruch, 2011; Qian & Yarnal, 2011), environmental enrichment (Yarnal, Chick, & Dattilo, 2006), and social connections (Caldwell & Witt, 2011). Playfulness in later life may mean having fun in informal, nonobligatory, social interactions with friends (Yarnal, 2006). Older adults may learn

flexible attitudes and behaviors from playfulness that help them adapt to change (Yarnal & Qian, 2011). Furthermore, playfulness provides personal satisfaction and mechanisms for social interaction (Staempfli, 2007). Yarnal and Qian (2011) indicated four characteristics of playful older adults: they are psychologically upbeat (e.g., happy, positive), behaviorally impish (e.g., naughty, teasing), cognitively spontaneous (e.g., creative, whimsical), and amusing (e.g., funny, humorous).

Playfulness is often linked to well-being outcomes, such as psychological well-being, resilience (e.g., Saunder, Sayer, & Goodale, 1999), and physical well-being (Proyer, 2013). Playfulness can also be a tool for healthy aging that maintains or improves cognitive, emotional, social, and psychological functions among older adults (Yarnal & Qian, 2011). For example, playfulness has been viewed as a stress-coping strategy for older adults to deal with daily stressors and to contribute to better mental health and psychological well-being (Mannell, 1984; Qian & Yarnal, 2011). Further, Magnuson and Barnett (2013) investigated the predisposition of playfulness on stress coping among young adults, and found that it may contribute to their resilience by helping them cope with stressors. However, Yarnal and Mitas (2008) suggested that playfulness be explored as an antecedent to and component of resilience among older adults, because playfulness is a form of broadening that builds positive outcomes (i.e., social connections, close friendships, and optimism), as is the case with RHS women (Mitas et al., 2011). Further, Fredrickson and colleagues (2005) indicated that playfulness may foster resilience across the life span, and thus explored its role in their Broaden-and-Build Theory (e.g., Conway, et al., 2013; Fredrickson, 2013b; Vacharkulksemsuk & Fredrickson, 2013). They indicated that play, according to this theory, is a special tendency for action derived from joy, one of the representative positive emotions. Previous results from RHS studies have demonstrated this leisure-based context could sustain coping efforts for older women because of frequent experiences of positive emotions (e.g., Hutchinson, Yarnal, Staffordson, & Kerstetter, 2008). In addition, frequent experiences of positive emotions contributed to long-term patterns of optimism based on the Broaden-and-Build Theory (e.g., Mitas et al., 2011; Yarnal & Mitas, 2008).

Resilience

Resilience is an outcome of positive development across the life span (Strurgeon & Zautra, 2010). However, achieving resilience differs by person (Windle, 2011), as some recover, sustain, and develop their resources and gain better health across the life span despite illness while others do not (Ong & Bergeman, 2004). That is, resilience is a dynamic state process that wavers over time (Luthar, 2006), “resulting from the combination of diverse protection and risk factors,” which may “develop at any moment of one’s lifetime and can change as a function of one’s personal, family, and social resources, as well as one’s context and age” (Ambriz, Izal, & Montorio, 2012, p. 834). For example, because of past experiences, adults older than 64 were found to be more resilient than adults younger than 26 (Gooding, Hurst, Johnson, & Tarrier, 2012). Strurgeon and Zautra explained that resilience is a state-characteristic because it “may have a more immediate impact on the day-to-day adaptation to chronic pain” (p. 109, 2010)”, and is influenced by individuals’ daily positive affect or social interaction. Previous researchers have demonstrated that the process of resilience growth gained from positive resources can be explained by the Broaden-and-Build Theory (Fredrickson, 2001). Tugade and Fredrickson (2004) suggested using this theory as a framework to understand the construct of resilience. The positive feelings associated with playfulness during some types of leisure engagement may be a source for facilitating the broaden-and-build process and resilience growth among older adults.

