



Excessive-reassurance seeking and mental health: Interpersonal networks for emotion regulation

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Abstract

In the context of research on depression, previous studies have explained relationships between excessive-reassurance seeking and mental health from the perspective of interpersonal rejection by significant others. The present study examined the mechanisms underlying these relationships from the perspective of “emotionships”, which indicates the diversity of interpersonal networks for emotion regulation. We also examined how the most significant other’s interpersonal acceptance plays a role in processes that underlie the relationship between excessive-reassurance seeking and mental health as mediated through emotionships. 118 students completed three questionnaires. First, they completed measures of excessive-reassurance seeking, depression and well-being. Second, to assess emotionships, participants nominated individuals they seek in different emotion regulation scenarios. Third, participants selected the most significant other that they nominated previously and answered questions about this individual’s acceptance tendency. Moderated mediation analysis results indicated that in a case that the most significant other did not tend to accept others, those who engaged in excessive-reassurance seeking had fewer emotionships, and fewer emotionships predicted deterioration of well-being. In contrast, when the most significant other tended to accept others, these negative effects of ERS behavior on well-being via emotionships were not found. These findings suggest that maintaining interpersonal networks for emotion regulation and the most significant other’s interpersonal acceptance may be important for preventing deterioration of mental health among excessive-reassurance seekers.

Keywords Excessive-reassurance seeking · Emotionships · Interpersonal emotion regulation · Mental health

Introduction

A number of factors may exacerbate poor mental health. Among these is excessive-reassurance seeking (ERS), first conceptualized by Joiner et al. (1992), and defined as the relatively stable tendency to excessively and persistently seek assurance from others that one is lovable and worthy, regardless of whether such assurance has already been provided (Joiner et al. 1999). Previous studies have suggested that ERS is positively associated with depression (Joiner et al. 1992; Katsuya 2004; Starr and Davila 2008), generalized anxiety, and obsessive-compulsive disorder (Cogle et al. 2012; Parrish and Radomsky 2010). In addition, it has been suggested that ERS exacerbates depression (Potthoff et al. 1995), and depression predicts ERS further as a downward

spiral process (Evraine 2014). These findings imply that ERS may exacerbate poor mental health.

In recent years, indices of mental health have broadened to include not only negative factors such as depression but also positive factors such as well-being (Seligman and Csikszentmihalyi 2000). In the present study, we examined the relationship between ERS and mental health, with a focus on depression and well-being as indices of mental health. Through this examination, we explored the role of interpersonal relationships. Specifically, we focused on use of the interpersonal network for emotional regulation as a potential mediator of the relationships between ERS and both depression, well-being. We also focused on the most significant other’s interpersonal acceptance as a moderator of this mediation process.

Regarding the process in which ERS exacerbates depressive symptoms, Coyne (1976) suggested as follows. Mildly depressed people tend to seek reassurance from others to assuage feelings of guilt and low self-esteem. At first, others provide support, but the depressed person doubts its authenticity and repeatedly seeks assurance. As a result, the

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depressed person elicits rejection from others, and his or her symptoms worsen.

When excessive-reassurance seekers experience stressful events and feel depressed, they may seek reassurance from significant others, counting on them to help regulate their feelings (Katsuya 2005). Katsuya (2005) showed that people with high ERS tended to regulate their own depressed feelings by using strategies that implicated significant others (e.g., demanding their affectional support) as well as strategies with an intrapersonal focus (e.g., rumination and problem solving), resulting in higher depression. It seems that they might not utilize their broader interpersonal networks sufficiently. In terms of the process through which ERS affects well-being and depression, it is therefore important to focus on the extent of the interpersonal networks that these individuals utilize to regulate their own emotions.

However, Katsuya (2005) examined only depressed feelings and not the regulation of other emotions (e.g., anxiety, anger, and happiness). Furthermore, Katsuya (2005) and other related research (Joiner et al. 1992; Katsuya 2004; Starr and Davila 2008) did not investigate quantitative differences (e.g., the number of people) in the interpersonal networks of excessive-reassurance seekers. To address these gaps, the present study examined the relationships between ERS and depression, well-being in terms of utilization of interpersonal networks for emotion regulation.

Cheung et al. (2015) have argued that people tend to utilize their interpersonal networks for emotion regulation, and that this affects their well-being, particularly when a specific other cannot be an interpersonal resource for emotion regulation. Individuals with a wide interpersonal network can regulate their own emotions through various other people, and Cheung et al. (2015) conceptualized these interpersonal network structures as “emotionships.”

Emotionships are defined as “specific social relationships that people expect to maintain in order to satisfy their distinct emotion-regulation needs” (Cheung et al. 2015). Cheung et al. (2015) proposed that individuals maintain knowledge about the emotion-regulation capacities of various individuals in their social networks, and strategically utilize specific relationships to optimize their emotion regulation. They also assumed that the structure of an individual’s emotionship portfolios—specifically the extent to which they diversify their emotion-regulation needs across multiple specialized relationships, such as turning to one’s sister for regulating anger, but to one’s best friend for regulating sadness—would influence the quality of their emotion regulation and thus their overall well-being.

