




Cognitive reappraisal and the association between depressive symptoms and perceived social support among older adults

Natalie Sachs-Ericsson, Dawn Carr, Julia Sheffler, Thomas J. Preston, Dimitris Kiosses & Greg Hajcak


To cite this article: Natalie Sachs-Ericsson, Dawn Carr, Julia Sheffler, Thomas J. Preston, Dimitris Kiosses & Greg Hajcak (2019): Cognitive reappraisal and the association between depressive symptoms and perceived social support among older adults, *Aging & Mental Health*, DOI: [10.1080/13607863.2019.1698516](https://doi.org/10.1080/13607863.2019.1698516)

To link to this article: <https://doi.org/10.1080/13607863.2019.1698516>

 [View supplementary material](#) 

 Published online: 26 Dec 2019.

 [Submit your article to this journal](#) 

 Article views: 146

 [View related articles](#) 

 [View Crossmark data](#) 



Cognitive reappraisal and the association between depressive symptoms and perceived social support among older adults

Natalie Sachs-Ericsson^a, Dawn Carr^b, Julia Sheffler^c, Thomas J. Preston^a, Dimitris Kiosses^d and Greg Hajcak^a

^aDepartment of Psychology, Florida State University, Tallahassee, FL, USA; ^bDepartment of Sociology, Florida State University, Tallahassee, FL, USA; ^cCenter for Translational Behavioral Science, Behavioral Sciences and Social Medicine, College of Medicine, Florida State University, Tallahassee, FL, USA; ^dDepartment of Clinical Psychiatry, Weill Cornell Medicine, New York, NY, USA

ABSTRACT

Objectives: There is an association between depression and diminished social support; indeed, interpersonal dysfunction is often a central feature of depression. The purpose of this study is to examine the role that an emotion regulation (ER) strategy, cognitive reappraisal, plays in influencing the association between depressive symptoms and perceived social support in older adults.

Method: Data for this cross-sectional study come from a community-based survey of older adults (60+, $N = 910$). We examined the effects of depressive symptoms and cognitive reappraisal on perceived social support. We then examined the potential moderating role of cognitive reappraisal on the association between depressive symptoms and perceived social support.

Results: Depressive symptoms were associated with lower levels of perceived social support. Cognitive reappraisal was associated with higher levels of perceived social support. Cognitive reappraisal moderated the negative consequences of depressive symptoms on perceived social support. Whereas depressive symptoms had a negative effect on perceived social support, the negative effect was greater for those with lower levels of cognitive reappraisal compared to those with higher levels of cognitive reappraisal.

Discussion: ER strategies may play a role in attenuating the negative consequences of depressive symptoms on social support in older age. It may be possible to help individuals maintain social support in later life, even in the face of mental health challenges, if they cultivate ER skills.

ARTICLE HISTORY

Received 14 June 2019
Accepted 24 November 2019

KEYWORDS

Emotion regulation;
cognitive reappraisal;
depression; perceived
social support

Introduction

Depression is the most common cause of suffering among older adults (Blazer, 2003), impairment in social functioning often characterizes depressive disorder (APA, 2013; Kupferberg, Bicks, & Hasler, 2016). Depression has a lasting negative influence on interpersonal functioning years after the depressive episode has remitted (Rhebergen et al., 2010). Moreover, low levels of social support in older age are associated with an array of poor health and psychological outcomes (Beutel et al., 2018; Holt-Lunstad, Smith, & Layton, 2010; Mazzella et al., 2010).

While there is a clear association between depression and poor social support in older adults (Grav, Hellzèn, Romild, & Stordal, 2012), the mechanisms underlying the association are likely complex and bi-directional (Travis, Lyness, Shields, King, & Cox, 2004). Social factors appear to be involved in both the pathogenesis and the consequences of depression (Kupferberg et al., 2016); however, one important aspect of the association is that individuals with depression exhibit detrimental interpersonal behaviors that diminish the quality of interpersonal relationships (Potthoff, Holahan, & Joiner, 1995).

Coyne's interpersonal theory of depression (1976) proposes that depressed individuals interact with others in a manner that is aversive and lacking in social skills (Coyne, 1976). As a result, significant others in the depressed

person's social network may become frustrated and annoyed (Coyne et al., 1987). Several interpersonal characteristics of individuals with depression have been identified as contributing to poor social functioning. These include reduced motivation for social interaction, impaired social skills, and lack of emotional expressiveness (Ellgring, 2007; Kupferberg et al., 2016; Rehman, Gollan, & Mortimer, 2008; Yang, Fairbairn, & Cohn, 2013). Additionally, depressed individuals are often overly self-focused (Schwartz-Mette & Rose, 2016) and appear disinterested in others (Kupferberg et al., 2016; Overall & Hammond, 2013). These qualities are likely to be experienced by others as unattractive and off-putting (Schwartz-Mette & Rose, 2016).

Whereas the behaviors of depressed individuals may contribute to social rejection, depressed individuals are highly sensitive and overly reactive to perceived social rejection (Ehnavall et al., 2014; Kupferberg et al., 2016). Depressed individuals may experience rejection as more salient and distressing compared to others (Silk et al., 2014), have a bias towards perceptions of rejection (Platt, Kadosh, & Lau, 2013), and react with excessive negative affect when experiencing perceived rejection (Hsu et al., 2015). Even during remission, individuals with a history of depression appear to be more emotionally reactive than others to interpersonal criticism (Hooley, Gruber, Scott, Hiller, & Yurgelun-Todd, 2005).

Control over emotional responses (i.e. emotion regulation or ER) has been defined as ‘the extrinsic and intrinsic processes responsible for monitoring, evaluating, and modifying emotional reactions, especially their intensity and temporal features’ (Thompson, 1994). ER deficits may be an important factor in determining the extent to which an individual’s depressive symptoms have negative consequences on social functioning (Tse & Bond, 2004). Indeed, ER strategies have been found to play an important role in depression (Joormann & Gotlib, 2010; Joormann & Stanton, 2016). Teasdale (1988) has suggested that individuals vulnerable to depression do not differ in their initial emotional response to a stressful event, but rather in their ability to recover from initial distress. Maladaptive ER skills have been found to contribute to difficulties recovering from negative mood following a stressful event (Garnefski, Kraaij, & Spinhoven, 2001; Joormann, Yoon, & Siemer, 2009; Joormann & Stanton, 2016). Thus, the interpersonal deficits of depressed individuals that increase risk for social rejection could result, in part, from failure to regulate emotions (Masten et al., 2009; Riva, 2016; Tse & Bond, 2004).

Several coping strategies have been identified as contributing to ER, and definitions of ER are diverse (Aldao, Sheppes, & Gross, 2015; Gross, 2015). Much of the empirical work on adaptive ER strategies has focused on *cognitive reappraisal* (Berking, Wirtz, Svaldi, & Hofmann, 2014; Liang, Huo, Kennison, & Zhou, 2017; Troy, Shallcross, Brunner, Friedman, & Jones, 2018). Cognitive reappraisal involves the reinterpretation of the emotion-eliciting situation: changing the way one thinks about a potentially distressing situation in order to change its emotional impact (Buhle et al., 2014).

Individuals with depression have been found to less frequently use cognitive reappraisal (Ehring, Tuschen-Caffier, Schnülle, Fischer, & Gross, 2010; Joormann & Stanton, 2016; Liverant, Brown, Barlow, & Roemer, 2008; Picó-Pérez, Radua, Steward, Menchón, & Soriano-Mas, 2017). Indeed, researchers have found that consistent use of cognitive reappraisal is associated with increased positive affect, decreased negative affect, as well as better interpersonal functioning (Cutuli, 2014; Gross & John, 2003; Mauss, Cook, Cheng, & Gross, 2007). Thus, cognitive reappraisal may be a key ER strategy that might reduce the association between depression and poor interpersonal functioning.