The Broaden-and-Build Theory

During the broadening process, according to this theory, positive emotions “create the urge to play, push the limits and be creative, urges evident not only in social and physical behavior, but also in intellectual and artistic behavior” (Fredrickson, 2004, p. 1369). The broadened states of mind may “trigger an indirect accumulative process of building valuable personal resources,” which may help individuals overcome future difficulties (Mitas et al., 2011, p. 32). Moreover, individuals who experience frequent positive emotions may build resources to deal with future life challenges and promote their survival skills across the life course (Meeks, Van Haitsma, Kostiwa, & Murrell, 2012). Therefore, a person’s experiences of positive emotions can broaden their mind through play, and then build enduring resources, such as resilience growth in the process of adaptation, which can lead to long-term well-being (Fredrickson, 2004; Mitas et al., 2011; Tugade & Fredrickson, 2004). Moreover, with time and repeated experience, the enduring personal resources derived from the broaden-and-build process may provide both intra-individual (e.g., increased resilience) and inter-individual (e.g., enhanced social relationships) resources (Fredrickson, 2000).

In addition, experiencing positive emotions frequently may predict resilience growth for older adults (Cohn, Fredrickson, Brown, & Mikels, 2009; Zautra, Hall, & Murray, K. 2008). Mitas et al.’s (2011) study indicated that the positive emotions associated with the RHS women’s playful, leisure experiences broadened their mental state. More specifically, RHS members “broadened their states of mind to be more socially open and more playful”, and “built valuable resources including social connections, supportive friendships, and dispositional optimism” (p.18). While the Broaden-and-Build Theory has been fully discussed in a number of research fields, most researchers have only conducted controlled laboratory studies to examine their hypothesized relationships. Fewer studies have examined the theory using a longitudinal intervention in real contexts.

Our Research Context: The Red Hat Society

The Red Hat Society provides its members the opportunity to enhance and develop their self-identity, reduce stress, and create social support networks by building and strengthening friendships with other members through leisure activities (Mock, Shaw, Hummel, & Bakker, 2012; Son, Kerstetter, & Mowen, 2007). Additionally, participating in the RHS has been viewed as a coping strategy that can partly compensate for the death of a loved one by providing an opportunity to build new relationships and to change the survivor’s circumstances (Hutchinson et al., 2008). In sum, the RHS has created a bonding opportunity for older women to enhance their social support and provides members with a sense of belonging, which improves their well-being (Mitas et al., 2011; Son et al., 2008) and promotes a positive attitude toward aging (Barrett, Pai, & Redmond, 2012). Play and playfulness are viewed as nonserious by-products of human development, which produce important ends (e.g., learning social skills and relieving stress). Thus, the RHS may be viewed as a desirable leisure-based context in which to explore and examine the playfulness construct, especially as related to resilience in older persons.

The Benefit of Longitudinal Data

The majority of researchers have used cross-sectional data to assess the association between leisure and health (e.g., Coleman & Iso-Ahola, 1993; Golden, Conroy, & Lawlor, 2009). However, Janke, Davey, and Kleiber (2006) suggested examining longitudinal changes in the leisure behaviors of older adults since their lives involve both gain and loss over time. Leisure and psychological experiences are dynamic and cannot be adequately assessed globally using data from

only one time point (Crouter & Pirretti, 2006). However, using longitudinal data collected from the same group of individuals during more than one wave of data collection makes the observation of individual changes over time possible (Yee & Niemeier, 1996). A longitudinal study can measure change in an outcome (e.g., resilience) and/or reveal individual patterns of change.

Aims of the Present Study

The overarching purpose of this study was to explore the relationship between playfulness and resilience over time, among RHS members, guided by the Broaden-and-Build Theory. We examined whether resilience is a building resource enhanced by monthly experiences of playfulness among older women in the RHS, controlling for demographic factors (i.e., age, education, marital status, physical health, and mental health) and years of RHS membership. There were two main research questions: (a) Is the RHS women's level of monthly playfulness a significant predictor of their resilience growth (i.e., within-person change)? and (b) Does the growth of resilience differ by persons (i.e., between-person difference)? To this end, we collected longitudinal data online across 12 waves in the course of a year from members of the RHS to examine if playfulness is broadening and if it builds resilience over time, based on Frederickson's theory. Demographic factors were controlled for in the analyses to examine the contribution of playfulness to resilience growth in this study. A longitudinal approach was employed in this study to examine this causal relationship.

