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Validation of the Emotion Regulation Questionnaire (ERQ) in older community dwelling adults

Abstract

Objective. To examine the psychometric properties of the Emotion Regulation Questionnaire (ERQ) among a sample of older community-dwelling males and females. To also assess gender differences in the association between emotion regulation and positive and negative affect.

Method. The ERQ and the Positive and Negative Affect Schedule-10 were administered to 252 older adults (age range 60–89 years; 48.4% female).

Results. The two ERQ subscales, reappraisal and suppression, were internally consistent. Reappraisal was positively correlated with positive affect among both genders, and negatively correlated with negative affect among older women only. Suppression was positively correlated with negative affect among older men only and unrelated to positive affect for both genders. Confirmatory factor analysis showed that a two-factor solution fits the data from both genders.

Conclusion. The results provide evidence to support the ERQ for use with older adults, while identifying clinically important gender differences in the associations between emotion regulation tendencies and affect in older age.

Keywords: emotion regulation; older adults; assessment; validation; psychometric properties

Practitioner Points

- Reliability and validity of the 10-item Emotion Regulation Questionnaire is supported for use among older adults.
- Suppression positively correlated with negative affect among older men but not older women.
- Reappraisal negatively correlated with negative affect among older women but not men.
- The current data from a community dwelling population may not generalise to older adults with clinical disorders.

Validation of the Emotion Regulation Questionnaire (ERQ) in Older Community Dwelling Adults

Emotion regulation encompasses the maintenance of optimal emotional wellbeing by selecting which emotions are experienced, when they are experienced, and how they are experienced and expressed over time (Gross, 1998; Koole, 2009). Successful regulation of emotion is critical for adaptive functioning across the lifespan and has been linked to improved mental health (Gross & Muñoz, 1995), physical health (Sapolsky, 2007), and relationship satisfaction (Murray, 2005). In contrast, difficulties with emotion regulation are broadly associated with a range of psychopathologies (see review by Aldao, Nolen-Hoeksema, & Schweizer, 2010). Increasing attention is being paid to examining emotion regulation in older age (see Charles & Carstensen, 2014 for a review), however, the psychometric properties of the most widely administered measure of emotion regulation, the Emotion Regulation Questionnaire (ERQ; Gross & John, 2003), has yet to be explored among an exclusively older sample of community-dwelling men and women. Establishing the reliability and validity of this measure is clinically important in that it may help to better understand and encourage wellbeing in older age.

The ERQ (Gross & John, 2003) was developed to assess emotion regulation tendencies using two distinct strategies; reappraisal and suppression. Reappraisal is an antecedent-focused strategy that involves changing the way one thinks about emotional stimuli in an attempt to alter the emotional response before it is fully activated. Suppression is a response-focused strategy that involves attempts to lessen the emotional impact of events by inhibiting emotionally-expressive behaviour once the emotional response is in full effect (Gross, 1998). The final 10-item ERQ includes six reappraisal items and four suppression items, which form two respective subscales. All reappraisal items are worded such that changing thinking is the focus, while all suppression items are

worded such that not expressing emotion is the focus. Within each subscale, at least one item refers to regulating positive emotion (e.g., joy and amusement) and at least one refers to regulating negative emotion (e.g., sadness and anger).

The initial ERQ validation study used a large student sample (N = 1483). Principal component analysis (PCA) provided evidence for a two-factor solution, with items loading on either the reappraisal or suppression factor (Gross & John, 2003). The two factors accounted for over 50% of the variance in sample scores. Evidence for the same two-factor solution has been found in other studies using student samples (i.e., Balzarotti, Gross, & John, 2010), and predominantly younger community samples (Spaapen et al., 2013; Wiltink et al., 2011). Gross and John also examined the relationship between emotion regulation tendencies and positive and negative affect. They found that reappraisal was associated with greater positive affect and reduced negative affect. In contrast, suppression was found to be associated with reduced positive affect and increased negative affect.