In the current study of older adults, we explored the association among depressive symptoms, the ER strategy of cognitive reappraisal, and perceived social support from friends. We examined whether ER buffered the negative consequences of depressive symptoms on perceived social support. In this cross-sectional analysis of older adults, we test the following hypotheses: Depressive symptoms will be associated with lower perceived social support, ER will be positively associated with perceived social support, and ER will attenuate the association between depressive symptoms and perceived social support (i.e. ER will moderate the negative consequences of depressive symptoms on perceived social support).

Methods

Data are drawn from a community-based sample of adults (60+). Under the initiative of the Institute for Successful

Longevity, older individuals in North Florida were initially contacted (through mailings, advertisements, and social media) and agreed to join a registry that would be used for aging related research. Registry for the Institute was voluntary, and individuals were under no obligation to participate in any study. Potential participants for the current study were invited via email to participate in our survey, which was administered using Qualtrics. A total of 1,084 (42.9% response rate) participants completed at least one survey question; however, our total analytic sample included only the individuals age 60+ who had complete data on all measures used in the current analysis ($N = 910$).

Measures

Outcome

Our measure of perceived social support (also described as perceived relationship quality), was drawn from the Health and Retirement Study (HRS) psychosocial and lifestyle leave behind questionnaire (LBQ; (Smith, Ryan, Fisher, Sonnega, & Weir, 2017). **Perceived social support** is measured based on three questions in relation to how respondents feel about *friends* they are close with, specifically: a) How much do they really understand the way you feel about things; b) How much can you rely on them if you have a serious problem; and c) How much can you open up to them if you need to talk about your worries. The response scale was as follows: (1 = A lot, 2 = Some, 3 = A little, 4 = Not at all). For the current analyses, the data were reverse coded (i.e. 1 = Not at all, to 4 = A lot), with 0 assigned to those who indicated that they did not have any close friends ($N = 46$). This measure is calculated as the average response across all items in the measure ($\alpha = 0.885$).

Primary independent measures

Emotion regulation is measured based on a six item cognitive reappraisal scale (Gross & John, 2003). Respondents answered each item on a 7-point Likert-type scale ranging from 1 (strongly disagree) to 7 (strongly agree). Items assessed the participants’ self-report of their ability to regulate their emotions (e.g. When I want to feel less negative emotion (such as sadness or anger), I change what I’m thinking about ($\alpha = 0.855$). A full description of each item is provided in [Supplementary materials](#).

To assess **depressive symptoms**, we administered the 9-item version of the Patient Health Questionnaire on Depression (PHQ-9) (Spitzer et al., 2000). Respondents used a 4-point scale for their responses, from 1 (not at all) to 4 (nearly every day), to indicate how often in the past 2-weeks they experienced symptoms, such as having ‘little interest or pleasure in doing things.’ ($\alpha = 0.833$). A full description of each item is provided in [Supplementary materials](#). Note, the one-item related to suicide was removed. This was due to the requirements of the University’s IRB, which we could not meet, which necessitates the assessment and treatment of participants reporting suicidal ideation/behavior.

Control measures

Social engagement variables. We controlled for social engagement variables that have an important influence on

depression and the cultivation of perceived social support in later life (see Min, Ailshire, & Crimmins, 2016).

Volunteer is coded as a dichotomously indicator for volunteer engagement occurring at least once in the last 12 months. **Worker** is coded as a dichotomous indicator of whether respondents reported participating in the labor force any amount during the previous month. **Regular church attendance** is a dichotomous indicator of church attendance in the last month. **Number of household members** is a categorical measure based on the question: 'How many people live in your household?' Individuals who live alone were coded '1,' individuals who live with one other person were coded '2,' and those who live with at least two other people were coded '3.'

Self-Rated Health: Among older adults, health is associated with depression and social functioning (Courtin & Knapp, 2017; Jones, Ledermann, & Fauth, 2018). We controlled for health using a self-report item, based on the question 'Would you say your health is excellent, very good, good, fair, or poor?'

Indices of **Socioeconomic status** are associated with depression as well as cultivation and access to social networks (Campbell, Marsden, & Hurlbert, 1986; Uphoff, Pickett, Cabieses, Small, & Wright, 2013). As a result, we controlled for household income and education. **Household income** is coded as a continuous measure, and is based on the following question: 'Which of the following best captures your average annual household income?' Responses were coded 1 = <\$10K; 2 = \$10K–20K; 3 = 20K–30K; 4 = 30K–50K; 5 = 50K–75K, 6 = 75K–100K; 7 = 100K+. We also assessed **educational attainment**. Given how highly educated our sample was, we measured educational attainment based on a dichotomous indicator of whether individuals completed a college degree. Specifically, those who reported having earned a four-year college degree were coded '1' and those without a college degree were coded '0.'

We also controlled for **demographic factors** known to be associated with psychosocial and health outcomes in older adults (e.g. age, minority status, ethnicity, and gender) (Blazer, Hybels, & Pieper, 2001; Cummings, Neff, & Husaini, 2003). **Age** is a continuous measure ranging from 60–92. We included two measures for race and ethnicity. Individuals who identified as any race other than white were determined to be a '**minority**' and they were coded '1' with individuals who identified as White coded '0.' We also include an indicator for whether individuals identified as **Hispanic**, and those who indicated being Hispanic were coded '1' and non-Hispanics coded '0.' Finally, we include a control measure for those who identified as **female** (1 = yes, 0 = male/other gender).

Analytic approach

To address our research hypotheses, we used OLS regression. We examined the association between depressive symptoms and perceived social support (Model 1), and the association between ER and social support (Model 2). We then examined the main effects of both depressive symptoms and ER on perceived social support in the same model (Model 3). Finally, we examined the interactive effect of ER and depressive symptoms on perceived social

support (Model 4). Moderation analyses: To more fully examine significant interactions, we followed the guidelines provided by Preacher, Curran, and Bauer (2006).

Results

Characteristics of study sample

The characteristics of our sample ($N = 910$) are shown in Table 1. Our sample reported a mean perceived social support score with friends to be 3.058 ($SD = 1.009$), range is 0–4, with 4 representing very high quality. The mean for ER strategy (e.g. cognitive reappraisal) was 5.229 (0.964) from a 1–7 Likert-type scale where 7 represents high ER skills. The mean for depressive symptoms was 11.084 (3.503), range 6 to 30, with higher scores corresponding to higher levels of symptoms.

Individuals in this sample participated in a variety of activities that influence social engagement. Nearly two-thirds reported volunteering at least once in the previous year, and 28.6% participated in the labor force either full- or part-time. Approximately 40% reported attending church at least once a month. Slightly more than a third of the sample lived alone (34%), but the majority (56%) lived with one other person, and about 10% live in a household with three or more individuals.

Respondents perceived themselves to be in good health. More than half reported their health to be very good or excellent, and another 31.3% indicated that their health is 'good.' Regarding socioeconomic status, this sample had a relatively high average household income. The average person had an average annual income in the range of \$50,000–\$75,000. This sample was also highly educated with 70.5% having completed (at least) a four-year college degree. The average age of the sample was 69.463 ($SD = 6.122$). The majority was White, with only 9.6% non-white, and only 2.3% Hispanic. The sample was also predominantly (68.1%) female.