Methods

The study used both cross-sectional and longitudinal methods to collect online data in two phases: (a) a baseline survey, requesting demographic factors, years of RHS membership, and health status (cross-sectional data) to examine between-person differences among 167 women in September 2010, and (b) data from 12 online survey questionnaires, gathering monthly information (longitudinal data) from the participants to examine within-person changes over time. To secure participants, the researchers posted a sign-up sheet on the RHS website from August to September 2010. A total of 292 members signed up, of which 204 were willing to participate in the monthly survey. Last, an identical monthly questionnaire was used to monitor the participants' experiences of resilience and playfulness in the RHS over the 12 months. The questionnaire was distributed monthly via the Internet to the same sample of 204 women from October 2010 to September 2011. The participants answered the sign-up sheet, baseline and online monthly questionnaires appropriately. Of 204 participants, 167 completed partial waves of data collection while 37 participants only completed the baseline survey. A total of 101 participants completed each monthly questionnaire during 12 months of data collection. Since only 101 of the 204 participants completed all 12 surveys, an independent-sample *t*-test was used to compare the demographics of the participants who finished the surveys with those who did not. The results indicated a significant difference in mean age for these two groups ($p < .01$): The average age for the 101 women who completed all of the surveys was about two years older than those who did not. While previous researchers indicated that age influences resilience (e.g., Ambriz et al., 2012; Gooding et al., 2012), it may not have been the case in our study because of the small age difference. The results of the data collection are summarized in Table 1.

The results from the baseline survey are shown in Table 2. Among the women who were included in the current study ($N=167$), 62.3% were retired, and 16.8% were employed. The ma-

Table 1*Timeline and Sample Size for Data Collection*

Survey	Information Collected	Date	Tool for Collection
Sign-up sheet (<i>N</i> =292)	Age, email address, willingness to participate in the monthly survey to collect data for a year.	From August 2010 to September 2010.	A URL link on the RHS website, which took them directly to an online sign-up sheet.
Baseline survey (<i>N</i> =204)	Physical and mental health, resilience, demographic information.	September 2010 for three weeks.	Email with a URL link that took them directly to an online questionnaire posted on Survey Monkey.
Monthly surveys (<i>N</i> =101, all waves completed; <i>N</i> =167, partial waves completed) *	Resilience, playfulness	Monthly (October 2010 to September, 2011).	Email that included a URL link that took them directly to an online questionnaire posted on Survey Monkey.

**Note:* These data were used for the analysis of the current study.

majority of the sample was White (89.8%). More than half of the women were married (72.0%) and reported having adequate finances (50.9%), and 46.1% had some college education. A total of 60.5% of the sample had been RHS members for 6 to 10 years.

Measures

Data on the RHS women's demographics and health (both physical and mental) were drawn from the baseline questionnaire, after which data on the sample's playfulness and resilience were derived from their 12 monthly questionnaires.

Self-reported health. The physical and mental health of the sample RHS members were measured using two different instruments. Physical health was measured in the baseline questionnaire using the 10-item Physical Functioning Scale (PF-10). Taken from the Self-Reported Physical Health Scale (Hays, Liu, Spritzer, & Cella, 2007), the PF-10 is an adaptation of the 25-item physical functioning measure from Rand's Health Insurance Experiment and consists of 10 items with a 3-point, Likert-type scale (1 = *yes, limit a lot*; 2 = *yes, limits a little*; 3 = *no, no limits at all*). The main question was "The following items are about activities you might do during a typical day. Does your health now limit your ability in the following activities? If so, how much?" This question was followed by a list of 10 moderate activities to rate, such as walking one block. A higher score represented a better level of physical health. The reliability of the instrument was 0.925 in this study.

Self-reported mental health was measured by the Mental Health Continuum Short Form (MHC-SF) (Keyes, 2002), derived from the Mental Health Continuum Long Form (MHC-LF). The MHC-SF consists of 14 items, measured by a 6-point, Likert-type scale (1 = *never* to 6 = *every day*). The 14 items, selected from the 40-item MCH-LF, comprehensively represented the construct of well-being. The sum of the 14 rated items is an indicator of self-reported mental health: The higher the score on the MHC-SF the greater the level of self-reported mental health. The reliability of the instrument in this study was 0.842.