Emotionships consist of three aspects. First, “breadth of emotional domains” is the number of emotions pertaining to seven emotional domains (e.g., anger, sadness, anxiety, happiness, and embarrassment), that people regulate through others. Second, “average number of emotionships per

domain” is the number of people, on average, whom one can use to regulate one’s emotions. Third, “proportion of specialized emotionships” is the proportion of the number of specialized people who regulate specific emotions in an entire interpersonal network. Cheung et al. (2015) suggested that among the components of emotionships, the breadth of the emotional domain and the proportion of specialized emotionships were positively associated with well-being. In sum, “emotionships” are related to the quantitative aspect of the interpersonal network, referring to the number of people that one needs to regulate various emotions, including positive and negative emotions.

For the distinction between emotionships and social support networks more generally, Cheung et al. (2015) considered that the latter network encompasses many forms of assistance (e.g., monetary, informational, emotional, etc.), whereas emotionships are limited to emotion regulation. In addition, they showed that emotionships affected well-being even after controlling for the effects of loneliness, suggesting that emotionships were not just the total amount of interpersonal networks. In sum, emotionships are interpersonal networks that individuals utilize to regulate their emotions.

We set two main hypotheses regarding the relationship between ERS and well-being, depression, from the perspective of emotionships. Regarding the first hypothesis, we believe that emotionships work as a mediator between ERS and well-being, depression. Considering the previous finding that excessive-reassurance seekers tend to count only on their significant others when they feel depressed (Katsuya 2005), excessive-reassurance seekers may have few emotionships. Furthermore, having few emotionships would lead to a deterioration of mental health (Cheung et al. 2015). We thus predict that emotionships would mediate the relationship between ERS and well-being, depression with high ERS leading to having few emotionships, which would in turn result in poorer well-being and higher depression.

Regarding the second hypothesis, because interpersonal emotion regulation requires others as targets, it is important to focus on factors regarding significant others during this process. In other words, the mediation process may be dependent on the attitudes or behavioral tendencies of significant others. Interaction with significant others can affect mental health in a variety of ways. Particularly, the warmth dimension of interpersonal relationships where people experience varying degrees of interpersonal acceptance and rejection in their relationships with significant others has large impacts on mental health (Rohner 2016). Previous studies have focused on the negative aspect, interpersonal rejection by significant others regarding the interpersonal relationships of excessive-reassurance seekers (see Evraire and Dozois 2011, for a review). However, from the view of the warmth dimension of interpersonal relationships, it is necessary to consider not only the negative aspect of the interaction with significant

others but also the impact of positive aspects. In this study, therefore, we focused on the most significant other's interpersonal acceptance. Also, Starr and Davila (2008) showed that ERS was more highly associated with one's perception of rejection by significant others than with partner-reported rejection. Based on this finding, we assess the one's perception of being accepted by the most significant other.

We postulated the moderated-mediation model shown in Fig. 1. Considering the finding that the perception of being accepted with peers prevents social withdrawal and promotes social companionship (McElhaney et al. 2008), we believe that the perception of the most significant other's interpersonal acceptance moderates the relationships between ERS and emotionships. If the most significant other is not accepting of others, excessive-reassurance seekers may withdraw from interpersonal relationships and not utilize interpersonal network for emotion regulation. In contrast, if the most significant other is accepting of others, ERS may not lead to having few emotionships.

Additionally, we believe that the most significant other's acceptance moderates the relationships between emotionships and well-being, depression. Cheung et al. (2015) have argued that emotionships do affect well-being, particularly when a specific other cannot be an interpersonal resource for emotion regulation. Therefore, if the most significant other is not accepting of others, the association between emotionships and well-being, depression may become stronger. If the most significant other is not accepting, excessive-reassurance seekers would not be able to utilize significant others to regulate their own emotions, thus the positive relationship between emotionships and well-being and the negative relationship between emotionships and depression may become stronger. In contrast, if the most significant other is accepting, emotionships may not affect well-being and depression because excessive-reassurance seekers can utilize the most significant other and would not have to utilize various others for emotion regulation.

Taken together, our hypothesis and rationale are summarized briefly as follows. Previous studies have examined the process by which ERS affects depression, focusing on

