

Multidimensional Assessment of Emotion Regulation Difficulties in Adolescents Using the Difficulties in Emotion Regulation Scale

Anna Neumann, Pol A. C. van Lier, Kim L. Gratz and Hans M. Koot
Assessment 2010 17: 138 originally published online 14 November 2009
DOI: 10.1177/1073191109349579

The online version of this article can be found at:
<http://asm.sagepub.com/content/17/1/138>

Published by:



<http://www.sagepublications.com>

Additional services and information for *Assessment* can be found at:

Email Alerts: <http://asm.sagepub.com/cgi/alerts>

Subscriptions: <http://asm.sagepub.com/subscriptions>

Reprints: <http://www.sagepub.com/journalsReprints.nav>

Permissions: <http://www.sagepub.com/journalsPermissions.nav>


Citations: <http://asm.sagepub.com/content/17/1/138.refs.html>

>> [Version of Record](#) - Mar 25, 2010

[OnlineFirst Version of Record](#) - Nov 14, 2009

[What is This?](#)

Multidimensional Assessment of Emotion Regulation Difficulties in Adolescents Using the Difficulties in Emotion Regulation Scale

Assessment
17(1) 138–149
© The Author(s) 2010
Reprints and permission: <http://www.sagepub.com/journalsPermissions.nav>
DOI: 10.1177/1073191109349579
<http://asmnt.sagepub.com>


Anna Neumann,¹ Pol A. C. van Lier,¹ Kim L. Gratz,²
and Hans M. Koot¹

Abstract

The authors explored the utility of the Difficulties in Emotion Regulation Scale (DERS) in assessing adolescents' emotion regulation. Adolescents (11–17 years; $N = 870$) completed the DERS and measures of externalizing and internalizing problems. Confirmatory factor analysis suggested a similar factor structure in the adolescent sample of the authors as demonstrated previously among adults. Furthermore, results indicated no gender bias in ratings of DERS factors on three scales (as evidenced by strong factorial gender invariance) and limited gender bias on the other three scales (as evidenced by metric invariance). Female adolescents scored higher on four of six DERS factors than male adolescents. DERS factors were meaningfully related to adolescents' externalizing and internalizing problems. Results suggest that scores on the DERS show promising internal consistency and validity in a community sample of adolescents.

Keywords

emotion regulation, adolescents, internalizing, externalizing, Difficulties in Emotion Regulation Scale

Recent research has led to an increased interest in the role of emotional processes in normal and atypical development (Southam-Gerow & Kendall, 2001), with the regulation and dysregulation of emotions being a primary focus of this research. Indeed, emotion regulation (ER) difficulties have been implicated in several forms of developmental psychopathology (e.g., Bradley, 2000; Cole, Michel, & Teti, 1994; Gross, 1998). Furthermore, ER skills have been positively linked to both prosocial behavior (e.g., Shields, Cicchetti, & Ryan, 1994) and resiliency to multiple risks (Lengua, 2002) among children.

In contrast to the growing body of literature on ER among children and adults, few studies have investigated ER and ER difficulties in adolescents (Gross, 1998; Zeman, Cassano, Perry-Parrish, & Stegall, 2006). However, emerging evidence for the central role of ER processes in adolescent development (e.g., Garnefski, Kraaij, & van Etten, 2005; Silk, Steinberg, & Morris, 2003) highlights the importance of examining ER among adolescents. One likely reason for the relative lack of research in this area (despite its clear clinical significance) may be the limited number of available measures of ER for adolescents (Zeman et al., 2006). Thus, the primary goal of the present study was to extend the extant research on adolescent ER difficulties by exploring the factor structure and psychometric properties of an existing adult measure of ER difficulties among adolescents.