Older adult playfulness. Playfulness was measured among the RHS participants in the monthly questionnaire by the Older Adult Playfulness (OAP) Scale (Yarnal & Qian, 2011). The

Table 2

*Demographic Results on The Red Hat Society Sample for This Study
(N = 167)*

Variables	Frequency	Percentage (%)
Age		
51-60	50	30.0
61-70	88	52.7
71-80	26	15.6
Ethnicity		
White	150	89.8
African American	5	3.0
Hispanic	1	0.6
Multi-racial	2	1.2
Other	2	1.2
Did not indicate	1	0.6
Financial situation		
Inadequate	1	0.6
Barely adequate	27	16.2
Adequate	85	50.9
Comfortable	45	26.9
Educational level		
Middle school	1	0.6
High school	18	10.8
Some college	77	46.1
Bachelor's degree	29	17.4
Some graduate school	20	12.0
Master's degree	18	10.8
Doctoral degree	1	0.6
Marital status		
Married/in a relationship	118	72.0
Not married (i.e., separated, divorced, widowed, single)	49	28.0
Employment status		
Employed	24	16.8
Employed part-time	17	10.2
Self-employed	13	7.8
Retired	104	62.3
Homemaker	13	7.8
Year of membership in RHS		
Less than 1	1	0.6
1-5	61	36.5
6-10	101	60.5
11 and above	4	2.4

participants answered identical questions that comprised the scale for 12 months based on their experiences in the RHS. This allowed us to examine changes across 12 waves of data. Yarnal and Qian (2011) tested if playfulness is an important component of healthy aging in older adults, and then developed the OAP Scale, an extension of Barnett's (2007) Young-Adult Playfulness Scale. Barnett's (1990) playfulness framework was used to develop many playfulness scales (e.g., the Children's Playfulness Scale, Young-Adult Playfulness Scale, Playfulness Scale) that can capture the changes in playfulness over time in longitudinal studies (Amabile et al., 2002; Magnuson & Barnett, 2013; Trevas et al., 2003). The OAP Scale consists of 15 items on a 10-point, Likert-type scale (1 = *very little* to 10 = *a lot of*). Sample items include "cheerful" and "funny." The sum of the items was used as an indicator of playfulness among the older adults in the RHS sample: A higher score reflects a greater level of playfulness. The reliability of this measure was 0.965 in this study.

Resilience. The Ego-Resiliency Scale (ER89) designed by Block and Kremen (1996) was used to measure the RHS participants' monthly self-reported psychological resilience. Tugade and Fredrickson (2011) used this scale to examine psychological resilience and positive emotions in the Broaden-and-Build Theory. The ER89 consists of 14 items on a 5-point, Likert-type scale (1 = *strongly disagree* to 5 = *strongly agree*). Sample items include "I enjoy dealing with new and unusual situations" and "Most of the people I meet are likeable." The average of each item is an indicator of ego-resiliency. A higher score reflects a greater level of ego-resiliency. This scale had been used in previous studies and was found to be reliable (e.g., Farkas & Orosz, 2013). The reliability in this study was 0.827.

Demographic Factors. Demographic data on the RHS participants included age (i.e., below 50=1, 50–55=2, 56–60=3, 61–65=4, 66–70=5, 71–75=6, 76–80=7, 81–85=8, 86–90=9, 91 and above=10); marital status (e.g., married or in a relationship=1, not married=0, i.e., separated/divorced, single); and education (e.g., elementary=1, high school=2, some college=3, bachelor's degree=4, some graduate school=5, master's degree=6, doctoral degree=7). Additionally, years of RHS membership (e.g., less than 1=1, 1–5=2, 6–10=3, 11 and above=4) were also included as a demographic factor.

Analytic Procedures

Multilevel modeling (MLM) was used to examine the data in the study. The MLM is a statistical model of parameters that vary at more than one level, which allows researchers to examine the participants' within-person changes at Level 1 and between-person differences at Level 2. Level 1, depicting within-person changes over time, was used to describe changes in playfulness and resilience within the same RHS individual over the 12 months. According to the life span developmental perspective and the concepts of playfulness, demographic factors may influence health outcomes. Level 2 measured whether different people had different patterns of within-individual changes, and explored the predictors (i.e., age, education, year(s) of RHS membership, marital and health status) of the differences (Singer & Willett, 2003). Additionally, the predictor variable (OAP) was separated into within- (i.e., OAP_Residual) and between-person (i.e., OAP_Mean) components. Then, a multilevel model was used to separately and simultaneously examine the within-person and between-person associations between resilience and playfulness. Data analyses were generated using IBM SPSS Statistics (Version 20.0) and SAS software (Version 9.4).