Two studies have examined age as a potential moderator of model fit for the English-language ERQ (John & Gross, 2004; Spaapen et al., 2014). Using two community samples (Australia: N = 550, UK: N = 483; aged 17 – 95 years) Spaapen and colleagues did not replicate the two-factor structure found in previous validation studies. However, the removal of item 3 from the Reappraisal subscale resulted in strong model fit across the entire sample. When examining the effect of age on model fit, this study used a median split to determine age groups for comparison, with young adults defined as those aged 17-29, and older adults defined as aged 30-95. The authors did not find evidence of unacceptable levels of measurement invariance across age groups, indicating that the 9-item ERQ offered better model fit for both tested age groups. While this result offers insight into the measurement invariance of the ERQ in young adulthood compared

to the remainder of the lifespan, it offers limited insight into model fit among an exclusively older adult group aged 60 years and over. John and Gross (2004) attempted to replicate the original two-factor structure of the 10-item ERQ among multiple samples of young women as well as a sample of women aged in their early 60s (n = 106). Evidence to support the two-factor structure of the ERQ was found among all samples. However, the results of this study cannot be generalized across genders.

The current study aimed to assess the factor structure, internal consistency and convergent validity of the ERQ among males and females aged 60 years and over. Based on previous psychometric studies, evidence for a two factor (suppression and reappraisal) structure was expected to be found for the ERQ. It was also hypothesised that the ERQ would demonstrate adequate convergent validity. That is, suppression and reappraisal subscale scores were expected to be significantly associated with measures of positive and negative affect.

Method

Participants

A total of 287 older adult volunteers were recruited for a short "Emotional Life Survey". After excluding data from participants who reported a current mood or neurological disorder, data from 252 older adults (mean age 66.6 years; age range 60–89 years; 48.4% female) were included in analyses. Ethnicity, marital status and education data were not collected from 38 of the 'in person' participants. Of the remaining sample, seventy nine percent of the sample were Caucasian, 5% South Asian, 5% African, 4% East or South East Asian, 4% Latin, Central and South American, and less than 1% reported themselves to be Middle Eastern, Pacific Islander or Other. Sixty percent were married, 16% single, 12% divorced, 9% widowed, and 2% dating. The sample was well educated with 21% reporting a graduate degree, 7% some graduate schooling, 32% a

college diploma, 26% some college, 12% high school certificate or equivalent, and 2% reporting some high school or less. The survey was completed in person at the university by 63 participants, and online by 189 participants. In person participants were recruited via a university research volunteer database. Online participants were recruited via advertisements on MicroWorkers and Mechanical Turk. MicroWorkers is an Australian crowd sourcing platform used to recruit participants for short online tasks which has been validated for use collecting data from Australian participants (Crone & Williams, 2016). Mechanical Turk is Amazon's international crowd sourcing platform commonly used for online psychological research. Regional filters were used to collect data from participants residing in the Australia and New Zealand region. In person participants were older on average (*M* age = 72.71) compared to online participants (*M* age = 64.52), $t(250) = -11.467$, $p < .001$. The lab also had a higher percentage of female participants compared to online (61.9% and 43.9% respectively, $X^2(1) = 6.123$, $p = .013$). In person participants were reimbursed $20 per hour and completed the questionnaires as a part of a larger study, while online participants received USD $1.50 for completion of questionnaires only. The present research was approved by the Human Research Ethics Committee (approval number H11503).

Measures

Emotion Regulation Questionnaire (ERQ; Gross & John, 2003)

The development and structure of the 10-item ERQ is discussed in the introduction. An example reappraisal item is "When I want to feel more positive emotion, I change the way I'm thinking about the situation". An example suppression item is "I control my emotions by not expressing them". Respondents are asked to rate their agreement with items using a 7-point Likert-type scale from 1 (strongly disagree) to 7 (strongly agree). Scores are averaged for the items within each scale to provide a single

reappraisal score and a single suppression score, ranging from 1 to 7. High scores on each subscale indicate higher trait reappraisal and suppression, respectively. Past research has provided support for a 9-item version of the ERQ in two community samples (Spaapen et al., 2014).