One promising measure for the comprehensive assessment of ER difficulties is the Difficulties in Emotion Regulation Scale (DERS; Gratz & Roemer, 2004). Originally developed for use with adults, the DERS was designed to provide a comprehensive assessment of clinically relevant ER difficulties across multiple domains. Moreover, suggesting its potential utility for adolescents, the DERS is based on a conceptual definition of ER influenced most directly by theoretical literature on ER in youth (Cole et al., 1994; Thompson, 1994). Whereas much of the literature on ER in adulthood emphasizes the control and reduction of negative emotions, the childhood literature emphasizes the functionality of emotions and the problems associated with deficits in the capacity to experience the full range of emotions, with some developmental researchers defining ER as “the extrinsic and intrinsic processes responsible for monitoring, evaluating, and modifying emotional reactions to accomplish one’s goals” (Thompson, 1994, pp. 27–28). The DERS

¹VU University Amsterdam, Amsterdam, Netherlands

²University of Mississippi Medical Center, Jackson, MS, USA

Corresponding Author:

Anna Neumann, Department of Developmental Psychology, Faculty of Psychology and Education, VU University Amsterdam, van der Boechorststraat 1, 1081 BT Amsterdam, Netherlands
Email: a.neumann@psy.vu.nl

is based on a conceptualization of ER as adaptive ways of responding to emotions, including accepting responses, the ability to experience and differentiate the full range of emotions, and the control of behaviors in the face of emotional distress (see Gratz & Roemer, 2004). Furthermore, items of the DERS focus mainly on the regulation of negative emotional states, because difficulties in this domain are considered to have particular clinical relevance.

In support of the utility of the DERS among adults, scores on this measure have been found to have good test-retest reliability over a period of 4 to 8 weeks in a sample of college students ($\rho_T = .88$; Gratz & Roemer, 2004) and high internal consistency within clinical (e.g., Fox, Axelrod, Paliwal, Sleeper, & Sinha, 2007; Gratz, Tull, Baruch, Bornovalova, & Lejuez, 2008) and nonclinical populations (e.g., Gratz & Roemer, 2004; Johnson et al., 2008). Furthermore, research using this measure with adults has repeatedly linked the DERS to clinically relevant phenomena in both clinical and nonclinical samples. Specifically, scores on the DERS showed statistically significant relations with behaviors thought to serve an emotion-regulating function, including deliberate self-harm (Gratz & Roemer, 2008), intimate partner abuse perpetration among men (Gratz, Paulson, Jakupcak, & Tull, 2009), and cocaine dependence (Fox et al., 2007). Furthermore, scores on the DERS have been found to be heightened among individuals with psychiatric disorders thought to be characterized by ER difficulties, including borderline personality disorder (vs. non-personality disorder outpatients; Gratz, Rosenthal, Tull, Lejuez, & Gunderson, 2006), probable posttraumatic stress disorder (PTSD; vs. trauma-exposed individuals without PTSD; Tull, Barrett, McMillan, & Roemer, 2007), and panic attacks (vs. nonpanickers; Tull & Roemer, 2007). Finally, the DERS demonstrates statistically significant associations with a number of constructs thought to be related to ER difficulties, including positive associations with negative affect (Johnson et al., 2008; Vujanovic, Zvolensky, & Bernstein, 2008), depression and anxiety symptom severity (Roemer et al., 2009; Vujanovic et al., 2008), anxiety sensitivity (Johnson et al., 2008; Vujanovic et al., 2008), and experiential avoidance (Gratz & Roemer, 2004; Tull & Gratz, 2008; Tull & Roemer, 2007), and negative associations with emotional expression and processing (Johnson et al., 2008), mindfulness (Baer, Smith, Hopkins, Krietemeyer, & Toney, 2006; Roemer et al., 2009), and self-compassion (Roemer et al., 2009).

Furthermore, studies provide support for the utility of the DERS subscales, finding that particular subscales are differentially associated with specific forms of psychopathology. Salters-Pedneault, Roemer, Tull, Rucker, and Mennin (2006) found that all DERS subscales (with the exception of lack of emotional awareness) were significantly elevated among individuals with (vs. without) probable generalized anxiety disorder when controlling for negative affect. In contrast,

only the specific subscales of difficulties controlling impulsive behaviors when distressed, limited access to effective ER strategies, and lack of emotional clarity have been found to differentiate between trauma-exposed individuals with and without probable PTSD when controlling for negative affect (Tull et al., 2007). As such, research has consistently linked the DERS and its subscales to a variety of forms of psychopathology in adults.