Results

The descriptive statistics from the baseline (Table 3) provided preliminary information to properly analyze the data, which were then used to test if resilience was strengthened by playfulness in the RHS women across the 12 waves of data collection. The 167 participants reported moderate baseline resilience on average ($M = 3.387$ on a 1-to-5 scale, $SD = 0.315$). Both physical health ($M = 73.946$ on a 10-to-100 scale, $SD = 25.748$) and mental health ($M = 70.675$ on a 6-to-84 scale, $SD = 10.502$) were adequate, with the RHS participants' self-reported mental health being slightly better than their physical health. Baseline resilience was only significantly correlated with mental health. Participants who reported higher levels of mental health reported higher levels of baseline resilience ($r = .402, p < .01$). Additionally, both monthly resilience and playfulness increased slightly across the 12 waves of data collection: Resilience increased from $M = 3.27$ to $M = 3.30$ and playfulness increased from $M = 97$ to $M = 104$. Figure 1 shows the fluctuations in resilience across the 12 waves. While the pattern of monthly mean resilience grew over time, it did not do so in a linear fashion.

Table 3

Descriptive Statistics and Correlations for the Baseline Variables (N = 167)

Variables	1	2	3	4	5	6	7
1. Age							
2. Education	-.01						
3. Marital Status	-.21**	.94					
4. Financial Status	.15*	.16**	-.19				
5. Physical Health	-.20*	.00	-.06*	.19**			
6. Mental Health	.06	.00	.12	.27**	.05		
7. Resilience	.05	.08	.06	.17	.10	.43**	
Mean	4.19	4.69	0.73	3.07	73.96	70.67	3.39
Standard Deviation	1.33	1.31	0.45	0.70	25.75	10.50	0.32

Note: Married status was categorized as 1=married, 0=not married; * $p < 0.05$, ** $p < 0.01$.

Test for Missing Data Patterns

An analysis for Little's MCAR Test was conducted before running further analyses in order to better understand the missing data patterns. For this test, the null hypothesis is that the data are missing completely at random (MCAR). The data are not MCAR if the p value is less than 0.05. The results indicated that there was no relationship between the missing data and any values ($\chi^2 = 679.059$; $df = 653$; $p = 0.233$). Any particular data-item missing is independent of both observable variables and of the unobservable parameters of interest (Hill, 1997). That is, the non-missing part of the data ($N=167$) is an unbiased sample of the complete data and no imputation is necessary. In sum, the data for further analyses included 167 participants who completed the 12 waves of data they provided without imputation.

Multilevel Model

The intraclass correlation (ICC) was first calculated for the outcome variable, resilience, to indicate the percentage of the variance based on between-person differences, which is an important indicator for future analyses (Hoffman & Stawski, 2009). The ICC of resilience for the