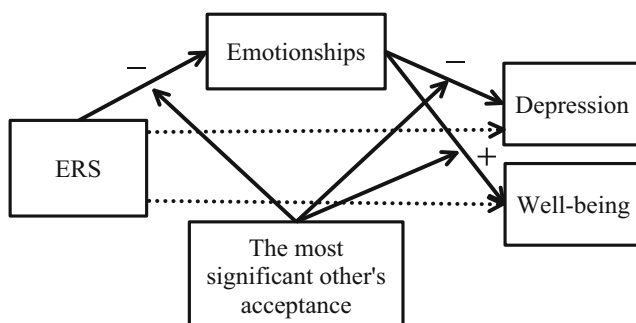


Fig. 1 The moderated mediation process by which ERS affects mental health

rejection by significant others (Joiner et al. 1992; Stewart and Harkness 2015). Although these findings are informative for a link between ERS and mental health, utilization of one's interpersonal network for emotion regulation and the most significant other's acceptance have not been examined. To resolve this, we evaluated two hypotheses. First, the less utilizing others broad interpersonal network for emotion regulation should mediate the relationship between ERS and well-being, depression. This means that excessive-reassurance seekers have few emotionships, leading to a deterioration of their well-being and depression. Second, the perception of the most significant other's acceptance should moderate the relationship between ERS and emotionships, as well as that between emotionships and well-being, depression. Specifically, the lower the most significant other's acceptance, the more likely that the positive effects of ERS on depression and the negative effects of ERS on well-being via emotionships would be stronger. In contrast, the greater the most significant other's acceptance, the more likely that ERS would not have positive effects on depression and would not have negative effects on well-being.

Material and Methods

Participants and Procedures

118 undergraduates residing in west Japan were recruited in psychology-related classes or using a research subject pool. To enable adequate time for questionnaire completion, up to four participants at a time responded to the questionnaires in the laboratory. Participants had to complete three questionnaires. First, we asked participants to complete measures of well-being, ERS, and depression. Second, we measured emotionships in accordance with Cheung et al. (2015). Third, participants selected the most significant other with whom they share an emotionship, and answered questions about these individuals' acceptance. Although the order of these scales did not match our conceptual-causal relationships, we prioritized lessening the burden on participants and ensuring that the questionnaires were clear and in an acceptable format.

All 118 students (80 men, 38 women) were included because there were no missing data. Their mean age was 19.6 years ($SD = 2.76$). All participants were Japanese. The present study was approved by the faculty ethics committee at our university, and written informed consent was obtained from all participants.

Measures

ERS We used the revised Japanese version of the Excessive Reassurance Seeking Scale (Katsuya 2004). This scale consists

of 12 items measuring daily ERS from significant others. Items were answered on a 7-point scale ranging from 1 (*Strongly disagree*) to 7 (*Strongly agree*), with higher scores indicating higher ERS. This scale consists of two subscales: ERS thought (6 items; e.g., “I want to get assurance as to whether significant others accept me”) and ERS behavior (6 items; e.g., “Even if I have already received assurance that a significant other accepts me, I would ask or test him/her further”). Previous studies using this scale have reported good to excellent internal consistency (Cronbach’s α s = .75–.86; Katsuya 2004, 2005) and there is evidence for construct validity (Katsuya 2004). In the present study, the Cronbach’s alpha was .84 for ERS thought, and .79 for ERS behavior.

Depression We used the Japanese version (Shima et al. 1985) of the Center for Epidemiology Studies Depression Scale (CES-D; Radloff 1977). CES-D is used widely in research and clinical settings for screening depressive symptoms in community populations (e.g., Snaith 1993). This scale consists of 20 items measuring depressive symptoms during the past week (e.g., “I was bothered by things that usually do not bother me”). Items were answered on a 4-point scale ranging from 0 (*Less than 1 day*) to 3 (*5–7 days*). Higher scores indicated more salient depressive symptoms. The cut-off point that has been recommended for depression screening is 16 in Japan (Shima et al. 1985) and a score of 16 or higher was identified in early studies as identifying subjects with depressive illness.. In the present study, 37 participants (31.3%) scored at and above a cutoff score of 16. We used total CES-D scores because we focused on examining relationships with other variables as opposed to conducting group comparisons. The validity and reliability of this scale have been supported in prior work (e.g., Wada et al. 2007). In the present study, the Cronbach’s alpha was .88.

Well-Being Well-being was assessed with the Japanese version (Oishi 2009) of the Satisfaction with Life Scale (Diener et al. 1985). This scale consists of five items measuring well-being (e.g., “I am satisfied with my life”). The items were answered on a 7-point scale ranging from 1 (*Strongly disagree*) to 7 (*Strongly agree*), with higher scores indicating higher levels of well-being. In the present study, the Cronbach’s alpha was .88.

Emotionships We measured emotionships according to the procedures of Cheung et al. (2015). These procedures were adapted from Hazan and Zeifman’s (1994) WHOTO attachment nomination measure in which participants nominate individuals they seek out for different attachment functions. Participants nominated up to four people from whom they would seek help with regulating specific emotions in each of seven scenarios corresponding to seven emotional domains (cheering-up sadness, calming down anger, calming down

anxiety, capitalizing happiness, amplifying anger, reducing guilt, and reducing embarrassment). For each emotionship listed, each participant reported the individual’s first name in the order in which it came to his or her mind. To control for order effects, we randomized the order of the seven scenarios that were presented to participants.

Cheung et al. (2015) used three indicators to assess the structure of emotionships: (a) the breadth of emotional domains, (b) the average number of emotionships per domain, and (c) the proportion of specialized emotionships. In addition to these indicators, based on a personal communication with E. O. Cheung (November 16, 2015), we used two indicators to assess the total extent of emotionships: (d) total emotionships, (e) the number of people in the network.