Research on Emotion Regulation Difficulties in Adolescence

Although relatively understudied (in comparison with ER in children and adults), research on ER in adolescents provides preliminary evidence for the importance of specific aspects of ER and related constructs to adolescent development. Some evidence comes from research in (trait) emotional intelligence, which focuses on understanding other's emotions in addition to one's own, and on perceived competencies (instead of perceived difficulties, as in the present study; Petrides, Frederickson, & Furnham, 2004). This research provides evidence that perceptions of how one deals with emotions are associated with academic performance and deviant behavior (Petrides et al., 2004) and self-esteem, anxiety, and depression (Fernandez-Berrocal, Alcaide, Extremera, & Pizarro, 2006). Of greater relevance to the present study, studies examining ER strategies (Garnefski et al., 2005; Silk et al., 2003) and physiological markers of ER (e.g., Beauchaine, Gatzke-Kopp, & Mead, 2007) have found that ER is associated with internalizing and externalizing problems (Garnefski et al., 2005), depression and problem behavior (Silk et al., 2003), and conduct problems (Beauchaine et al., 2007) among adolescents. Furthermore, some evidence suggests that ER difficulties may play a greater role in adolescent internalizing than externalizing problems (Garnefski et al., 2005).

These studies provide preliminary evidence for the importance of certain aspects of ER to adolescent functioning; however, other important dimensions of ER remain unstudied among adolescents. For example, two of the most commonly used measures of emotional intelligence (the Trait Meta Mood Scale and Swinburne University Emotional Intelligence Test; see Salovey, Mayer, Goldman, Turvey, & Palfai, 1995; Luebbbers, Downey, & Stough, 2007, respectively) do not assess the ability to control behaviors when experiencing negative emotions or the acceptance of emotions. Likewise, measures of ER strategies (e.g., the Cognitive Emotion Regulation Scale; Garnefski, Kraaij, & Spinhoven, 2002, cf. Garnefski et al., 2005) focus only on this particular dimension of ER difficulties, to the exclusion of aspects such as the awareness, understanding, and acceptance of emotions. To better understand the nature and role of ER in adolescence, a comprehensive measure that assesses all theoretically relevant aspects of ER difficulties is needed.

The Present Study

The goal of the present study was to examine if a widely used and empirically supported measure of ER difficulties in adults (the DERS) has utility in the assessment of ER difficulties among adolescents. To this end, we examined three questions. First, we examined whether the factor structure of the DERS previously found in adults is replicable among a sample of adolescents. Given that the conceptualization of ER of the DERS is based in theoretical literature on ER among youth, we expected that this would be the case. Additionally, based on findings pertaining to emotional development among youth we expected that the specific dimensions of ER difficulties assessed in the DERS would be observable and stable among adolescents (Stegge & Meerum Terwogt, 2007).

The second question pertains to potential gender differences in ER difficulties. Findings of lower emotional expression/verbalization among boys versus girls (Brody & Hall, 1993) suggest that boys may have less emotional awareness than girls. Furthermore, a meta-analysis of gender differences in temperament showed that girls are better at inhibiting inappropriate behavioral responses than boys (Else-Quest, Hyde, Goldsmith, & van Hulle, 2006). Conversely, compared with their male peers, adolescent girls have been found to use more maladaptive coping strategies, such as resignation (Hampel & Petermann, 2006), and to report experiencing higher levels of guilt, shame, and self-directed hostility (Hamilton & Jensvold, 1992), some of which may be in response to emotions that are perceived as inappropriate. Accordingly, we hypothesized that female adolescents, compared with their male peers, would report greater emotional awareness and less difficulty controlling their behaviors when distressed, but also more emotional nonacceptance (in the form of secondary emotional responses to negative emotions) and less access to ER strategies perceived as effective. Before levels of ER difficulties between male and female adolescents can be compared, however, gender invariance in the measurement of ER difficulties must be established. Thus, we examined whether the DERS demonstrates measurement invariance with respect to male and female participants.