OLS regression

Prior to inclusion of ER and depressive symptoms, OLS regression results (not shown, but available upon request) indicated that being a volunteer, having better health, and being female was associated with higher levels of perceived social support (all $ps < .05$). All other factors enhanced model fit, but did not have a direct, significant association with perceived social support.

Table 2 shows the OLS regression models used to test our research hypotheses. To address our first two hypotheses, we separately examined the main effects of depressive symptoms (Model 1) and the ER skill cognitive reappraisal (Model 2) on perceived social support. Depressive symptoms were associated with lower levels of social support ($\beta = -0.070$, $p < 0.001$); higher levels of the ER skill cognitive reappraisal were associated with higher levels of perceived social support ($\beta = 0.131$, $p < 0.001$).

We then examined the main effects of the ER skill cognitive reappraisal and depressive symptoms on perceived social support in the same model (Model 3). Results showed that the size of the effect of depressive symptoms increased and the size of the effect of ER slightly

Table 1. Descriptive characteristics of study sample ($N = 910$).

Continuous variables	Mean	SD	Min	Max
Perceived social support	$\bar{x} = 3.058$	1.009	0	4
Emotion regulation (cognitive reappraisal)	$\bar{x} = 5.229$	0.964	1.5	7
Depressive symptoms	$\bar{x} = 11.084$	3.503	6	30
Age	$\bar{x} = 69.463$	6.122	60	92
Household income	$\bar{x} = 5.069$	1.596	1	7
	(\$50K–\$75K)		<10K	100 + K
Categorical variables	Percentage (%)			
Female %	68.1%			
Completed college	70.5%			
Minority (non-White)	09.6%			
Hispanic	02.3%			
Social engagement factors				
Volunteer	64%			
Employed	28.6%			
Regularly attends church	40.9%			
Number in household				
1	34.4%			
2	55.7%			
3+	09.9%			
Self-rated health				
Poor	01.1%			
Fair	08.8%			
Good	31.3%			
Very good	43.4%			
Excellent	15.4%			

Note: For continuous variables the mean, standard deviation, and range is reported; for dichotomous and/or categorical variables the proportions with the characteristic is reported.

Table 2. OLS regression models examining associations of depressive symptoms and emotion regulation on perceived social support.

	Model 1		Model 2		Model 3		Model 4	
	Β	St. Error	Β	St. Error	β	St. Error	Β	St. Error
Depressive symptoms	−0.070***	−0.01			−0.231***	0.036	−0.155***	−0.046
Emotion regulation			0.131***	−0.035	0.104**	0.034	0.101**	−0.034
Emotion regulation X depressive symptoms							0.018*	0.009
Constant	4.771***	−0.557	2.566***	−0.542	3.458	0.547	5.309***	−0.815
R-squared	0.109		0.079		0.1118		0.121	
−2 Log Likelihood	−1242.211		−1258.41		−1237.494		−1235.512	
AIC	2518.421		2550.819		2510.987		2509.025	

*** $p < 0.001$.

** $p < 0.01$.

* $p < 0.05$.

Note: All models control for social engagement and health/demographic measures shown in Table 1. Detailed results available upon request.

decreased, but both main effects remained statistically significant. We then examined the potential moderating effect of the ER skill, cognitive reappraisal, on the association between depressive symptoms and perceived social support. The interaction between ER and depressive symptoms was statistically significant ($\beta = 0.018$, $p < 0.05$, Model 4).

To clarify the direction and nature of the significant interaction reported in Model 4, we followed the statistical procedures described by Preacher et al. (2006) for calculating marginal effects for continuous variables. Specifically, we identified participants who were *one standard deviation below the mean* of the ER skill cognitive reappraisal (i.e. Low ER) and participants who were *one standard deviation above the mean* of the ER skill cognitive reappraisal (i.e. High ER). After deriving these values, we plotted the slopes of the equations for High and Low ER. Figure 1 illustrates these results. Analyses revealed that at higher levels of depressive symptoms, perceived social support was significantly lower for both groups, High ER ($p < 0.05$) and Low ER ($p < 0.01$). However, the two slopes were statistically different such that levels of perceived social support were even lower for the Low ER Group compared to the High ER Group ($p < 0.01$). Differences emerged at 15, 20, and 25 depressive symptoms (*all* $p < 0.01$). That is, the negative consequences of depressive symptoms on perceived social

support appeared to be greater for those with lower levels

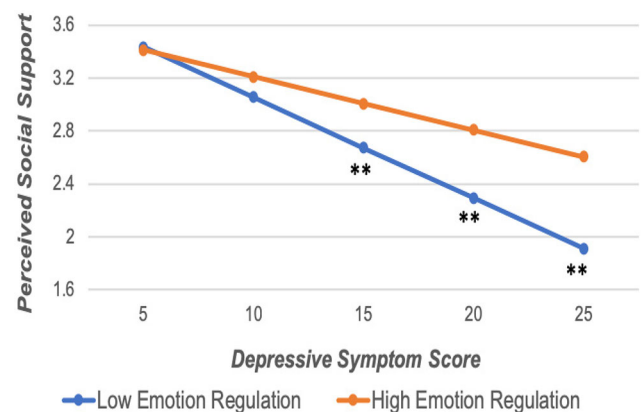


Figure 1. The moderating effect of emotion regulation (cognitive reappraisal) on the association between depressive symptoms and perceived social support. ** $p < 0.01$. Note: This Figure illustrates the moderation analyses (see Preacher et al., 2006) for the significant interaction. We identified Low ER participants (*1 SD below the mean of cognitive reappraisal*), and High ER participants (*1 SD above the mean of cognitive reappraisal*) and plotted the slopes depicted in the Figure. Analyses revealed that at higher levels of depressive symptoms, perceived social support was significantly lower for both groups, High ER ($p < 0.05$) and Low ER ($p < 0.01$). However, the two slopes were statistically different such that levels of perceived social support were even lower for Low ER Group compared to High ER Group ($p < 0.01$). Differences emerged at 15, 20, and 25 depressive symptoms (*all* $p < 0.01$).

of ER compared to those with higher levels of ER. Thus, among those with depressive symptoms, the ER skill cognitive reappraisal may provide an internal resource to help maintain meaningful relationships.

Discussion

We conducted a cross-sectional study of older adults to examine the association among depressive symptoms, the emotion regulation (ER) strategy cognitive reappraisal, and perceived social support from friends. As hypothesized, we found depressive symptoms to be associated with *lower levels* of perceived social support and ER to be associated with *higher levels* of perceived social support. We also found that ER moderated the association between depressive symptoms and perceived social support. That is, the ER skill cognitive reappraisal buffered the negative consequences of depressive symptoms on perceived social support. Whereas depressive symptoms were associated with lower perceived social support, the negative consequences of depressive symptoms appeared to be greater among participants who had low levels of cognitive reappraisal. Thus, participants who had high levels of cognitive reappraisal appeared to be less affected by depressive symptoms than those with low levels of cognitive reappraisal. For depression vulnerable older adults, ER skills may play a role in maintaining perceived social support.

Consistent with our study's findings, others have found an association between depressive symptoms and perceived social support (for a review see Kupferberg et al., 2016). Depressive symptoms negatively impact the lives of many older adults (Beekman, Copeland, & Prince, 1999; Steffens, Fisher, Langa, Potter, & Plassman, 2009); which may be due, in part, to the adverse influence of depressive symptoms on social functioning (APA, 2013; Kupferberg et al., 2016; Rhebergen et al., 2010). Nonetheless, because of the cross-sectional nature of the study's data, we cannot conclude that the depressive symptoms have direct consequences on perceived social support. Indeed, social factors appear to be involved in both the pathogenesis and the consequences of depression (Kupferberg et al., 2016).