Indicator (a), the breadth of emotional domains, represents the variety of emotions that people regulate through others and can be measured by the number of domains in which participants listed at least one other, ranging from 0 to 7. Indicator (b), the average number of emotionships per domain, represents the average number of interpersonal resources for emotion regulation within a given domain, as measured by the number of people, on average, who were listed across the seven scenarios, ranging from 0 to 4. Both indicators (a) and (b) involved double counting individuals who appeared in different scenarios. Indicator (c), the proportion of specialized emotionships, represents the diversity of emotion regulation needs across multiple specialized relationships, as reflected in the proportions of people in the entire interpersonal network who regulate only one emotional domain, ranging from 0 to 1.

The number of people in a participant’s interpersonal network for emotion regulation was assessed using indicators (d), total emotionships, and (e), the number of people in network. Both indicators are a sum of the number of people listed, ranging from 0 to 28. Indicator (d), total emotionships, included people listed for more than one scenario; if the same person was listed for two scenarios, he or she was counted twice. However, the purpose of the present study was to examine the number of people whom excessive-reassurance seekers counted on for emotion regulation. Therefore, we assessed indicator (e), the number of people in a network, as the total extent of emotionships. Indicator (e) assesses how many people were listed across all seven scenarios; even if one person was listed for two scenarios, he or she was counted only once. In the present study, the *Mean* levels and *SDs* of all emotionships indicators indicated trends similar to those observed in previous studies (Abe 2017; Cheung et al. 2015).

The most Significant other’s Acceptance The most significant others’ acceptance was assessed using the Coping Pattern with Disliked Others Scale (Hyugano et al. 1998). This scale consists of two subscales, “avoidance of disliked others” and “acceptance of individuality.” We used the acceptance of individuality subscale, which consists of three items measuring the

tendency to accept negative aspects of others as reflective of their individuality, and to try to build friendly relationships (e.g., “He/She tries to see and understand the strengths of others”, “He/She keeps company as much as possible without worrying about the other person’s bad points”). Acceptance of individuality involves an attitude of being accepting towards the positive attributes or individuality of others, even if they are difficult to deal with (Hyugano et al. 1998). Previous studies have suggested that these tendencies are negatively associated with tendencies to deny the individuality of others (Hyugano et al. 1998), and positively associated with self-regulation (Hyugano 2008). Someone with high acceptance of individuality can identify others’ positive aspects or attributes and maintain relationships with these individuals. The items were answered on a 7-point scale ranging from 1 (*Strongly disagree*) to 7 (*Strongly agree*), with higher scores indicating that participants perceive more the most significant other’s acceptance. In the present study, the Cronbach’s alpha was .74.

Statistical Analysis

We tested the moderated mediation model in which the most significant other’s acceptance moderates the process by which ERS affects well-being and depression via emotionships. Considering previous findings (e.g., Cheung et al. 2015; Katsuya 2005), we set a model which reflects the hypothesized causal relationships among ERS, emotionships, and well-being, depression as noted in the Introduction section. In all analyses, a value of $p < .05$ was used as the criterion for statistical significance.

First, to test for the mediation process, we conducted Structural Equation Modeling (SEM) which depicted that ERS affects well-being and depression via the indices of emotionships. We used observed variables in SEM. Regarding the indices of emotionships, as a result of the correlation analysis, we examined three indices which were significantly or marginally correlated with either ERS thought or ERS behavior as mediators. We followed Rucker et al.’s (2011) approach to mediation. Specifically, we required that the a path (from ERS thought or ERS behavior to mediator) and b path (from mediator to well-being or depression) are significant, and that the indirect effect ($a \times b$ path) is significant. Using bootstrap methods, we estimated the indirect effects of ERS on mental health (well-being and depression) as mediated by the emotionship indicators. We tested a total of six mediation processes; the indirect effects of ERS behavior on depression and well-being via the number of people in network; the indirect effects of ERS behavior on depression and well-being via the proportion of specialized emotionships. Indicators that had no significant indirect effects were excluded from the subsequent moderated mediation analysis.

Next, we tested for moderated mediation using SEM. Specifically, the interactional influence of ERS and the most significant other’s acceptance on the indicators of emotionships, and the interactional influence of the indicators of emotionships and the most significant other’s acceptance on well-being and depression, were used to test for the moderation of the most significant other’s acceptance.

Furthermore, we estimated the conditional indirect effects of ERS on well-being and depression as mediated by emotionships at one standard deviation above and below the mean of the most significant other’s acceptance. Since the purpose of this study is to examine how the mediation effects of emotionships vary with the moderator, we examined only the mediating processes in which the indirect effects were significant.

Results

Descriptive Statistics and Correlations

Descriptive statistics are summarized in Table 1. All scales indicated adequate internal consistency as well as trends similar to those in previous studies (Cheung et al. 2015; Hyugano et al. 1998; Katsuya 2004; Oishi 2009; Shima et al. 1985). There were ceiling and floor effects on the distributions of the breadth of emotional domains and proportion of specialized emotionships, respectively.