Positive and Negative Affect Schedule – 10 (PANAS-10; Mackinnon et al., 1999)

The PANAS-10 is a ten-item scale derived from the longer form Positive and Negative Affect Schedule (Watson, Clark, & Tellegen, 1988) designed to measure the experience of positive (inspired, alert, excited, enthusiastic, determined) and negative (afraid, upset, nervous, scared, upset) emotional states. Respondents are asked to indicate how frequently they have experienced the emotions in the last few weeks using a Likert-type scale from 1 (very slightly or not at all) to 5 (Extremely). Item responses are summed for each scale resulting in a single positive affect score and a single negative affect score. Higher scores on each subscale indicate greater experience of affect. In the initial validation study, age was not found to impact the factor structure or factor correlations among a large sample (N = 2651) of adults, including older adults (Mackinnon et al., 1999).

Statistical Analyses

The first step in our analyses was to examine the factor structure of the ERQ among older males and females. Confirmatory factor analysis was performed for both a 9- and 10-item ERQ using AMOS 24 (Arbuckle, 2017). This method allows for pre-specification of the number of factors as well as the relationship between factors and indicators (Brown, 2006), which is important and most appropriate when evaluating a well-established measure. Factor structure was examined using chi-square, the comparative fit index (CFI; Bentler, 1990), Tucker-Lewis Index (TLI; Tucker-Lewis, 1973), and the root-mean-square error of approximation (RMSEA; Steiger & Lind,

1980). Model fit is deemed acceptable when chi square is non-significant, CFI and TLI values are above .90 (Kline, 2004), and RMSEA is below .08 (Browne & Cudeck, 1993). However, chi square is known to be inflated by large samples, so acceptability was judged on the basis of multiple fit statistics.

To investigate whether the ERQ performs similarly across older male and female groups, we computed multigroup confirmatory factor analysis using AMOS 24 (Arbuckle, 2017). Multigroup CFA involves comparison of nested models organised in a hierarchical order with increased parameter constraints added at each stage (Byrne, Shavelson & Muthén, 1989; Steenkamp & Baumgartner, 1998). Because each new model is nested in the previous model, measurement invariance models become increasingly restrictive. We tested successive models in line with tests proposed by Vandenberg and Lance (2000), with interpretations of equality across groups at each stage based on Byrne, Shavelson and Muthén (1989). Following reporting of unconstrained configural models for both groups, we tested three nested models: 1) A metric invariance model where factor loadings were constrained to be equal across groups. Measurement invariance at this stage indicates the same metric in the groups. 2) A factor invariance model where factor variances were constrained to be equal across groups. Measurement invariance at this stage indicates comparable heterogeneity of latent variables in the groups. 3) A factor and error covariance model, where factor covariances and error variances were constrained to be equal across groups. Measurement invariance at this final stage indicates the same correlations between factors and same reliability in the groups.

In previous research, the removal of item 3 from the ERQ resulted in better model fit. To explore the relatedness of individual items to the two ERQ factors, item factor loadings were calculated using principle component analysis with Varimax rotation. Items were deemed to be significantly related to factors if the rotated factor loading was

above .30. Communalities were also calculated to assess the percentage of variance in item scores that could be explained by the intended factor.

Once the factor structure of the ERQ was established, internal consistency was evaluated for the reappraisal and suppression subscales of the ERQ using Cronbach's alpha. Independent-samples t tests were used to identify gender differences in ERQ item and subscale scores, as well as positive and negative affect as measured by the PANAS-10. Pearson's product moment correlations were used to evaluate convergent validity between ERQ subscales and positive and negative affect.