Our study's findings of the negative influence of depressive symptoms on perceived social support have implications for older adult's quality of life. Individuals who lack social connections, especially those who are socially isolated or lonely, experience significant negative consequences to their health (Cacioppo, Hawkley, & Thisted, 2010; Julianne Holt-Lunstad, Smith, Baker, Harris, & Stephenson, 2015; Uchino, 2009). A growing body of evidence has shown that perceived social support is a critical ingredient for thriving in later life (Victor, Scambler, Bond, & Bowling, 2000). Higher levels of perceived social support are associated with increased longevity as well as a variety of factors that impact quality of life (Bélanger et al., 2016; Uchino, 2009). Thus, among older adults who tend to have smaller, more selective social networks (Carstensen, Fung, & Charles, 2003) maintaining good relations are critical to preserving overall well-being. Our findings are consistent with the growing literature pointing to the importance of addressing depression among older adults, while also enhancing social functioning. To meet both goals, we must

better understand the mechanisms underlying these associations.

Researchers have found that older adults with depression, compared to those without depression, have challenges maintaining social relationships (Badger & Collins-Joyce, 2000; Gurung, Taylor, & Seeman, 2003). While we found that depressive symptoms appeared to have a negative influence on perceived social support, we found that the ER skill cognitive reappraisal may buffer the negative impact. Whereas others have found an association between ER deficits and depression (Ehring et al., 2010; Liverant et al., 2008; Visted, Vøllestad, Nielsen, & Schanche, 2018), our results suggest that depression and ER may act together to influence social functioning. Researchers have speculated that ER deficits may play a role in the problematic behaviors exhibited by individuals who are depressed (e.g. hostility, negative affect) (Coyne, 1976; Coyne et al., 1987; Hsu et al., 2015; Kupferberg et al., 2016; Rehman et al., 2008). Results of this study suggest that we should consider increasing ER skills in older adults to lessen the negative impact of depressive symptoms on perceived social support. It may be most beneficial to target ER skills used to manage interpersonal difficulties. Moreover, results of the current study suggest that cognitive reappraisal may be an important ER skill in maintaining positive social relationships among older adults with depressive symptoms. Investigating the extent to which increasing cognitive reappraisal in older adults decreases problematic interpersonal behaviors, would extend understanding of the mechanisms through which depression confers risk to perceived social support in older adults.

In general, older adults tend to report higher levels of well-being in older age (Charles, Reynolds, & Gatz, 2001; Scheibe & Carstensen, 2010); this may be due to an overall *increase* in some ER skills with aging (Charles, Piazza, Luong, & Almeida, 2009; Orgeta, 2009; Urry & Gross, 2010). Nonetheless, older adults may have more difficulty than younger adults returning to homeostasis when experiencing intensive emotional arousal (Charles, 2010) and in reducing their negative reactions to stressors (Charles & Luong, 2013). This may be due, in part, to age related decreases in cognitive resources (e.g. Verhaeghen & Salthouse, 1997) that contribute to difficulties implementing some cognitively demanding reappraisal strategies (Liang et al., 2017; Opitz, Rauch, Terry, & Urry, 2012; Shiota, 2006; Shiota & Levenson, 2009; Urry & Gross, 2010). Thus, some forms of cognitive reappraisal may be less effective for older adults than for younger adults (Urry & Gross, 2010). Investigating the specific cognitive reappraisal strategies that increase social functioning may be particularly beneficial to depressed older adults.

Older adults with depression and those exposed to early traumas may have increased difficulty regulating emotions when experiencing stressors (Joormann & Quinn, 2014; Kraaij, Pruyboom, & Garnefski, 2002; Sachs-Ericsson, Joiner, Cogle, Stanley, & Sheffler, 2016; Sachs-Ericsson, Rushing, Stanley, & Sheffler, 2016; Uchino, 2009). Further, aging is associated with increased risk for many stressful circumstances that threaten well-being (e.g. chronic disease, loss of loved ones, and potential for decline in cognitive functioning) (Sachs-Ericsson, Joiner, et al., 2016). Such stressors are associated with increases in depressive

symptoms (Hammen, 2005) that may in-turn negatively influence social functioning. Interventions that increase ER skills may help diminishing such detrimental effects of stress (Moore, Zoellner, & Mollenholt, 2008; Troy, Wilhelm, Shallcross, & Mauss, 2010) while improving the individuals' interpersonal functioning (Diamond & Aspinwall, 2003; Gross, 2002; Tugade & Fredrickson, 2007).

Treatment implications

Current treatments for depression in older adults often focus on symptom reduction and do not typically focus on the enhancement of social functioning (Cohen, Greenberg, & IsHak, 2013; Greenberg, 2015). Interventions that directly or indirectly focus on improving ER skills show promise for treatment of depression in older adults (Alexopoulos et al., 2011; Berking et al., 2014; Greenberg, 2015; Joormann & Stanton, 2016; Kiosses et al., 2015). For example, Problem Adaptation Therapy integrates a problem-solving approach with compensatory strategies to improve older adults' ER strategies (Kiosses, Arean, Teri, & Alexopoulos, 2010; Kiosses et al., 2015; 2017). Other efficacious therapies for depression also focus on the development of cognitive reappraisal skills (e.g. cognitive behavioral therapy (Beck, 2005) and dialectical behavioral therapy (Lynch, Trost, Salsman, & Linehan, 2007). However, the efficacy of these therapies in improving ER skills to enhance interpersonal functioning has not yet been established. Future research in this area would be quite useful as perceived social support is critical to the health of older adults.

Limitations

We note several limitations of the current study. Although our study's findings are consistent with the notion that strengthening ER skills may be beneficial to the social functioning of depressed older adults, the current study relied on correlational data, which precludes making causal claims concerning these constructs. Thus, the correlational nature of the current data set limits our ability to interpret the results. Indeed, research examining associations among these factors (e.g. depression, ER, and social support) have found that casual pathways are likely bi-directional (Kupferberg et al., 2016; Marroquín, 2011; Travis et al., 2004). Future research should also consider that associations may vary across gender (Duarte, Matos, & Marques, 2015; Nadia Garnefski, Teerds, Kraaij, Legerstee, & van den Kommer, 2004), cultures (Potthoff et al., 2016), and age (Urry, 2016). We should note that whereas we attempted to control for some of these variables, it is also the case that covariates may influence pathways, in an unknown manner, affecting the precision of results or even biasing results (Schisterman, Cole, & Platt, 2009).

Moreover, definitions and measurement of ER are quite varied (Aldao et al., 2015; Gross, 2015). There are several different types of ER strategies and our study focused on only one ER strategy, cognitive reappraisal. Though cognitive reappraisal is the adaptive ER strategy most often empirically examined (Ahn et al., 2015), other ER strategies may have different consequences to social support (Gross, 2015; Troy et al., 2018), may act independently (Moore et al., 2008), and depend on context (Diedrich, Hofmann,

Cuijpers, & Berking, 2016; Doré, Silvers, & Ochsner, 2016; Troy, Shallcross, & Mauss, 2016). There may be situations for which an ER strategy other than cognitive reappraisal is more effective (McRae, 2016) and there is an age-related shift towards the use of selectivity and disengagement strategies to regulate negative emotions (Scheibe, Sheppes, & Staudinger, 2015; Sims, Hogan, & Carstensen, 2015). That is, to lessen negative affect older adults, compared to younger adults, demonstrate an information processing bias toward positive versus negative information (Reed, Chan, & Mikels, 2014), attend less to negative stimuli (van Reekum et al., 2007), and avoid interpersonal conflict (Charles et al., 2009). Cognitive resources change with increasing age, which in turn may affect the successful use of some cognitive reappraisal strategies. In this regard, Liang and colleagues (Liang et al., 2017) suggest that future studies of older adults examine what aspects of cognitive control are relevant to cognitive reappraisal processes.