The study's third question pertained to the association between ER difficulties and psychopathology in adolescence. We explored the concurrent validity of DERS scores by studying the association between the DERS and adolescents' symptoms of internalizing and externalizing psychopathology. Based on previous studies using the DERS in adult samples (as well as evidence of the role of ER strategies in adolescent psychopathology), we hypothesized that scores on the DERS subscales would be associated with both externalizing and internalizing difficulties among adolescents, with generally stronger relations between the DERS and internalizing as opposed to externalizing problems.

Method

Participants

All 1,003 students at a school for secondary education, including Atheneum (60.3%), Gymnasium (21.5%), and HAVO (a Dutch acronym for "higher general secondary education"; 18.2%), in Amsterdam, the Netherlands, were invited to participate in the study. These school forms represent higher levels of secondary education in the Netherlands and are attended by approximately 56% of all secondary school students in the Netherlands (Centraal Bureau voor Statistiek [CBS], 2008b). Parents of 6 of these 1,003 (0.6%) students did not grant permission for their children to complete the questionnaires, and another 78 students (7.8%) were not present on the day of testing. All other adolescents took part in the study. Furthermore, to ensure that this adolescent sample does not overlap in age with adult samples, only adolescents below the age of 18 were included, resulting in the exclusion of an additional 49 students. Thus, the final sample consisted of 870 adolescents (441 girls, 429 boys) with a mean age of 14.34 years ($SD = 1.60$; age range 11-17 years). Female and male participants did not differ significantly in age, $t(870) = 1.00$, $p > .05$, Cohen's $d = .07$. Almost all (95.5%) of the participants were born in the Netherlands; however, 40.1% reported having at least one parent born outside the Netherlands. This percentage is comparable with that of all Atheneum, Gymnasium, and HAVO students with a minority background (defined as having at least one parent born outside the Netherlands) found in larger cities of the Netherlands (CBS, 2008a), and is higher than that found for the Netherlands as a whole (20% students with minority status).

Measures

Emotion Regulation

Difficulties in Emotion Regulation Scale. The DERS (Gratz & Roemer, 2004) is a 36-item self-report questionnaire that assesses clinically relevant difficulties in ER (with a particular emphasis on negative emotions). Items are scored on six scales, labeled Lack of Emotional Awareness (6 items), Lack of Emotional Clarity (5 items), Difficulties Controlling Impulsive Behaviors When Distressed (6 items), Difficulties Engaging in Goal-Directed Behavior When Distressed (5 items), Nonacceptance of Negative Emotional Responses (6 items), and Limited Access to Effective ER Strategies (8 items). Items are scored on a 5-point scale ranging from 1 (*almost never*) to 5 (*almost always*). Subscale scores are obtained by summing the corresponding items. Evidence has been provided in support of the reliability of DERS scores. Specifically, DERS scores have been found to demonstrate good test-retest reliability over a period of 4 to 8 weeks in a sample of college students

($\rho_f = .88$; Gratz & Roemer, 2004), and both the overall DERS score and subscale scores have been found to have high internal consistency within both clinical (e.g., Fox et al., 2007; Gratz et al., 2008) and nonclinical populations (e.g., Gratz & Roemer, 2004; Johnson et al., 2008). Support for the construct and predictive validity of DERS scores within both clinical and nonclinical populations have also been found (Fox et al., 2007; Gratz, Bornovalova, Delany-Brumsey, Nick, & Lejuez, 2007; Gratz & Roemer, 2004, 2008; Gratz et al., 2006, 2009). The Flesch–Kincaid Grade Level of the DERS is 5.3, meaning the questionnaire should be understandable by an average fifth grader (Kincaid, Fishburne, Rogers, & Chissom, 1975). For the purpose of the present study, the DERS was translated to Dutch. First, the scale was translated independently from English to Dutch by three translators, who then discussed their translations and combined them into one. Next, the translated scale was administered to 46 Dutch high school students (28 girls, mean age = 12.65, age range = 12–13 years). Difficult or misinterpreted items were rephrased ($n = 2$). Although we did not use a formal back-translation procedure before the study was conducted, the Dutch version of the DERS used in the study was back-translated to English by a professional translator after the assessment. The back-translated DERS was consistent with the original DERS.