Results

Factor Structure

Model fit statistics for the original ERQ as well as the 9-item ERQ were acceptable for the unconstrained model among the older male sample. Among the older female sample, inspection of the modification indices for the 10-item model revealed that model fit was being limited by high correlation between error terms e1 and e3, e3 and e4, and e1 and e6. Covariances were added for these error terms which resulted in acceptable model fit among the older females. Using a 9-item model, inspection of the modification indices among the older female sample revealed that model fit was being limited by high correlation between error terms e5 and e9. Adding covariance among these error terms resulted in marginally acceptable model fit among the older females. See Figure 1 for unconstrained standardised model solutions for each group on the two versions of the ERQ. As shown in Table 1, no significant changes in model fit statistics were observed, providing evidence that the structure of both the 9- and 10-item ERQ is similarly acceptable among older males and females, and importantly, that the 9-item of the ERQ does not offer any significant improvement in model fit compared to the original ERQ among the present older adult sample.

As shown in Table 2, all items loaded highest on their intended ERQ subscale and no items had cross-loadings higher than .30 on the unintended factor. Communalities were all .48 or higher, indicating that at least 48% of variance in individual item scores can be explained by the reappraisal and suppression components.

Internal Consistency

Internal consistency was computed for the 10-item ERQ. Scale internal consistency was assessed across all recruitment methods to ensure no confounds related to online versus face-to-face data collection were present. Evidence of internal consistency was found for both ERQ subscales across both recruitment methods (Cronbach's alpha above .76 for all), which is in line with evidence that online and paper versions of questionnaires return similarly reliable results (Ritter, Lorig, Laurent, & Matthews, 2004).

For the reappraisal subscale, internal consistency was excellent for the full sample ($\alpha = .89$), as well as males ($\alpha = .89$) and females ($\alpha = .88$) separately. All items contributed to internal consistency for all group comparisons, and internal consistency could not be improved by the deletion of any item(s). For the suppression subscale, internal consistency was acceptable for the full sample ($\alpha = .80$), as well as males ($\alpha = .75$) and females ($\alpha = .83$) separately. Internal consistency of the suppression scale could be improved by .02 among older women by deleting item 4.

Demographic Differences

Table 3 displays descriptive statistics and tests of gender differences for the 10-item ERQ and PANAS-10. Older women scored higher than older men on reappraisal as measured by the ERQ, and this appeared to be driven by higher scores on items 3, 7, and 10. Older men scored higher than older women on all suppression items. Older men and women did not differ in their general positive affect. However, older men reported more

excitement than older women in the few weeks before testing. Older men also reported more general negative affect than older women, including higher ratings of being upset, nervous and distressed in the few weeks prior to testing. It is important to note that both older men and women's negative affect scores were below the 'somewhat' middle score, indicating low-to-moderate negative affect.

Convergent Validity

Convergent validity was assessed using the 10-item ERQ. As shown in Table 4, while the levels of association were low, greater reappraisal tendencies were associated with increased positive affect among both genders. Increased reappraisal was also associated with reduced negative affect among older women, but not older men. Increased suppression was associated with increased negative affect among older men, but not older women. Suppression was unrelated to positive affect for both genders.

Discussion

Validating the psychometric properties of commonly used psychological self-report measures for use in an older population is an important, though often overlooked practice. The ERQ is the most widely cited measure of reappraisal and suppression tendencies, however, the internal consistency and validity of this measure among older men and women had not previously been explored. The results of the present study provide support for the intended two-factor structure of the ERQ. For both genders, all ten items of the ERQ loaded highest on their intended factor, and no item had significant cross-loading on the unintended factor. The results provide evidence for the internal consistency of the reappraisal and suppression subscales among older men and women. Convergent validity was supported in part by associations with positive and negative affect, which also revealed some important gender differences in emotional regulation in older age. Overall, the reliability and validity of the ERQ is supported for measuring reappraisal and suppression tendencies in older community-dwelling adults.