Conclusions and future directions

Depression is often associated with interpersonal dysfunction and diminished perceived social support, which may be especially detrimental to health and well-being of older adults. ER skills may be an important factor in determining the extent to which an individual's depressive symptoms have negative consequences on social functioning. In our cross-sectional sample of community dwelling older adults, the association between depressive symptoms and lower perceived social support was influenced by the ER strategy cognitive reappraisal. We found that the negative influence of depressive symptoms on perceived social support appeared to be greater for those with lower levels of cognitive reappraisal compared to those who had higher levels of cognitive appraisal. Enhancement of ER skills may be beneficial for helping older adults, particularly those vulnerable to depression, cultivate and maintain meaningful relationships.

Disclosure statement

No potential conflict of interest was reported by the authors.

Funding

This work was supported by the Institute for Successful Aging (Florida State University) Grant number OMNI 089009-550-000473.

References

- Ahn, H. M., Kim, S. A., Hwang, I. J., Jeong, J. W., Kim, H. T., Hamann, S., & Kim, S. H. (2015). The effect of cognitive reappraisal on long-term emotional experience and emotional memory. *Journal of Neuropsychology*, 9(1), 64–76. doi:10.1111/jnp.12035
- Aldao, A., Sheppes, G., & Gross, J. (2015). Emotion regulation flexibility. *Cognitive Therapy and Research*, 39(3), 263–278. doi:10.1007/s10608-014-9662-4
- Alexopoulos, G. S., Raue, P. J., Kiosses, D. N., Mackin, R. S., Kanellopoulos, D., McCulloch, C., & Areán, P. A. (2011). Problem-solving therapy and supportive therapy in older adults with major depression and executive dysfunction: Effect on disability adults with

- major depression and executive dysfunction. *Archives of General Psychiatry*, 68(1), 33–41. doi:10.1001/archgenpsychiatry.2010.177
- APA. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). Arlington, VA: American Psychiatric Association.
- Badger, T. A., & Collins-Joyce, P. (2000). Depression, psychosocial resources, and functional ability in older adults. *Clinical Nursing Research*, 9(3), 238–255. doi:10.1177/10547730022158564
- Beck, A. T. (2005). The current state of cognitive therapy: A 40-year retrospective. *Archives of General Psychiatry*, 62(9), 953–959. doi:10.1001/archpsyc.62.9.953
- Beekman, A. T. F., Copeland, J., & Prince, M. J. (1999). Review of community prevalence of depression in later life. *British Journal of Psychiatry*, 174(4), 307–311. doi:10.1192/bjp.174.4.307
- Bélanger, E., Ahmed, T., Vafaei, A., Curcio, C. L., Phillips, S. P., & Zunzunegui, M. V. (2016). Sources of social support associated with health and quality of life: A cross-sectional study among Canadian and Latin American older adults. *BMJ Open*, 6(6), e011503. doi:10.1136/bmjopen-2016-011503
- Berking, M., Wirtz, C. M., Svaldi, J., & Hofmann, S. G. (2014). Emotion regulation predicts symptoms of depression over five years. *Behaviour Research and Therapy*, 57, 13–20. doi:10.1016/j.brat.2014.03.003
- Beutel, M. E., Brähler, E., Wiltink, J., Kerahrodi, J. G., Burghardt, J., Michal, M., ... Tibubos, A. N. (2018). New onset of depression in aging women and men: Contributions of social, psychological, behavioral, and somatic predictors in the community. *Psychological Medicine*, 49(7), 1–8. doi:10.1017/S0033291718001848
- Blazer, D. G. (2003). Depression in late life: Review and commentary. *The Journals of Gerontology Series A: Biological Sciences and Medical Sciences*, 58(3), M249–M265. doi:10.1093/gerona/58.3.M249
- Blazer, D. G., Hybels, C. F., & Pieper, C. F. (2001). The association of depression and mortality in elderly persons: A case for multiple, independent pathways. *The Journals of Gerontology Series A: Biological Sciences and Medical Sciences*, 56(8), M505–M509. doi:10.1093/gerona/56.8.M505
- Buhle, J. T., Silvers, J. A., Wager, T. D., Lopez, R., Onyemkwo, C., Kober, H., ... Ochsner, K. N. (2014). Cognitive reappraisal of emotion: A meta-analysis of human neuroimaging studies. *Cerebral Cortex*, 24(11), 2981–2990. doi:10.1093/cercor/bht154
- Cacioppo, J. T., Hawkey, L. C., & Thisted, R. A. (2010). Perceived social isolation makes me sad: 5-year cross-lagged analyses of loneliness and depressive symptomatology in the Chicago health, aging, and social relations study. *Psychology and Aging*, 25(2), 453–463. doi:10.1037/a0017216
- Campbell, K. E., Marsden, P. V., & Hurlbert, J. S. (1986). Social resources and socioeconomic status. *Social Networks*, 8(1), 97–117. doi:10.1016/S0378-8733(86)80017-X
- Carstensen, L. L., Fung, H. H., & Charles, S. T. (2003). Socioemotional selectivity theory and the regulation of emotion in the second half of life. *Motivation and Emotion*, 27(2), 103–123.
- Charles, S., Reynolds, C., & Gatz, M. (2001). Age-related differences and changes in positive and negative affect over 23 years. *Journal of Personality and Social Psychology*, 80(1), 136–151. doi:10.1037//0022-3514.80.1.136
- Charles, S. T. (2010). Strength and vulnerability integration (SAVI): A model of emotional well-being across adulthood. *Psychological Bulletin*, 136(6), 1068–1091. doi:10.1037/a0021232