Externalizing Problem Behavior

Youth Self-Report (YSR): Externalizing items. The 30 YSR Externalizing items (Achenbach, 1991) assess Aggressive Behavior (19 items; e.g., “I physically attack people” and “I argue a lot”) and Delinquent Behavior (11 items; e.g., “I hang around with others who get in trouble” and “I steal from home”). Each item is scored on a 3-point scale of 0 (*not true*), 1 (*somewhat or sometimes true*), or 2 (*very or often true*). Raw scores were summed to obtain scores for Aggressive and Delinquent Behavior, respectively. The Dutch version of the YSR Externalizing scales (Verhulst, van der Ende, & Koot, 1997) was used with the permission of the authors. Support for YSR scores’ construct and predictive validity have been provided (Verhulst et al., 1997). Cronbach’s alphas were .79 for the scale Aggressive Behavior and .70 for Delinquent Behavior in the present adolescent sample. The factor structure of the Dutch YSR was found to be similar to the U.S. version (de Groot, Koot, & Verhulst, 1996). To assess whether administering the YSR externalizing scales outside the standard item set of the entire YSR affected the variance of the scores, we compared the standard deviations (*SDs*) in our sample to the *SDs* of the Dutch general population sample (Verhulst et al., 1997). *SDs* were highly similar for female adolescents in the two samples (4.05 in the present sample vs. 4.51 in the general population for Aggressive Behavior; 2.26 vs. 2.21 for Delinquent Behavior) and somewhat higher for male adolescents in the

present sample (5.87 vs. 4.87 for Aggressive Behavior and 3.57 vs. 2.57 for Delinquent Behavior) compared with the general Dutch sample. Given that the variance of the scale scores was at least as high in the present sample, compared with the general population in which the full YSR was used, the likelihood of detecting potential relations between the YSR externalizing scores in our sample and DERS factors does not seem to be compromised by the fact that only the YSR externalizing scales were administered.

Internalizing Problems

Screen for Child Anxiety Related Emotional Disorders (SCARED). The SCARED (Birmaher et al., 1997) is a 38-item self-report questionnaire that assesses anxiety disorder symptoms in children and adolescents consistent with the *Diagnostic and Statistical Manual of Mental Disorders*, fourth edition (American Psychiatric Association, 1994) classification scheme (Generalized Anxiety, Separation Anxiety, Somatic/Panic, Social Phobia, and School Phobia). Examples of items are “When I get frightened, I feel like I am choking” (Somatic/Panic), “I feel shy with people I don’t know well” (Social Phobia), and “I am a worrier” (Generalized Anxiety). In the present study, only the total anxiety score will be used. Items are rated on a 3-point scale, with 0 (*almost never*), 1 (*sometimes*), and 2 (*often*). Evidence for the SCARED scores’ concurrent validity has been demonstrated (Muris et al., 1998), and the original five-factor structure has been shown to apply to the Dutch SCARED (Hale, Raaijmakers, Muris, & Meeus, 2005). Cronbach’s alpha was .93 for the SCARED total score in the present adolescent sample.

Reynolds Adolescent Depression Scale—2nd Edition (RADS-2). The RADS-2 (Reynolds, 2002) assesses the severity of self-reported depressive symptoms in adolescents. The RADS-2 contains 30 items and four subscales, named Dysphoric Mood, Anhedonia/Negative Affect, Negative Self-Evaluation, and Somatic Complaints. Examples of items are “I feel sad” (Dysphoric Mood) and “I feel I am bad” (Negative Self-Evaluation). In the present study, only the RADS-2 total score will be targeted for analyses, because the focus lies on establishing the usefulness of the DERS in research with adolescents, rather than on showing how ER difficulties relate to diverse aspects of depression. Adolescents are asked to indicate on a 4-point rating scale (ranging from 1 *almost never* to 4 *most of the time*) the extent to which each item applies to them. The total score is calculated by summing responses on all items. RADS-2 scores have shown adequate internal consistency ($\alpha = .92$) and test–retest reliability ($r = .80$) in a sample of high school students, and the construct validity of scores on this measure has also been supported (e.g., scores on this scale have been found to differentiate between clinically depressed adolescents and nondepressed adolescents; Reynolds, 2002). Cronbach’s alpha for the total scale was .90 in the present sample. The

RADS-2 was translated to Dutch using the procedure described by Varni, Seid, and Rode (1999), including forward and backward translation, and pilot testing.