The results of the present study provide evidence for the two-factor structure (reappraisal and suppression) of the original 10-item ERQ among older adults. This is in line with prior research involving undergraduate samples (Balzarotti, Gross, & John, 2010; Gross & John, 2003) as well as a female sample in their early 60s (John & Gross, 2004). The results also provide support for the two-factor structure of a 9-item version of the ERQ that has been supported in previous research involving community samples (Spaapen, et al. 2014). As shown in Figure 1a and 1b, for each ERQ model and in each gender group the items loaded substantially on the expected factor with item-loadings for the ERQ-9 and ERQ-10 ranging from .53 to .93, and .55 to .92, respectively. Multiple groups measurement invariance tests revealed that model fit did not vary for either the ERQ-9 or ERQ-10 across genders.

To investigate if any individual item(s) may have been limiting scale strength we examined factor loadings and communalities for each item. Contrary to prior research (Spaapen, et al., 2014), we did not find any evidence of poor performance of Item 3. While model fit statistics do not differ significantly for the ERQ-9 and ERQ-10, we argue that it is important to retain Item 3 in the ERQ as the 10-item version was the originally intended scale and is more widely used.

Evidence was found in the current study for the internal consistency of the reappraisal and suppression scales of the ERQ among both older men and women. This is consistent with studies involving undergraduate samples (Gross & John, 2003; John & Gross, 2004) as well as community lifespan samples (Spaapen et al., 2014).

Convergent validity was explored with the PANAS-10 (Mackinnon et al., 1999). A greater tendency to engage in reappraisal was found to be associated with increased positive affect among both men and women, which is consistent with a recent systematic review of ageing and positive reappraisal which suggests that older adults may find

reappraisal particularly useful for maintaining positive affect (Nowlan, Wuthrich, & Rapee, 2015). Other research also demonstrates a positive correlation between reappraisal and positive affect among neurotypical older adults living in assisted care (Danhauer, Carlson, & Andrykowski, 2005; Schanowitz & Nicassio, 2006).

While previous research has demonstrated that increased reappraisal is related to decreased negative affect in student samples (Gross & John, 2003), this result was only supported among older women in the current study. This suggests that older men who frequently use reappraisal do not experience the same reductions in negative affect as older women. It may be that older men put less effort into reappraisal as supported by previous FMRI research demonstrating reduced activation of the prefrontal regions typically associated with reappraisal in young men compared to young women (McRae et al., 2008). While this finding may limit support for convergent validity of the reappraisal subscale among older men, it also provides evidence of an important age-related gender difference in emotional regulation.

Increased tendency to regulate emotion by suppressing emotional expressivity was associated with increased negative affect among older men. This is consistent with previous research indicating that suppressors feel more negative emotions than non-suppressors (Gross & John, 2003). However, suppression was unrelated to negative affect among women or positive affect among either gender. This latter result is inconsistent with previous research demonstrating that suppression reduces positive affect among undergraduate samples (Gross & John, 2003). Although these findings limit support for convergent validity of the suppression subscale of the ERQ, they also suggest real differences between young and older samples in the relationship between affect and suppression. In particular, the current findings might be explained by research showing that, with age, we have less emotional reactivity to suppress (e.g., Pedder, Terrett, Bailey,

Henry, Ruffman, & Rendell, 2016). This may result in a reduced effect of suppression on the emotions of older adults, with the one exception of increased negative affect among older men, potentially related to their increased experience of negative affect relative to older women. Taken together with the finding that older men also do not benefit from reduced negative affect when using reappraisal, future research is needed to examine age-related gender differences in the relationship between emotion regulation and negative affect.

Interesting gender differences emerged in ERQ and PANAS subscale scores. Older men scored higher in trait suppression compared to older women, which is in line with past research (Balzarotti et al., 2010; Gross & John, 2003; Melka et al., 2011; Spaapen, et al., 2014; Wiltink et al., 2011). In contrast, older women scored higher in trait reappraisal compared to older men which is in line with previous research using community samples (Spaapen, et al., 2014) but contrary to other research that has found no gender differences in reappraisal (Balzarotti et al., 2010; Gross & John, 2003; Melka et al., 2011; Wiltink et al., 2011). Older men and women did not differ in positive affect. However, older men reported greater negative affect compared to older women, which potentially helps to explain the association between increased reappraisal and decreased negative affect in older women but not men.