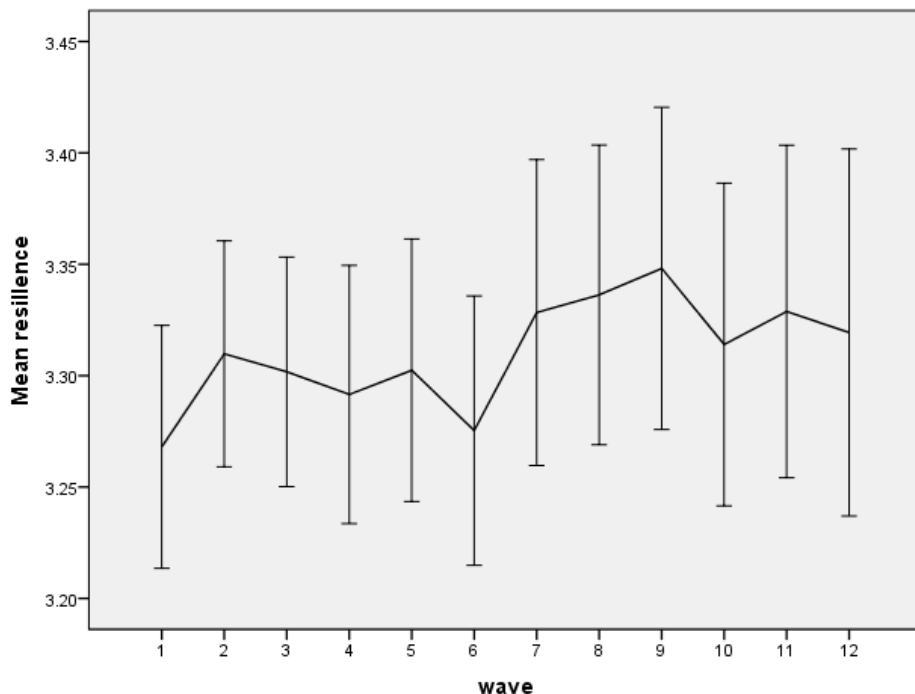


Figure 1. The Fluctuations of Monthly Mean Resilience with Standard Errors: 95% CI (N=167)

between-person variance was 65.02% and the within-person variance was 34.98%, which suggests that there was adequate variation in resilience at each level (within- and between-person) for further MLM analyses (Mroczek & Griffin, 2007).

A test model was used to examine the within-person and between-person link between resilience and playfulness with age, marital status, health, education level, and year of RHS membership. A time variable, “wave*OAP_residual,” was created and included in the model in order to examine if the intercept of waves and playfulness influenced resilience growth over time. The results indicated that increases in playfulness had a significant effect on increases in resilience among the 167 RHS participants ($\gamma_1 = 0.002, p < 0.05$). That is, playfulness was a significant predictor of resilience, and the effect differed significantly by physical health ($\gamma_2 = 0.001, p < 0.05$) and mental health ($\gamma_3 = 0.005, p < 0.05$) regardless of the effects of age, education, marital status, and years of RHS membership. In addition, individuals with higher mean levels of playfulness than others reported higher mean levels of resilience. More specifically, mental health contributed to resilience growth more than physical health. That is, individuals with better mental health reported higher levels of resilience growth. The random effects in the model were statistically significant, indicating that the associations were different across individuals (i.e., the between-person differences). To conclude, the baseline levels of playfulness were the significant predictors of resilience to each participant but changes in playfulness over time were not. A summary of the results of the model is presented in Table 4.

Table 4

Multilevel Model Examining Covariation (and Standard Errors) with Demographic Variables

Variables	Fixed effects
Intercept	2.501(0.320)*
<u>Age</u>	
50-55	-0.243(0.157)
56-60	-0.265(0.148)
61-65	-0.277(0.144)
66-70	-0.291(0.152)
71-75	-0.291(0.152)
76-80	-0.405(0.165)
<u>Year of RHS Membership</u>	
Less than 1	0.236(0.237)
1-5	-0.004(0.077)
6-10	-0.370(0.052)
11 and above	-0.252(0.122)
<u>Education</u>	
High school	0.048(0.326)
Some school	-0.207(0.236)
Bachelor's degree	-0.168(0.233)
Some graduate school	-0.134(0.237)
Master's degree	-0.175(0.238)
Doctoral degree	-0.108(0.236)
<u>Marital Status</u>	
Married	0.073(0.091)
Not married	0.032(0.088)
<u>Health</u>	
Mental Health	0.006(0.002)*
Physical Health	0.001(0.000)*
<u>Older Adult Playfulness</u>	
OAP_mean	0.005(0.002)*
OAP_residual	0.001(0.001)*
Random effects	
Intercept variance	0.046008 (0.006)*
Fit Statistics	
-2LL	127.514
AIC	121.514

Notes: Unstandardized estimates and standard errors. Model based on 12 occasions nested within 200 participants for a total of 2004 observations. *AIC* = Akaike information criterion; $-2LL$ = -2 log-likelihood, relative model fit statistics. * $p < 0.05$.

Discussion

We tested the effect of playfulness on resilience based on the prediction suggested by the Broaden-and-Build Theory, using 12 monthly waves of data collected online from 167 Red Hat Society members. The results showed that the 167 participants' perceived that higher levels of playfulness contributed to their growth in resilience over the 12 months. This significant longitudinal effect from the current study supports the Broaden-and-Build Theory, as corroborated by previous studies (e.g., Cohn et al., 2009; Mitas et al., 2011). Furthermore, upon examining the between-person difference, the RHS women reporting higher mean levels of playfulness and exhibited higher levels of resilience than those with lower mean levels of playfulness, which suggests the power of playfulness to produce resilience among these women.