Procedure

The adolescents' parents received written information about the study and the possibility to disallow their children's participation. Adolescents themselves were informed about the study in their classrooms and completed the questionnaires after completing an informed assent form. Because assessment sessions lasted only 30 to 45 minutes per class, it was not possible for the students to complete all the measures of interest. Therefore, whereas all students completed the DERS ($N = 870$), the other measures of interest in this study were distributed across participants, with 215 completing the YSR Externalizing subscale, 212 completing the SCARED, and 197 completing the RADS-2. Respondents were assigned to one of the questionnaire packages randomly, stratified by gender and age. On completion of the questionnaires, adolescents received a small gift in return for their participation.

Results

DERS Factor Structure: Confirmatory Factor Analysis in the Adolescent Sample

We first tested whether the factor structure of the DERS in our adolescent sample was equivalent to the structure found for adults using a confirmatory factor analysis (CFA). Six latent variables were specified, corresponding to the six subscales of the DERS, which were allowed to correlate. The CFA and all following structural models were analyzed in Mplus 4.21 (Muthén & Muthén, 1998-2007). Model fit was determined through the comparative fit index (CFI) and Tucker–Lewis Index (TLI; exact fit = 1.00, close fit = 0.95-0.99, acceptable fit = 0.90-0.95; Bentler & Bonett, 1980) and root mean square error of approximation (RMSEA; exact fit = 0.00, close fit = 0.06-0.01, acceptable fit = 0.08-0.06; Browne & Cudeck, 1993). Results are shown in Table 1. Based on model modification indices, Item 33 of the original Difficulties Engaging in Goal-Directed Behavior When Distressed scale (“When I’m upset, I have difficulty thinking about anything else”) was allowed to cross-load on the Limited Access to ER Strategies scale. When allowing for this cross-loading, model fit was acceptable (CFI = .92, TLI = .91, RMSEA = .045; 90% CI = .043-.048), suggesting that the structure of the DERS in adolescents is equivalent to that found among adults (Gratz & Roemer, 2004). The correlations between the six subscales were low to medium in size (range = $-.12$ to $.54$, median = $.35$), suggesting that the subscales tap different aspects of ER difficulties (see Table 2).

Cronbach's alphas were satisfactory to high within this adolescent sample (range = $.72$ -. $.87$; see Table 1).

Gender Differences in DERS Subscales

Next, we tested for measurement invariance between male and female participants, specified by subscale. Results are shown in Table 3. We started by fitting baseline sex difference configural models, in which males (reference category) were contrasted with females. Adequate model fit for this model is a prerequisite for further testing of invariance. A latent factor was considered for each scale, indicated by the items. The variance of the latent factor was fixed at 1, and the means were fixed at 0 for both male and female adolescents. Factor loadings were freely estimated in both samples. All configural models had exact to acceptable fit to the data (see Table 3).

Next, we specified metric invariance models in which the factor loadings were held equal between the male and female samples, to test whether items contribute equally to the total score for male and female adolescents. In the male sample, the variance of the latent factor was fixed at 1, whereas this was freely estimated in the female sample. The means of the latent factors were fixed at 0 in both samples. As these metric invariance models were nested within the configural models, deterioration of model fit (usually assessed using the chi-square difference test) is the outcome of interest. However, the chi-square difference test has substantial power in large samples ($n = 200$) to detect small discrepancies of no theoretical or practical consequence (Chen, Sousa, & West, 2005). We therefore considered only a decrease in the CFI greater than $.01$ to be an indication of a meaningful decrement in fit (see Cheung & Rensvold, 2002). Although some χ^2 difference tests were significant, no drop in CFA $> .01$ was observed.