While this study represents an important initial consideration of the psychometric properties of the highly cited ERQ among older adults, the age range of the present sample cannot be considered as entirely representative of older adulthood because there are no adults over the age of 89 years. Future research should explore the psychometric properties of the ERQ across a range of age groups including very late adulthood. Future research using older clinical samples with emotion regulation deficits would also be useful to better understand the factors that impact the relationships between emotion

regulation tendencies and affect in older age. Establishing reproducibility of the measure (test–re-test reliability) would also be worthwhile.

The ageing population is growing, and an increasing focus is being placed on understanding and supporting emotional wellbeing in this older cohort, including growing interest in ageing and emotion regulation. The ERQ is the most widely cited measure of emotion regulation, and the present study is the first to provide evidence of the internal consistency and factorial validity of this measure for use among community-dwelling older males and females.

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Table 1.

Tests of Measurement Invariance for Older Male and Female Samples for the original ERQ and ERQ-9.

Model	ERQ							ERQ-9						
	df	X^2	X^2/df	*p*	CFI	TLI	RMSEA	*df*	X^2	X^2/df	*p*	CFI	TLI	RMSEA
Unconstrained Configural Solutions														
Males (*n* = 130)	34	61.08	1.80	.003	.951	.935	.079	26	44.81	1.72	.000	.960	.944	.075
Females (*n* = 122)	34	73.49	2.37	.000	.932	.901	.106	25	67.29	2.69	.000	.924	.890	.118
Combined (*N*= 252)	62	130.46	2.10	.000	.942	.916	.066	52	118.85	2.29	.000	.935	.909	.072
Multiple Group Measurement Invariance Tests														
Metric Invariance Model	70	146.87	2.10	.000	.935	.916	.066	59	118.85	2.34	.000	.923	.906	.073
Factor Invariance Model	82	174.35	2.13	.000	.922	.914	.067	62	140.56	2.27	.000	.923	.911	.071
Factor and Error Covariances Model	92	180.72	1.96	.000	.925	.926	.062	71	149.45	2.10	.000	.923	.922	.066

Note. CFI = Comparative Fit Index; TLI = Tucker-Lewis Index; RMSEA = Root-Mean-Square Error of Approximation.

Table 2.
Varimax Rotated Factor Loadings and Communalities for Reappraisal and Suppression Items of the 10-item ERQ.

	Males (n = 130)			Females (n = 122)		
Item	h^2	Reappraisal Factor	Suppression Factor	h^2	Reappraisal Factor	Suppression Factor
Reappraisal Subscale						
ERQ1	.57	**0.75**	-0.05	.55	**0.74**	0.04
ERQ3	.60	**0.77**	-0.07	.55	**0.74**	0.06
ERQ5	.65	**0.80**	-0.08	.55	**0.73**	-0.12
ERQ7	.80	**0.89**	0.01	.74	**0.86**	0.06
ERQ8	.60	**0.77**	0.10	.68	**0.81**	0.15
ERQ10	.74	**0.86**	0.08	.74	**0.85**	0.11
Suppression Subscale						
ERQ2	.50	0.03	**0.71**	.75	0.01	**0.86**
ERQ4	.51	-0.17	**0.69**	.48	-0.09	**0.68**
ERQ6	.77	0.06	**0.87**	.80	0.06	**0.89**
ERQ9	.54	0.07	**0.73**	.70	0.29	**0.78**

Note. Bold indicates item rotated factor loadings on the intended factor.

Table 3.

Descriptive Statistics and Age Group Comparison for the Reappraisal and Suppression Subscales of the 10-item ERQ, and the Positive and Negative Affect Subscales of the PANAS-10.