Our findings contribute to the leisure literature in four ways. First, it supported the Broaden-and-Build Theory in a leisure-based context using a longitudinal study. Previous researchers using this theory had mainly focused on the effects of positive emotions on stress coping in laboratory environments (e.g., Cohn et al., 2009; Tugade & Fredrickson, 2004); none had examined a hypothesized relationship based on the Broaden-and-Build Theory in a leisure-based context using a longitudinal approach. The current study extended Mitas et al.'s (2011) study of the broaden-and-build process in RHS participation, also supporting the application of this theory to RHS members. Furthermore, the majority of leisure studies have used cross-sectional data to study the effect of playfulness on resilience (Qian & Yarnal, 2011). However, given the power of longitudinal data (Janke, Davey, & Kleiber, 2006), our study supported the viability of collecting data online from RHS members for the 12 months.

Second, the findings of our study support resilience as being a state-characteristic (Ong, Bergeman, & Boker, 2009) that can be increased through playfulness. The findings on resilience growth on the study participants over a one-year period also supported White, Driver, and Warren's (2010) finding that resilience can be cultivated in a social environment over time. Moreover, our findings provided additional evidence in regard to the Broaden-and-Build Theory that resilience can be viewed as a personal resource that increases during the building process (e.g., Fredrickson, 2006; Tugade & Fredrickson, 2004). Further, despite a lack of evidence that changes in playfulness impacted other variables, the findings from our study indicated that a longitudinal change in playfulness, as related to resilience, occurred in the RHS participants across the 12 waves of data collection. This supports playfulness as being a state-based stimulus, which may change in different situations across the life span (Barnett, 2007; Yarnal & Qian, 2011).

Third, on examining the longitudinal data on the 167 RHS participants, our study supported the validity of Yarnal and Qian's (2011) OAP Scale for studying playfulness in an older adult population. Previous studies showing the significance of playfulness have mainly focused on childhood and adolescence (e.g., Stewart & Stewart, 1981) and developed scales for these populations (e.g., Kruger, 1995), whereas fewer researchers have examined playfulness in older adult populations. Yarnal and Qian (2011) were the first to examine playfulness in older adults using their OAP Scale.

Last, average playfulness, physical health, and mental health were the three factors that showed different patterns of resilience growth in the older women in the current study. The results also showed that the RHS women with higher levels of physical and mental health perceived having experienced higher average levels of playfulness, which had produced higher levels of resilience. More specifically, our results indicated that the effect of playfulness on mental health was slightly higher than the effect on the participants' physical health. This finding

supports previous research showing that playfulness and resilience are often linked to health outcomes (e.g., Hutchinson & Nimrod, 2012; Ong & Bergeman, 2004), especially mental health (e.g., Qian & Yarnal, 2011). Moreover, mental health may be a between-person indicator of the overall current condition of older adults when a decline in physical health is typically viewed as part of “normal aging” and that most older individuals experience similar kinds of age-related diseases and physical changes (Ong & Bergeman, 2004, p. 220).

In addition, our findings indicated that the study participants’ experience of playfulness in the monthly leisure context of The Red Hat Society contributed to their resilience growth during the one-year period. That is, playfulness contributed to resilience growth consistently each month. Since most of these participants had been involved in the RHS from 6 to 10 years, the playfulness they enjoy in this organization may be a resource for them to have maintained resilience over time. However, this outcome could also be explained by the homogeneity of the RHS women in the study; that is, most had a higher education, were White, married, and healthy.

Implications

The findings from this study have important theoretical implications that may explain the effect of playfulness in the broaden-and-build process. There are also methodological implications for within-person analysis in the leisure field, and practical implications for using playfulness to understand resilience growth among older adults. First, the study supported the Broaden-and-Build Theory by suggesting that older women’s resilience may be built or sustained by engaging in playfulness over a one-year period. Thus, intervention programmers could plan leisure activity programs that provide older adults with long-term opportunities to enjoy playfulness in order to improve their well-being and health, and especially their resilience for future life challenges. Specifically, such a leisure program might help healthy older adults maintain their physical and mental health, and improve their resilience by experiencing playfulness with their group members. Second, collecting data from the same RHS participants for multiple months in our study enabled within-person analysis, overcoming the limitations of previous leisure researchers who considered only between-person effects (Yee & Niemeier, 1996) without considering change over time (e.g., Coleman & Iso-Ahola, 1993; Golden, Conroy, & Lawlor, 2009). The findings of this study also imply that a multilevel model could be used to measure the psychological pattern of change based on the Broaden-and-Build Theory in a leisure-based context (e.g., Reis & Gable, 2000).