We calculated the correlations between all measures. As can be seen in Table 2, for emotionship indicators, ERS thought was positively correlated with breadth of emotional domains ($r = .22, p < .05$). ERS behavior was not significantly correlated with the indicators of emotionships. In addition, well-being was positively correlated with total emotionships ($r = .27, p < .01$), number of people in the network ($r = .27, p < .01$), and average number of emotionships per domain

Table 1 Descriptive statistics

	M	SD	Range	α
ERS thought	30.5	6.08	14–42	.84
ERS behavior	21.9	7.02	7–39	.79
Well-being	21.4	6.35	5–35	.88
Depression	12.5	8.90	0–48	.88
Total emotionships	17.1	6.60	0–28	–
Number of people in network	7.5	2.89	0–17	–
Breadth of emotional domains	6.1	1.27	0–7	–
Average number of emotionships per domain	2.7	0.83	0–4	–
Proportion of specialized emotionships	0.2	0.19	0–1	–
The most significant other’s acceptance	15.8	3.46	5–21	.74

Abbreviations: ERS = Excessive-Reassurance Seeking

Table 2 Correlations Between all Measures

	1	2	3	4	5	6	7	8	9	10
1. ERS thought	–									
2. ERS behavior	.59**	–								
3. Well-being	.08	–.13	–							
4. Depression	.25**	.39**	–.64**	–						
5. Total emotionships	.12	.03	.27**	–.10	–					
6. Number of people in network	.03	–.16†	.27**	–.14	.68**	–				
7. Breadth of emotional domains	.22*	.12	.10	.04	.70**	.45**	–			
8. Average number of emotionships per domain	.04	–.04	.26**	–.17†	.91**	.66**	.39**	–		
9. Proportion of specialized emotionships	–.14	–.16†	.01	–.11	–.36**	.25**	–.36**	–.24**	–	
10. The most significant other's acceptance	.09	.09	–.01	–.10	.05	–.01	.03	.06	.01	–

Abbreviations: ERS = Excessive-Reassurance Seeking

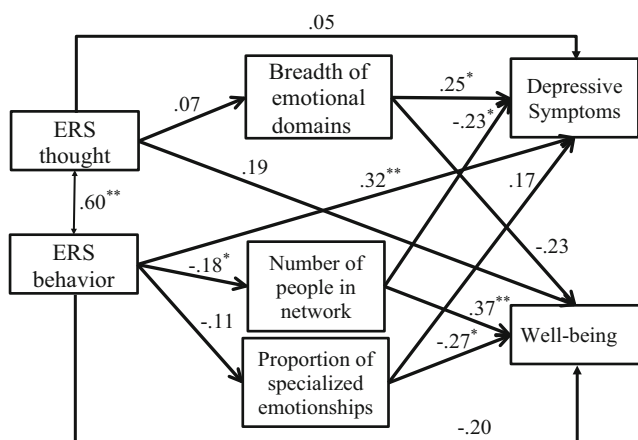
** $p < .01$, * $p < .05$, † $p < .10$

($r = .26$, $p < .01$). Depression was not significantly correlated with emotionship indicators.

Mediating Effects of Emotionships

We conducted the SEM to examine the process which ERS affects well-being and depression via the indicators of emotionships (Fig. 2). Based on the results of the correlation analysis, among the emotionships indicators, we entered those were significantly or marginally correlated with either ERS thought or ERS behavior; the breadth of emotional domains as a mediator between ERS thought and well-being, depression, and the number of people in network and the proportion of specialized emotionships as mediators between ERS behavior and well-being, depression. Therefore, we examined the six mediation models.

The effect of ERS thought on the breadth of emotional domains ($\beta = .07$, ns) and the effect of ERS behavior on the proportion of specialized emotionships ($\beta = -.11$, ns) were not



** $p < .01$, * $p < .05$

Fig. 2 Structural Equation Modelling depicts that ERS affects well-being and depression via emotionships

significant. However, the effect of ERS behavior on number of people in network was significant ($\beta = -.18$, $p < .05$), and the effects of number of people in network on depression ($\beta = -.23$, $p < .05$) and well-being ($\beta = .37$, $p < .01$). Thus, we followed Rucker et al. (2011) in examining the mediating effects of number of people in network on the relationship between ERS and well-being, depression.

The results involving bootstrapping with 5000 iterations indicated that only the number of people in the network mediated the relationship between ERS behavior and well-being. This indirect effect was significant ($\beta = -.07$, $SE = 0.04$, 95% $CI = [-.102, -.001]$).

However, number of people in network did not significantly mediate the relationship between ERS behavior and depression ($\beta = .04$, $SE = 0.03$, 95% $CI = [-.011, .088]$). Only the direct path from ERS behavior to depression was significant ($\beta = .32$, $p < .01$).