- Charles, S. T., & Luong, G. (2013). Emotional experience across adulthood: The theoretical model of strength and vulnerability integration. *Current Directions in Psychological Science*, 22(6), 443–448. doi:10.1177/0963721413497013
- Charles, S. T., Piazza, J. R., Luong, G., & Almeida, D. M. (2009). Now you see it, now you don't: Age differences in affective reactivity to social tensions. *Psychology and Aging*, 24(3), 645–653. doi:10.1037/a0016673
- Cohen, R. M., Greenberg, J. M., & IsHak, W. W. (2013). Incorporating multidimensional patient-reported outcomes of symptom severity, functioning, and quality of life in the individual burden of illness index for depression to measure treatment impact and recovery in MDD patient-reported outcomes in the IBI-D. *JAMA Psychiatry*, 70(3), 343–350. doi:10.1001/jamapsychiatry.2013.286
- Courtin, E., & Knapp, M. (2017). Social isolation, loneliness and health in old age: A scoping review. *Health & Social Care in the Community*, 25(3), 799–812. doi:10.1111/hsc.12311
- Coyne, J. C. (1976). Toward an interactional description of depression. *Psychiatry*, 39(1), 28–40. doi:10.1080/00332747.1976.11023874
- Coyne, J. C., Kessler, R. C., Tal, M., Turnbull, J., Wortman, C. B., & Greden, J. F. (1987). Living with a depressed person. *Journal of Consulting and Clinical Psychology*, 55(3), 347–352. doi:10.1037/0022-006X.55.3.347
- Cummings, S. M., Neff, J. A., & Husaini, B. A. (2003). Functional impairment as a predictor of depressive symptomatology: The role of race, religiosity, and social support. *Health & Social Work*, 28(1), 23–32. doi:10.1093/hsw/28.1.23
- Cutuli, D. (2014). Cognitive reappraisal and expressive suppression strategies role in the emotion regulation: An overview on their modulatory effects and neural correlates. *Frontiers in Systems Neuroscience*, 8, 175. doi:10.3389/fnsys.2014.00175
- Diamond, L. M., & Aspinwall, L. G. (2003). Emotion regulation across the life span: An integrative perspective emphasizing self-regulation, positive affect, and dyadic processes. *Motivation and Emotion*, 27(2), 125–156. doi:10.1023/a:1024521920068
- Diedrich, A., Hofmann, S. G., Cuijpers, P., & Berking, M. (2016). Self-compassion enhances the efficacy of explicit cognitive reappraisal as an emotion regulation strategy in individuals with major depressive disorder. *Behaviour Research and Therapy*, 82, 1–10. doi:10.1016/j.brat.2016.04.003
- Doré, B. P., Silvers, J. A., & Ochsner, K. N. (2016). Toward a personalized science of emotion regulation. *Social and Personality Psychology Compass*, 10(4), 171–187. doi:10.1111/spc3.12240
- Duarte, A. C., Matos, A. P., & Marques, C. (2015). Cognitive emotion regulation strategies and depressive symptoms: Gender's moderating effect. *Procedia - Social and Behavioral Sciences*, 165, 275–283. doi:10.1016/j.sbspro.2014.12.632
- Ehnvall, A., Mitchell, P. B., Hadzi-Pavlovic, D., Parker, G., Frankland, A., Loo, C., ... Perich, T. (2014). Rejection sensitivity and pain in bipolar versus unipolar depression. *Bipolar Disorders*, 16(2), 190–198. doi:10.1111/bdi.12147
- Ehring, T., Tuschen-Caffier, B., Schnülle, J., Fischer, S., & Gross, J. J. (2010). Emotion regulation and vulnerability to depression: Spontaneous versus instructed use of emotion suppression and reappraisal. *Emotion*, 10(4), 563–572. doi:10.1037/a0019010
- Ellgring, H. (2007). *Non-verbal communication in depression*. Cambridge, England: Cambridge University Press.
- Garnefski, N., Kraaij, V., & Spinhoven, P. (2001). Negative life events, cognitive emotion regulation and emotional problems. *Personality and Individual Differences*, 30(8), 1311–1327. doi:10.1016/S0191-8869(00)00113-6
- Garnefski, N., Teerds, J., Kraaij, V., Legerstee, J., & van den Kommer, T. (2004). Cognitive emotion regulation strategies and depressive symptoms: Differences between males and females. *Personality and Individual Differences*, 36(2), 267–276. doi:10.1016/S0191-8869(03)00083-7
- Grav, S., Hellzèn, O., Romild, U., & Stordal, E. (2012). Association between social support and depression in the general population: The HUNT study, a cross-sectional survey. *Journal of Clinical Nursing*, 21(1–2), 111–120. doi:10.1111/j.1365-2702.2011.03868.x
- Greenberg, L. S. (2015). *Emotion-focused therapy: Coaching clients to work through their feelings*, 2nd ed. Washington, DC, US: American Psychological Association.
- Gross, J. J. (2002). Emotion regulation: Affective, cognitive, and social consequences. *Psychophysiology*, 39(3), 281–291. doi:10.1017/S0048577201393198
- Gross, J. J. (2015). Emotion regulation: Current status and future prospects. *Psychological Inquiry*, 26(1), 1–26. doi:10.1080/1047840X.2014.940781
- Gross, J. J., & John, O. P. (2003). Individual differences in two emotion regulation processes: Implications for affect, relationships, and well-being. *Journal of Personality and Social Psychology*, 85(2), 348–362. doi:10.1037/0022-3514.85.2.348
- Gurung, R. A. R., Taylor, S. E., & Seeman, T. E. (2003). Accounting for changes in social support among married older adults: Insights from the MacArthur studies of successful aging. *Psychology and Aging*, 18(3), 487–496. doi:10.1037/0882-7974.18.3.487
- Hammen, C. (2005). Stress and depression. *Annual Review of Clinical Psychology*, 1(1), 293–319. doi:10.1146/annurev.clinpsy.1.102803.143938