We then examined the factorial invariance of the DERS among female and male adolescents, to test whether the items' intercepts are equivalent for males and females. Latent factor means and variances were fixed at 0 and 1, respectively, in males, and estimated freely in females. A decrease in CFI $> .01$ was found for the subscales of Lack of Emotional Awareness (Δ CFI = $.044$), Difficulties Engaging in Goal-Directed Behavior When Distressed (Δ CFI = $.014$), and Nonacceptance of Negative Emotional Responses (Δ CFI = $.017$).

Mean Differences in DERS Between Males and Females

A multivariate analysis of variance (MANOVA) on the DERS factors showed a significant overall effect of gender, Pillai's Trace: $F(6, 863) = 21.04, p < .001$. No gender differences were found for Difficulties Controlling Impulsive Behaviors When Distressed. Female participants reported

Table 1. Factor Loadings for DERS Items Obtained From Confirmatory Factor Analysis in Dutch Adolescents ($N = 870$)

Item	Factor Loadings
I. Lack of Emotional Awareness ($\alpha = .73$ for boys and $.76$ for girls)	
2. I pay attention to how I feel.	.56
6. I am attentive to my feelings.	.66
8. I care about what I am feeling.	.79
10. When I'm upset, I acknowledge my emotions.	.25
17. When I'm upset, I believe my emotions are valid and important.	.57
34. I take time to figure out what I am really feeling.	.49
II. Lack of Emotional Clarity ($\alpha = .74$ for boys and $.83$ for girls)	
1. I am clear about my feelings.	.59
4. I have no idea how I am feeling.	.57
5. I have difficulty making sense out of my feelings.	.74
7. I know exactly how I am feeling.	.59
9. I am confused about how I am feeling.	.70
III. Difficulties Controlling Impulsive Behaviors When Distressed ($\alpha = .86$ for boys and $.83$ for girls)	
3. I experience my emotions as overwhelming and out of control.	.38
14. When I'm upset, I become out of control.	.81
19. When I'm upset, I feel out of control.	.83
24. When I'm upset, I feel I can remain in control over my behavior.	.62
27. When I'm upset, I have difficulty controlling my behavior.	.72
32. When I'm upset, I lose control over my behavior.	.83
IV. Difficulties Engaging in Goal-Directed Behaviors When Distressed ($\alpha = .81$ for boys and $.82$ for girls)	
13. When I'm upset, I have difficulty getting work done.	.76
18. When I'm upset, I have difficulty focusing on other things.	.77
20. When I'm upset, I can still get things done.	.52
26. When I'm upset, I have difficulty concentrating.	.79
33. When I'm upset, I have difficulty thinking about anything else.	.44 [VI{.35}]
V. Nonacceptance of Negative Emotional Responses ($\alpha = .72$ for boys and $.81$ for girls)	
11. When I'm upset, I become angry at myself for feeling that way.	.66
12. When I'm upset, I become embarrassed.	.56
21. When I'm upset, I feel ashamed with myself.	.63
23. When I'm upset, I feel like I am weak.	.59
25. When I'm upset, I feel guilty.	.62
29. When I'm upset, I become irritated with myself.	.65
VI. Limited Access to ER Strategies ($\alpha = .80$ for boys and $.87$ for girls)	
15. When I'm upset, I believe I'll remain that way for a long time.	.67
16. When I'm upset, I believe that I'll end up very depressed.	.70
22. When I'm upset, I know that I can find a way to feel better.	.40
28. When I'm upset, I believe there is nothing I can do to feel better.	.67
30. When I'm upset, I start to feel very bad about myself.	.68
31. When I'm upset, I believe that wallowing in it is all I can do.	.77
35. When I'm upset, it takes me a long time to feel better.	.68
36. When I'm upset, my emotions feel overwhelming.	.65

Note: DERS = Difficulties in Emotion Regulation Scale; ER = Emotion Regulation; Numbers in square brackets indicate the factor on which an item showed a cross-loading (given in {}).

significantly higher levels of Lack of Emotional Clarity, Difficulties Engaging in Goal-Directed Behaviors When Distressed, Nonacceptance of Negative Emotional Responses, and Limited Access to ER Strategies. Male participants reported higher levels of Lack of Emotional Awareness (see Table 4). The observed gender differences on the subscales Lack of Emotional Awareness, Difficulties Engaging in Goal-Directed Behavior When Distressed, and Nonacceptance of Negative Emotional Responses should

be interpreted with caution, as they may reflect gender-based differences in the ratings of items in addition to true gender differences in these ER difficulties.