Study Limitations and Directions for Further Research

The first limitation of this study concerns the influence of the RHS women’s personal characteristics on their playfulness and resilience. According to the life span developmental perspective (Alwin & Wray, 2005), individuals differ by their contextual (e.g., historical events and timing), socioeconomic (e.g., gender and financial situation), and cultural environment (e.g., race and society) (Nimrod & Janke, 2012). However, the demographics of the RHS members in the study were quite similar, rather middle class (e.g., having a higher education, being White, married, financially stable, and an RHS member more than six years). Therefore, although the findings supported the broaden-and-build relationship between playfulness and resilience as observed among the RHS members over a one-year period, the current study was unable to demonstrate the relationship between the involvement of RHS members and their resilience growth according to any particular demographic characteristic or characteristics. Nor could the current study determine if the women’s growth in resilience was a product of increased playfulness itself or attributable to particular kind of playfulness activities enjoyed by the RHS. Future researchers could examine the interactions of moderation between variables (i.e., demographic

factors, playfulness, resilience), or control for other personal differences in groups (e.g., by race, personality). Furthermore, illustrating how the RHS women differ from the general population regarding playfulness and resilience, or comparing the differences between the RHS and other leisure-based contexts might be other possibilities. In addition, a future study could collect longitudinal data from new RHS members in order to examine if length of membership influences the effect of playfulness on resilience.

The second limitation of the study concerns the amount and method of data collected: the sample size of 167 may have been limiting. Of the 292 RHS members who originally signed up online, only 167 of the 204 who agreed to participate in the study completed a number of waves of the data with only 101 completing all 12 monthly surveys. Online recruitment and having to complete the same survey every month may have limited the women's responses, especially if their experience in the RHS had not significantly changed month to month. Further, Fredrickson (2013a) proposed that the benefits of the broaden-and-build process are not only "emotional" but also biological and physical (e.g., improving cardiovascular and immune systems). Because our study collected RHS data online across the United States for a year, we could not examine physiological effects. Thus, future leisure researchers could assess using online recruitment versus in-person recruitment and data collection in order to collect biomarkers (e.g., blood pressure, BMI, and saliva) to relate the value of leisure and playfulness to physical as well as mental/emotional health.

Last, other potentially positive resources might have contributed to resilience growth in the RHS women. We only examined playfulness as a predictor of resilience based on the Broaden-and-Build Theory. However, other positive resources (e.g., social support, life satisfaction, life events) may have been broadening and could have built the RHS participants' long-term resilience as well. Moreover, the process of broaden-and-build may trigger an "upward spiral" over time (Fredrickson, 2001), i.e., positive emotions can broaden individuals' minds and build their psychological resources, and thus facilitate a habitual mode of positive thinking. A longer period of data collection that measures more and different factors relating to personal thinking, habits, and psychological well-being in the last wave of a longitudinal study could examine such an upward spiral. In addition, while the current study tested playfulness as a factor in determining resilience based on the Broaden-and-Build Theory, there is a possibility that this relationship is bi-directional. However, we could not determine whether resilience influenced playfulness or if playfulness influenced resilience. A longer period of data collection in a lab environment could examine the precise direction of playfulness and resilience in a future study.

Future researchers could broaden the leisure research field by comparing the RHS activities with those of other leisure-type groups that have the potential to build positive resources for older women.

Conclusion

The major finding of this study showed that higher levels of playfulness produced growth in the RHS members' resilience across 12 waves of data. That is, their experiences of playfulness predicted their resilience growth, changing little over the course of the year. This finding supported the Broaden-and-Build Theory as the RHS women evidently built this enduring resource by experiencing playfulness in a unique leisure context, whose sole purpose is to have fun and socialize informally. In addition, this association between playfulness and resilience differed by persons (between-person differences) in the sample: the women with higher mean levels of playfulness built more resilience through their experiences of playfulness over time.

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