	Full Sample (N = 252)		Males (n = 130)		Females (n = 122)		Gender Comparison			95% CI	
Item	*M*	*SD*	*M*	*SD*	*M*	*SD*	*t*	df	*p*	Lower	Upper
Reappraisal Factor	5.04	1.15	4.88	1.16	5.22	1.13	-2.36	250	.019*	-0.62	-0.06
ERQ1	4.98	1.57	4.80	1.55	5.17	1.57	-1.89	250	.060	-0.76	0.02
ERQ3	5.06	1.49	4.87	1.52	5.25	1.44	-2.06	250	.040*	-0.75	-0.02
ERQ5	5.21	1.40	5.05	1.46	5.39	1.33	-1.88	250	.061	-0.68	0.02
ERQ7	4.98	1.48	4.79	1.43	5.17	1.51	-2.05	250	.041*	-0.74	-0.02
ERQ8	5.08	1.28	5.01	1.24	5.16	1.32	-0.97	250	.333	-0.47	0.16
ERQ10	4.95	1.42	4.75	1.43	5.16	1.39	-2.36	250	.019*	-0.77	-0.07
Suppression Factor	3.96	1.25	4.25	1.13	3.65	1.30	3.90	250	.000***	0.30	0.90
ERQ2	4.54	1.53	4.86	1.42	4.20	1.57	3.53	250	.000***	0.29	1.04
ERQ4	3.23	1.60	3.52	1.55	2.92	1.61	3.00	250	.003**	0.21	0.99
ERQ6	3.95	1.62	4.25	1.57	3.63	1.62	3.07	250	.002**	0.22	1.01
ERQ9	4.12	1.55	4.36	1.45	3.85	1.61	2.64	250	.009**	0.13	0.89
Positive Affect Factor	15.42	4.08	15.41	4.23	15.42	3.91	-0.02	211	.987	-1.12	1.10
Inspired	2.88	1.11	2.92	1.13	2.82	1.08	0.64	211	.522	-0.20	0.40
Alert	3.42	0.95	3.35	0.99	3.51	0.89	-1.17	211	.245	-0.41	0.11

Excited	2.76	1.08	2.90	1.12	2.60	1.01	2.02	210	.045*	0.01	0.59
Enthusiastic	2.98	1.08	3.00	1.04	2.95	1.12	0.35	211	.728	-0.24	0.34
Determined	3.39	1.13	3.27	1.11	3.55	1.15	-1.80	211	.073	-0.58	0.03
Negative Affect Factor	9.89	4.90	10.64	5.19	9.00	4.38	2.46	211	.015*	0.33	2.95
Afraid	1.86	1.10	1.97	1.13	1.73	1.05	1.55	211	.123	-0.06	0.53
Upset	2.14	1.15	2.31	1.26	1.93	0.96	2.45	211	.015*	0.08	0.69
Nervous	2.08	1.19	2.26	1.24	1.87	1.09	2.44	211	.016*	0.08	0.71
Scared	1.75	1.07	1.86	1.11	1.61	1.02	1.73	211	.086	-0.04	0.54
Distressed	2.07	1.16	2.24	1.23	1.87	1.04	2.38	211	.018*	0.06	0.69

Note. * $p < .05$, ** $p < .01$, *** $p < .001$.

Table 4

Pearson's Product Moment Correlations Between Scores on the Reappraisal and Suppression Scales of the 10-item ERQ and Positive and Negative Affect.