Moderating Effects of Traits of Significant Others

In order to test our second hypothesis, we examined the moderating effects of the perception of the most significant other's acceptance on the mechanism by which ERS behavior affected well-being through the number of people in the network. Significant interaction effects were found for ERS behavior and the most significant other's acceptance on the number of people in the network ($b = .02$, $p < .05$, $SE = 0.01$, 95% $CI = [.002, .370]$), and for the number of people in the network and the most significant other's acceptance on well-being ($b = -.13$, $p < .05$, $SE = 0.04$, 95% $CI = [-.214, .040]$) (Table 3).

Simple slope analysis results showed that when scores on the most significant other's acceptance were 1 SD lower than the mean, ERS behavior was negatively associated with the number of people in the network (Fig. 3-a). Additionally, when scores on the most significant other's acceptance were 1 SD lower than the mean, number of people in the network was positively associated with well-being (Fig. 3-b).

Table 3 Regression results for moderation of the most significant other’s acceptance

Outcome: Number of people in network					
Predictor	<i>b</i>	<i>SE</i>	<i>R</i> ²	ΔR^2	<i>F</i>
Step 1			.00		0.21
Gender	.38	.59			
Age	-.02	.11			
Step 2			.03	.03	0.90
ERS behavior	-.07 [†]	.04			
The most significant other’s acceptance	.01	.08			
Step 3			.06	.03*	1.53
ERS behavior					
× The most significant other’s acceptance	.02*	.01			
Outcome: Well-Being					
Predictor	<i>b</i>	<i>SE</i>	<i>R</i> ²	ΔR^2	<i>F</i>
Step 1			.00		0.09
Gender	-.44	1.27			
Age	.08	.23			
Step 2			.08 [†]	.08*	2.36 [†]
Number of people in network	.59**	.20			
The most significant other’s acceptance	-.03	.17			
Step 3			.14**	.07**	3.74**
ERS behavior					
Number of people in network					
× The most significant other’s acceptance	-.13**	.04			

Abbreviations: ERS = Excessive-Reassurance Seeking

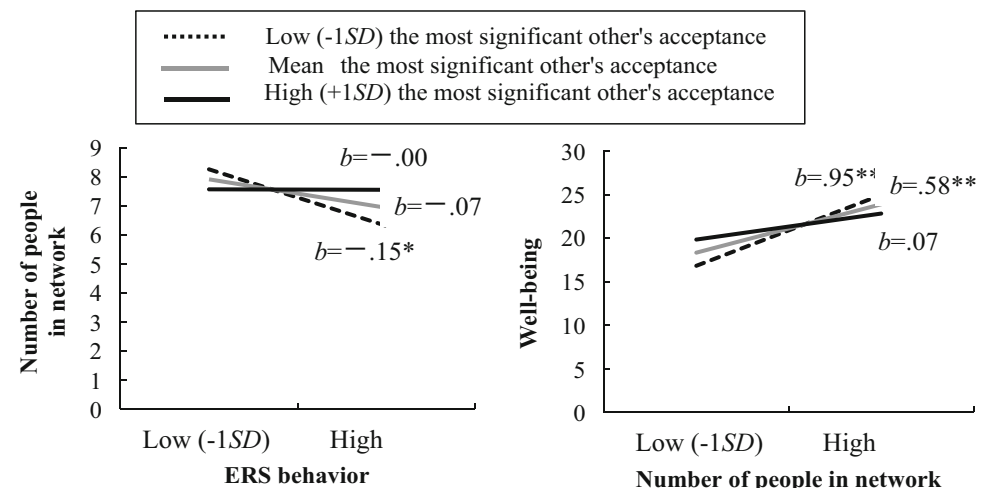
** *p* < .01, * *p* < .05, † *p* < .10

Moderated mediation analysis showed that when scores on the most significant other’s acceptance were 1 *SD* lower than the mean, the mediating effect of the number of people in the network was significant ($\beta = -.16$, *SE* = 0.06, 95% CI = [-.273, -.032]). As shown in Fig. 4a, ERS behavior had negative effects on the number of people in the network

($\beta = -.36$, *p* < .01), and the number of people in the network had positive effects on well-being ($\beta = .46$, *p* < .01). The direct effect of ERS behavior on well-being was not significant after adding the mediator to the model.

Importantly, as Fig. 4b indicates, when the most significant other’s acceptance scores were 1 *SD* higher than the mean, the

Fig. 3 The modelling effect of the most significant other’s acceptance on the ERS behavior–number of people in network relationship and the number of people in network–well-being, (a) ERS behavior–Number of people in network, (b) Number of people in network–well-being