- Holt-Lunstad, J., Smith, T. B., & Layton, J. B. (2010). Social relationships and mortality risk: A meta-analysis review. *PLOS Medicine*, 7(7), e1000316. doi:10.1371/journal.pmed.1000316
- Holt-Lunstad, J., Smith, T. B., Baker, M., Harris, T., & Stephenson, D. (2015). Loneliness and social isolation as risk factors for mortality: A meta-analytic review. *Perspectives on Psychological Science*, 10(2), 227–237. doi:10.1177/1745691614568352
- Hooley, J. M., Gruber, S. A., Scott, L. A., Hiller, J. B., & Yurgelun-Todd, D. A. (2005). Activation in dorsolateral prefrontal cortex in response to maternal criticism and praise in recovered depressed and healthy control participants. *Biological Psychiatry*, 57(7), 809–812. doi:10.1016/j.biopsych.2005.01.012
- Hsu, D. T., Sanford, B. J., Meyers, K. K., Love, T. M., Hazlett, K. E., Walker, S. J., ... Zubieta, J.-K. (2015). It still hurts: Altered endogenous opioid activity in the brain during social rejection and acceptance in major depressive disorder. *Molecular Psychiatry*, 20(2), 193. <https://www.nature.com/articles/mp2014185#supplementary-information>. doi:10.1038/mp.2014.185
- Jones, J. W., Ledermann, T., & Fauth, E. B. (2018). Self-rated health and depressive symptoms in older adults: A growth mixture modeling approach. *Archives of Gerontology and Geriatrics*, 79, 137–144. doi:10.1016/j.archger.2018.08.012
- Joormann, J., & Gotlib, I. H. (2010). Emotion regulation in depression: Relation to cognitive inhibition. *Cognition & Emotion*, 24(2), 281–298. doi:10.1080/0269930903407948
- Joormann, J., & Quinn, M. E. (2014). Cognitive processes and emotion regulation in depression. *Depression and Anxiety*, 31(4), 308–315. doi:10.1002/da.22264
- Joormann, J., & Stanton, C. H. (2016). Examining emotion regulation in depression: A review and future directions. *Behaviour Research and Therapy*, 86, 35–49. doi:10.1016/j.brat.2016.07.007
- Joormann, J., Yoon, K. L., & Siemer, M. (2009). Cognition, attention and emotion regulation. In A. Kring & D. Sloan (Eds.), *Emotion regulation and psychopathology* (pp. 174–203). New York, NY: Guilford Press.
- Kiosses, D. N., Areal, P. A., Teri, L., & Alexopoulos, G. S. (2010). Home-delivered problem adaptation therapy (PATH) for depressed, cognitively impaired, disabled elders: A preliminary study. *The American Journal of Geriatric Psychiatry*, 18(11), 988–998. doi:10.1097/JGP.0b013e3181d6947d
- Kiosses, D. N., Gross, J. J., Banerjee, S., Duberstein, P. R., Putrino, D., & Alexopoulos, G. S. (2017). Negative emotions and suicidal ideation during psychosocial treatments in older adults with major depression and cognitive impairment. *The American Journal of Geriatric Psychiatry*, 25(6), 620–629. doi:10.1016/j.jagp.2017.01.011
- Kiosses, D. N., Ravdin, L. D., Gross, J. J., Raue, P., Kotbi, N., & Alexopoulos, G. S. (2015). Problem adaptation therapy for older adults with major depression and cognitive impairment: A randomized clinical trial. *JAMA Psychiatry*, 72(1), 22–30. doi:10.1001/jamapsychiatry.2014.1305
- Kraaij, V., Pruyboom, E., & Garnefski, N. (2002). Cognitive coping and depressive symptoms in the elderly: A longitudinal study. *Aging & Mental Health*, 6(3), 275–281. doi:10.1080/13607860220142387
- Kupferberg, A., Bicks, L., & Hasler, G. (2016). Social functioning in major depressive disorder. *Neuroscience & Biobehavioral Reviews*, 69, 313–332. doi:10.1016/j.neubiorev.2016.07.002
- Liang, Y., Huo, M., Kennison, R., & Zhou, R. (2017). The role of cognitive control in older adult cognitive reappraisal: Detached and positive reappraisal. *Frontiers in Behavioral Neuroscience*, 11, 27. doi:10.3389/fnbeh.2017.00027
- Liverant, G. I., Brown, T. A., Barlow, D. H., & Roemer, L. (2008). Emotion regulation in unipolar depression: The effects of acceptance and suppression of subjective emotional experience on the intensity and duration of sadness and negative affect. *Behaviour Research and Therapy*, 46(11), 1201–1209. doi:10.1016/j.brat.2008.08.001
- Lynch, T. R., Trost, W. T., Salsman, N., & Linehan, M. M. (2007). Dialectical behavior therapy for borderline personality disorder. *Annual Review of Clinical Psychology*, 3(1), 181–205. doi:10.1146/annurev.clinpsy.2.022305.095229
- Marroquín, B. (2011). Interpersonal emotion regulation as a mechanism of social support in depression. *Clinical Psychology Review*, 31(8), 1276–1290. doi:10.1016/j.cpr.2011.09.005
- Masten, C. L., Eisenberger, N. I., Borofsky, L. A., Pfeifer, J. H., McNealy, K., Mazziotta, J. C., & Dapretto, M. (2009). Neural correlates of social exclusion during adolescence: Understanding the distress of peer rejection. *Social Cognitive and Affective Neuroscience*, 4(2), 143–157. doi:10.1093/scan/nsp007
- Maus, I. B., Cook, C. L., Cheng, J. Y. J., & Gross, J. J. (2007). Individual differences in cognitive reappraisal: Experiential and physiological responses to an anger provocation. *International Journal of Psychophysiology*, 66(2), 116–124. doi:10.1016/j.ijpsycho.2007.03.017
- Mazzella, F., Cacciato, F., Galizia, G., Della-Morte, D., Rossetti, M., Abbruzzese, R., ... Abete, P. (2010). Social support and long-term mortality in the elderly: Role of comorbidity. *Archives of Gerontology and Geriatrics*, 51(3), 323–328. doi:10.1016/j.archger.2010.01.011
- McRae, K. (2016). Cognitive emotion regulation: A review of theory and scientific findings. *Current Opinion in Behavioral Sciences*, 10, 119–124. doi:10.1016/j.cobeha.2016.06.004
- Min, J., Ailshire, J., & Crimmins, E. M. (2016). Social engagement and depressive symptoms: Do baseline depression status and type of social activities make a difference? *Age and Ageing*, 45(6), 838–843. doi:10.1093/ageing/afw125
- Moore, S. A., Zoellner, L. A., & Mollenholt, N. (2008). Are expressive suppression and cognitive reappraisal associated with stress-related symptoms? *Behaviour Research and Therapy*, 46(9), 993–1000. doi:10.1016/j.brat.2008.05.001
- Opitz, P. C., Rauch, L. C., Terry, D. P., & Urry, H. L. (2012). Prefrontal mediation of age differences in cognitive reappraisal. *Neurobiology of Aging*, 33(4), 645–655. doi:10.1016/j.neurobiolaging.2010.06.004
- Orgeta, V. (2009). Specificity of age differences in emotion regulation. *Aging & Mental Health*, 13(6), 818–826. doi:10.1080/13607860902989661
- Overall, N. C., & Hammond, M. D. (2013). Biased and accurate: Depressive symptoms and daily perceptions within intimate relationships. *Personality and Social Psychology Bulletin*, 39(5), 636–650. doi:10.1177/0146167213480188
- Picó-Pérez, M., Radua, J., Steward, T., Menchón, J. M., & Soriano-Mas, C. (2017). Emotion regulation in mood and anxiety disorders: A meta-analysis of fMRI cognitive reappraisal studies. *Progress in Neuro-Psychopharmacology and Biological Psychiatry*, 79, 96–104. doi:10.1016/j.pnpbp.2017.06.001
- Platt, B., Kadosh, K. C., & Lau, J. Y. F. (2013). The role of peer rejection in adolescent depression. *Depression and Anxiety*, 30(9), 809–821. doi:10.1002/da.22120
- Potthoff, J. G., Holahan, C. J., & Joiner, T. E. (1995). Reassurance seeking, stress generation, and depressive symptoms: An integrative model. *Journal of Personality and Social Psychology*, 68(4), 664–670. doi:10.1037/0022-3514.68.4.664
- Potthoff, S., Garnefski, N., Miklósi, M., Ubbiali, A., Domínguez-Sánchez, F. J., Martins, E. C., ... Kraaij, V. (2016). Cognitive emotion regulation and psychopathology across cultures: A comparison between six European countries. *Personality and Individual Differences*, 98, 218–224. doi:10.1016/j.paid.2016.04.022
- Preacher, K. J., Curran, P. J., & Bauer, D. J. (2006). Computational tools for probing interaction effects in multiple linear regression, multilevel modeling, and latent curve analysis. *Journal of Educational and Behavioral Statistics*, 31(4), 437–448. doi:10.3102/10769986031004437
- Reed, A. E., Chan, L., & Mikels, J. A. (2014). Meta-analysis of the age-related positivity effect: Age differences in preferences for positive over negative information. *Psychology and Aging*, 29(1), 1–15. doi:10.1037/a0035194
- Rehman, U. S., Gollan, J., & Mortimer, A. R. (2008). The marital context of depression: Research, limitations, and new directions. *Clinical Psychology Review*, 28(2), 179–198. doi:10.1016/j.cpr.2007.04.007
- Rhebergen, D., Beekman, A. T. F., de Graaf, R., Nolen, W. A., Spijker, J., Hoogendijk, W. J., & Penninx, B. W. J. H. (2010). Trajectories of recovery of social and physical functioning in major depression, dysthymic disorder and double depression: A 3-year follow-up. *Journal of Affective Disorders*, 124(1–2), 148–156. doi:10.1016/j.jad.2009.10.029
- Riva, P. (2016). Emotion regulation following social exclusion: Psychological and behavioral strategies. In Riva P. & Eck J. (Eds.), *Social exclusion*. New York, NY: Springer.
- Sachs-Ericsson, N., Joiner, T. E., Cogle, J. R., Stanley, I. H., & Sheffler, J. L. (2016). Combat exposure in early adulthood interacts with recent stressors to predict PTSD in aging male veterans. *The Gerontologist*, 56(1), 82–91. doi:10.1093/geront/gnv036
- Sachs-Ericsson, N. J., Rushing, N. C., Stanley, I. H., & Sheffler, J. (2016). In my end is my beginning: Developmental trajectories of adverse childhood experiences to late-life suicide. *Aging & Mental Health*, 20(2), 139–165. doi:10.1080/13607863.2015.1063107