	Reappraisal		Suppression	
Sample	Positive Affect	Negative Affect	Positive Affect	Negative Affect
Full sample	.23**	-.19**	-.09	.22**
Males	.22*	-.08	-.10	.23*
Females	.25*	-.32**	-.10	.11

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

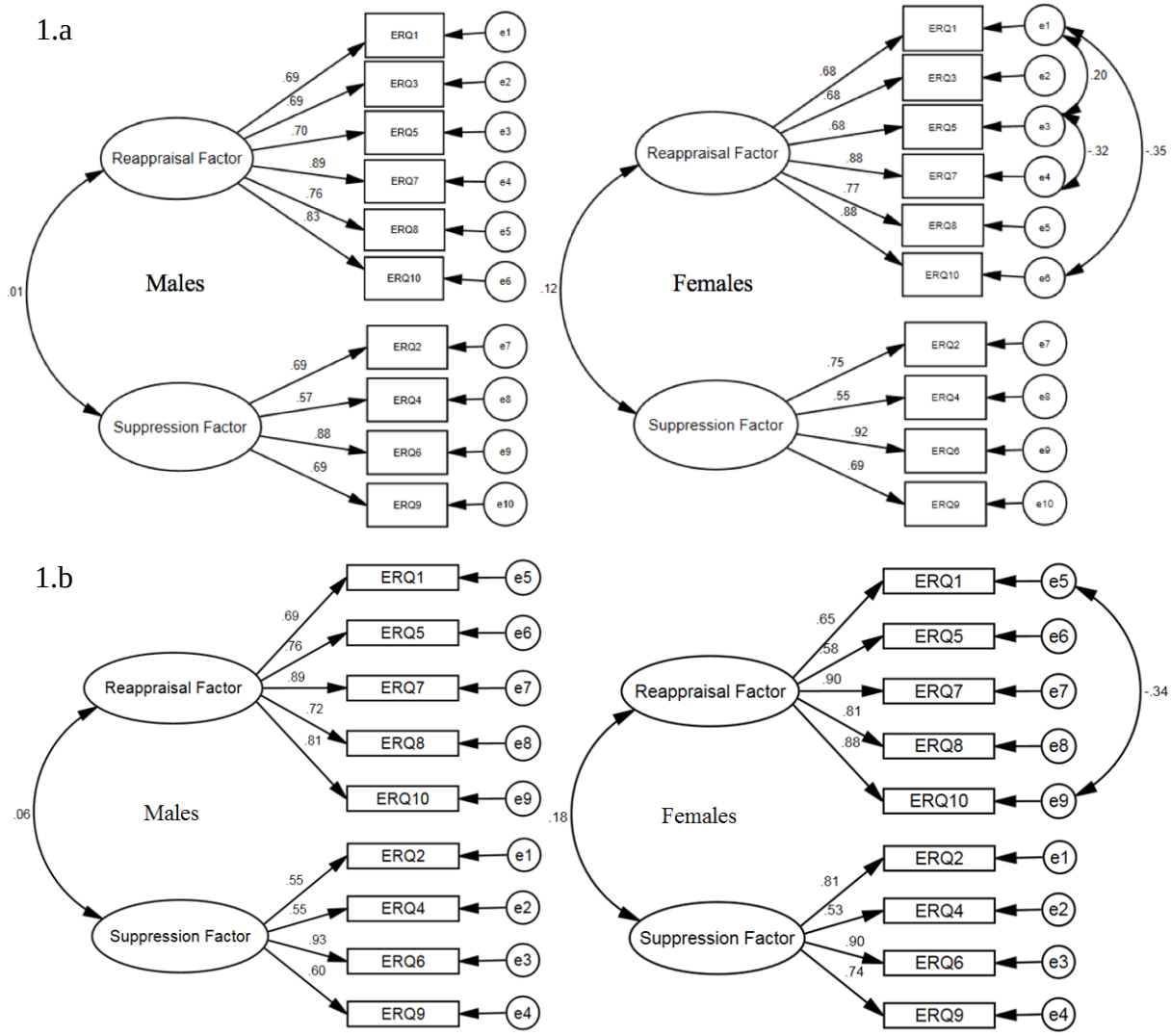

Figure 1a. ERQ-10 unconstrained standardised factor loadings, factor correlations, and error covariances for the male and female samples.

Figure 1b. ERQ-9 unconstrained standardised factor loadings, factor correlations, and error covariances for the male and female samples.