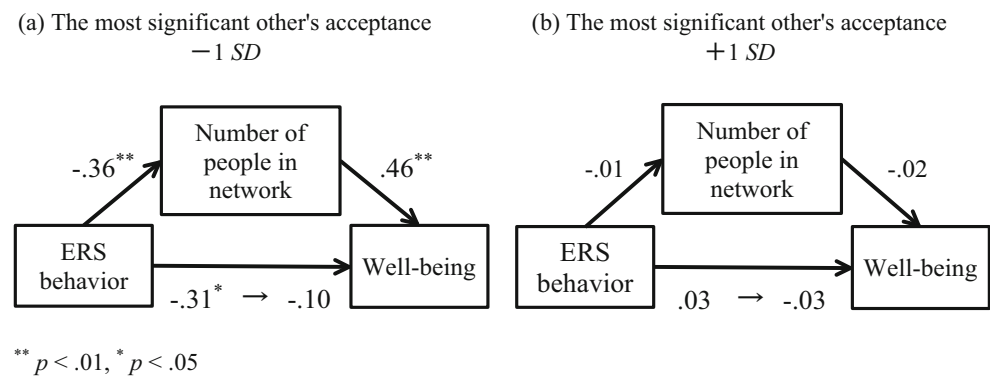


(a) ERS behavior—Number of people in network

(b) Number of people in network—Well-being

*** *p* < .001, ** *p*

Fig. 4 The mediating effects of number of people in network moderated by the most significant other's acceptance



mediating effects of the number of people in the network were not significant ($\beta = -.00$, $SE = 0.01$, $95\% CI = [-.031, .029]$). These results support the hypothesis that the most significant other's acceptance moderated the negative effects of ERS behavior on well-being through the number of people in the network.

Discussion

The purpose of this study was to examine the process through which ERS affects well-being and depression. In general, the number of people in network mediated the relationship between ERS behavior and well-being. ERS behavior had negative effect on the number of people in network which in turn had positive effect on well-being. Also, the results showed that the most significant other's acceptance moderated the mediating process. When the most significant other was not accepting, the negative effects of ERS behavior on the number of people in network and the positive effects of the number of people in network on well-being became stronger. In contrast, when the most significant other was accepting, ERS behavior did not have negative effect on the number of people in network, and the number of people in network did not have positive effect on well-being. Although our hypotheses were not largely supported, we suggested that the number of people in network and the most significant other's acceptance play important role in excessive-reassurance seekers' well-being.

Mediation of the Relationship between ERS and Well-Being, Depression

First, the indirect effect of ERS behavior on well-being (as mediated by number of people in an interpersonal network) was significant. Regarding the reason why only the number of people in network mediated between ERS behavior and well-being, we discuss as follows. ERS behavior was negatively associated with only two indices of emotionships; the number of people in network and the proportion of specialized emotionships. These results can be interpreted as that ERS behavior is related not to a lack of emotional domains where

they rely on others or a lack of frequency of relying on others, but to a lack of the number of others who they rely on for emotion regulation. Considering that the Katsuya's (2005) findings that people with high ERS tended to regulate their own depressed feelings by using strategies that implicated significant others, excessive-reassurance seekers may not utilize various others to regulate their own emotions because they rely only on significant others. Also, ERS behavior was not related to the breadth of emotional domains, the total emotionships and the average number of people per domain. Unlike the other two indicators, these three indicators count people separately who are listed more than once across different emotional domains. Therefore, even though excessive-reassurance seekers may not rely on various others, on the other hand, they may tend to rely on significant others repeatedly. As a result, the expected negative association between ERS behavior and these three indicators may not have been found.

Also, well-being was positively associated with only the three indices of emotionships; total emotionships, the number of people in a network, and the average number of people per domain. These indices capture the frequency or the number of relying others for emotion regulation. Therefore, as Cheung et al. (2015) implied, building an interpersonal network that facilitates emotion regulation may lead to well-being.

On the other hand, emotionships did not mediate the relationship between ERS thought and well-being. ERS thought was positively associated with the breadth of emotional domains. Katsuya (2004) developed a subscale of ERS thought to measure trends in non-clinical individuals, whereas previous studies have focused on the behavioral aspects of ERS. The thought or desire to assure one's own value with significant others may facilitate relying on others in the various emotional domains. On the contrary, as previous studies have shown (Joiner et al. 1992; Stewart and Harkness 2015), the behavioral aspects of ERS may have maladaptive effects on mental health.

Furthermore, emotionships did not significantly mediate the relationship between ERS thought or behavior and depression. The process through which ERS affects depression may

be different from the one through which it affects well-being. Previous studies have suggested that depression is strongly associated with stressful interpersonal events such as rejection (Magaro and Weisz 2006). In addition, rejection from significant others may mediate the relationship between ERS and depression (Stewart and Harkness 2015). This may suggest that ERS affects depression through not the less utilizing interpersonal networks for emotion regulation but rather through rejection by significant others.

The Moderating Effects of the Most Significant Others' Acceptance

The present results showed that the most significant other's acceptance moderated the process by which number of people in a network mediates the relationships between ERS behavior and well-being. When the most significant other's acceptance was low, ERS behavior had more negative effects on well-being via number of people in network. On the other hand, when the most significant other's acceptance was high, the negative effects of ERS behavior on well-being via number of people in network were not found.