- Scheibe, S., & Carstensen, L. L. (2010). Emotional aging: Recent findings and future trends. *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences*, *65B*(2), 135–144. doi:10.1093/geronb/gbp132
- Scheibe, S., Sheppes, G., & Staudinger, U. M. (2015). Distract or reappraise? Age-related differences in emotion-regulation choice. *Emotion*, *15*(6), 677–681. doi:10.1037/a0039246
- Schisterman, E. F., Cole, S. R., & Platt, R. W. (2009). Overadjustment bias and unnecessary adjustment in epidemiologic studies. *Epidemiology*, *20*(4), 488–495. doi:10.1097/EDE.0b013e3181a819a1
- Schwartz-Mette, R. A., & Rose, A. J. (2016). Depressive symptoms and conversational self-focus in adolescents' friendships. *Journal of Abnormal Child Psychology*, *44*(1), 87–100. doi:10.1007/s10802-015-9980-3
- Shiota, M. N. (2006). Silver linings and candles in the dark: Differences among positive coping strategies in predicting subjective well-being. *Emotion*, *6*(2), 335–339. doi:10.1037/1528-3542.6.2.335
- Shiota, M. N., & Levenson, R. W. (2009). Effects of aging on experimentally instructed detached reappraisal, positive reappraisal, and emotional behavior suppression. *Psychology and Aging*, *24*(4), 890–900. doi:10.1037/a0017896
- Silk, J. S., Siegle, G. J., Lee, K. H., Nelson, E. E., Stroud, L. R., & Dahl, R. E. (2014). Increased neural response to peer rejection associated with adolescent depression and pubertal development. *Social Cognitive and Affective Neuroscience*, *9*(11), 1798–1807. doi:10.1093/scan/nst175
- Sims, T., Hogan, C. L., & Carstensen, L. L. (2015). Selectivity as an emotion regulation strategy: Lessons from older adults. *Current Opinion in Psychology*, *3*, 80–84. doi:10.1016/j.copsyc.2015.02.012
- Smith, J., Ryan, L. H., Fisher, G. G., Sonnega, A., & Weir, D. R. (2017). *HRS psychosocial and lifestyle questionnaire 2006–2016: Documentation report*. (R. F.). Ann Arbor, MI: Institute for Social Research, University of Michigan. Retrieved from https://hrs.isr.umich.edu/sites/default/files/biblio/HRS%202006–2016%20SAQ%20Documentation_07.06.17_0.pdf.
- Spitzer, R. L., Williams, J. B., Kroenke, K., Hornyak, R., McMurray, J., Patient Health Questionnaire Obstetrics-Gynecology Study Group. (2000). Validity and utility of the PRIME-MD patient health questionnaire in assessment of 3000 obstetric-gynecologic patients: The PRIME-MD patient health questionnaire obstetrics-gynecology study. *American Journal of Obstetrics and Gynecology*, *183*(3), 759–769. doi:10.1067/mob.2000.106580
- Steffens, D. C., Fisher, G. G., Langa, K. M., Potter, G. G., & Plassman, B. L. (2009). Prevalence of depression among older Americans: The aging, demographics and memory study. *International Psychogeriatrics*, *21*(05), 879–888. doi:10.1017/S1041610209990044
- Teasdale, J. D. (1988). Cognitive vulnerability to persistent depression. *Cognition & Emotion*, *2*(3), 247–274. doi:10.1080/02699938808410927
- Thompson, R. A. (1994). Emotion regulation: A theme in search of definition. *Monographs of the Society for Research in Child Development*, *59*(2/3), 25–52. doi:10.1111/j.1540-5834.1994.tb01276.x
- Travis, L. A., Lyness, J. M., Shields, C. G., King, D. A., & Cox, C. (2004). Social support, depression, and functional disability in older adult primary-care patients. *The American Journal of Geriatric Psychiatry*, *12*(3), 265–271. doi:10.1097/00019442-200405000-00005
- Troy, A. S., Shallcross, A. J., Brunner, A., Friedman, R., & Jones, M. C. (2018). Cognitive reappraisal and acceptance: Effects on emotion, physiology, and perceived cognitive costs. *Emotion*, *18*(1), 58–74. doi:10.1037/emo0000371
- Troy, A. S., Shallcross, A. J., & Mauss, I. B. (2016). Corrigendum: A person-by-situation approach to emotion regulation: Cognitive reappraisal can either help or hurt, depending on the context. *Psychological Science*, *27*(3), 428–431. doi:10.1177/0956797615627417
- Troy, A. S., Wilhelm, F. H., Shallcross, A. J., & Mauss, I. B. (2010). Seeing the silver lining: Cognitive reappraisal ability moderates the relationship between stress and depressive symptoms. *Emotion*, *10*(6), 783–795. doi:10.1037/a0020262
- Tse, W. S., & Bond, A. J. (2004). The impact of depression on social skills: A review. *The Journal of Nervous and Mental Disease*, *192*(4), 260–268. doi:10.1097/01.nmd.0000120884.60002.2b
- Tugade, M. M., & Fredrickson, B. L. (2007). Regulation of positive emotions: Emotion regulation strategies that promote resilience. *Journal of Happiness Studies*, *8*(3), 311–333. doi:10.1007/s10902-006-9015-4
- Uchino, B. N. (2009). Understanding the links between social support and physical health: A life-span perspective with emphasis on the separability of perceived and received support. *Perspectives on Psychological Science*, *4*(3), 236–255. doi:10.1111/j.1745-6924.2009.01122.x
- Uphoff, E. P., Pickett, K. E., Cabieses, B., Small, N., & Wright, J. (2013). A systematic review of the relationships between social capital and socioeconomic inequalities in health: A contribution to understanding the psychosocial pathway of health inequalities. *International Journal for Equity in Health*, *12*(1), 54. doi:10.1186/1475-9276-12-54
- Urry, H. L. (2016). Resources for emotion regulation in older age: Linking cognitive resources with cognitive reappraisal. In *Emotion, aging, and health*. (pp. 51–69). Washington, DC, US: American Psychological Association.
- Urry, H. L., & Gross, J. J. (2010). Emotion regulation in older age. *Current Directions in Psychological Science*, *19*(6), 352–357. doi:10.1177/0963721410388395
- van Reekum, C. M., Johnstone, T., Urry, H. L., Thurow, M. E., Schaefer, H. S., Alexander, A. L., & Davidson, R. J. (2007). Gaze fixations predict brain activation during the voluntary regulation of picture-induced negative affect. *NeuroImage*, *36*(3), 1041–1055. doi:10.1016/j.neuroimage.2007.03.052
- Verhaeghen, P., & Salthouse, T. A. (1997). Meta-analyses of age-cognition relations in adulthood: Estimates of linear and nonlinear age effects and structural models. *Psychological Bulletin*, *122*(3), 231–249. doi:10.1037/0033-2909.122.3.231
- Victor, C., Scambler, S., Bond, J., & Bowling, A. (2000). Being alone in later life: Loneliness, social isolation and living alone. *Reviews in Clinical Gerontology*, *10*(4), 407–417. doi:10.1017/S0959259800104101
- Visted, E., Vøllestad, J., Nielsen, M. B., & Schanche, E. (2018). Emotion regulation in current and remitted depression: A systematic review and meta-analysis. *Frontiers in Psychology*, *9*, 756. doi:10.3389/fpsyg.2018.00756
- Yang, Y., Fairbairn, C., & Cohn, J. F. (2013). Detecting depression severity from vocal prosody. *IEEE Transactions on Affective Computing*, *4*(2), 142–150. doi:10.1109/T-AFFC.2012.38