Considering the findings of previous studies (Cheung et al. 2015; Hames et al. 2015; Marroquin and Nolen-Hoeksema 2015), we can describe the mechanism of the moderating effects as follows. If the most significant other is not accepting of others, excessive-reassurance seekers' perceived burdensomeness (Hames et al. 2015) may be stronger, and their interpersonal resources may decrease, particularly because they are not accepted by the most significant other. These individuals may also carry out intrapersonal or maladaptive strategies to regulate their own emotions (Katsuya 2005; Marroquin and Nolen-Hoeksema 2015), and experience worsening well-being.

In contrast, if the most significant other tends to accept others, this decrease in interpersonal resources may be buffered. When excessive-reassurance seekers are accepted by significant others, their perceived burdensomeness (Hames et al. 2015) may also be buffered, and their well-being may not deteriorate because trust in and intimacy with significant others prompt adaptive emotion regulation (Marroquin and Nolen-Hoeksema 2015; Shaver and Mikulincer 2007). The most significant other who tends to accept of others can work as an effective resource for emotion regulation, and thus a diverse interpersonal network may exert little effect on well-being. When the most significant other is accepting, excessive-reassurance seekers may be able to adequately utilize the various interpersonal resources available for emotion regulation, resulting in the maintenance of their well-being.

Limitations

Several limitations of the present study should be noted. First, as data in the present study are cross-sectional, it is impossible

to conclude a causal relationship regarding the process by which number of people in a network mediates the relationships between ERS behavior and well-being. It will be necessary to conduct additional experiments to get strong suggestions for causality, such as experimental investigations focusing on the relationship between specific variables in our model, or longitudinal investigations that take time into consideration and/or involve data collection from couples.

Second, we discussed the relationship between ERS and emotionships without measuring "perceived burdensomeness" (Hames et al. 2015), although perceived burdensomeness could mediate the relationship between ERS and the number of people in network. In this study, the proportion of variance in the number of people in network explained by ERS and the most significant other's acceptance was low. It is necessary to examine the relationships between ERS and emotionships including perceived burdensomeness.

Third, the most significant other's acceptance was reported by participants. Therefore, it is unclear whether it was the perception of excessive-reassurance seekers or the actual significant other's acceptance that was at play. Also, it is possible that the assessment of the perceived individuality of another person can be influenced by the extent of depressive symptoms. In the future, we should collect dyadic data and examine interactions between factors, using the Actor-Partner Interdependent Model (Kenny 1996).

Fourth, in the present study, we focused only well-being and depression as indicators of mental health. However, previous findings have suggested that ERS was associated with not only depression but also anxiety, obsessive-compulsive disorders, and hypochondria (Cogle et al. 2012; Wearden et al. 2006). The effects of ERS on other mental disorders via emotionships should be examined in the future.

Fifth, we focused the most significant other's acceptance as a factor of significant others' behavioral tendencies or attitudes. There are various tendencies or attitudes which would affect the interpersonal relationship within dyads such as significant other's compassion, empathy, listening skills, abilities to regulate one's own emotions, etc. It will be necessary to examine in more detail what significant other's tendencies affect excessive-reassurance seeker's emotionships and well-being.

Sixth, sample size in the present study was small and participants were students. Therefore, generalizability of our results is limited. The present results should be replicated with larger, more representative samples.

Finally, we did not examine whether interpersonal emotion regulation actually occurred. Although the present results suggest that emotionships are associated with well-being, as in Cheung et al. (2015), it is unclear as to whether this association depends on the extent of the interpersonal network or actual emotion regulation. To examine the effects of ERS on mental health in more detail, we should examine the effects of interpersonal

emotion regulation in daily life, using the Experience Sampling Method (Csikszentmihalyi and Larson 1984).

Conclusion

We provided an initial finding that ERS behavior is negatively associated with well-being, mediated by interpersonal networks for emotion regulation when the most significant other is not accepting of others. This result suggests that having few interpersonal relationships for emotion regulation leads to a deterioration of well-being. In terms of the process through which ERS behavior affects mental health, it seems important to focus on not only the deterioration of relationships with specific others, but also on the interpersonal networks for emotion regulation.

Our study showed that the individual's perception of being accepted by the most significant other buffers the mediation process. This result suggests that if the most significant other is accepting of others, the well-being of excessive-reassurance seekers may not deteriorate, even if they do not adequately utilize their interpersonal networks. Therefore, in terms of therapeutic intervention in excessive-reassurance seekers' well-being, it may be effective to focus on both their interpersonal networks for emotion regulation and the most significant other's acceptance. For example, it has been suggested that excessive-reassurance seekers tend to over-perceive rejection from significant others (Massing-Schaffer et al. 2015; Starr and Davila 2008). Dealing with excessive-reassurance seekers' cognitive distortions in responses and behaviors of their significant others may eventually lead to maintaining their emotionships.

Author's Contributions KA was involved in the study conception and design, acquisition of data, analysis and interpretation of data, and drafting of the manuscript. KN was involved in the study design, interpretation of data, and the critical revision of the manuscript.

Compliance with Ethical Standards

Conflict of Interest The authors declare no conflicts of interest associated with this manuscript.

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