DERS and Externalizing and Internalizing Problems

Given that subsamples completed only one measure of psychopathology (see section Procedure), we first examined whether the subsamples differed on the DERS. Results of a

Table 2. Correlations Among DERS Factors in Adolescents (N = 870)

DERS Factors	1	2	3	4	5
Lack of Emotional Awareness	—				
Lack of Emotional Clarity	.10*	—			
Difficulties Controlling Impulsive Behavior when Distressed	.04	.34**	—		
Difficulties Engaging in Goal-Directed Behavior When Distressed	-.10*	.35**	.42**	—	
Nonacceptance of Negative Emotional Responses	-.12**	.35**	.39**	.37**	—
Limited Access to ER Strategies	-.09*	.47**	.50**	.54**	.54**

Note: DERS = Difficulties in Emotion Regulation Scale; ER = Emotion Regulation. 1 = Lack of Emotional Awareness; 2 = Lack of Emotional Clarity; 3 = Difficulties Controlling Impulsive Behavior When Distressed; 4 = Difficulties Engaging in Goal-Directed Behavior When Distressed; 5 = Nonacceptance of Negative Emotional Responses; 6 = Limited Access to Emotion Regulation Strategies.

* $p < .01$, one-tailed. ** $p < .001$, one-tailed.

MANOVA showed no overall effect of sample on DERS scores, Pillai's Trace: $F(12, 1234) = 1.65, p > .05$.

Zero-order correlations between the DERS subscales and each measure of psychopathology are given in Table 5. Small but statistically significant positive associations between DERS subscales and adolescent externalizing problems were found. Correlations between DERS subscales and internalizing problems were generally large and positive.

To determine if particular DERS subscales are uniquely related to internalizing and externalizing problems, a series of standard multiple regression analyses were conducted for each measure of psychopathology. The DERS subscales were entered together with gender in the first step of the equation (see Table 6). Results provide support for the differential relevance of particular DERS subscales to different forms of psychopathology. Specifically, both Difficulties Controlling Impulsive Behaviors When Distressed and Difficulties Engaging in Goal-Directed Behavior When Distressed were associated with Aggressive Behavior; Lack of Emotional Awareness was associated with Delinquent Behavior; and Lack of Emotional Clarity, Nonacceptance of Negative Emotional Responses, and Limited Access to ER Strategies were associated with Anxiety and Depression.

Given that the associations of the DERS subscale scores with internalizing problems were somewhat stronger than their associations with externalizing problems, we carefully

inspected the questionnaires for possible overlapping items. No evidence of item overlap between the SCARED and the DERS was found. Furthermore, although five items of the RADS-2 had possible overlap with DERS items, exclusion of these overlapping items had only a minimal influence on the regression weights (change in β s = $\pm 0.01-.02$).

Discussion

Results of the present study provide preliminary evidence for the utility of the DERS as a measure of ER difficulties in adolescents. The factor structure of the DERS previously established among adults was replicated in our adolescent sample. Furthermore, metric invariance in the assessment of ER difficulties between male and female adolescents was found for all subscales, and strong factorial invariance between male and female adolescents was found for three of the six subscales. Finally, results demonstrated a number of gender differences in levels of self-reported ER difficulties as well as meaningful associations between DERS scores and externalizing and internalizing problems.

Findings from CFAs revealed that the structure of the DERS in adolescents is equivalent to that previously found among adults. Furthermore, the internal consistency coefficients of the factors were acceptable to high (average α for the subscales = .81) and comparable with those reported by Gratz and Roemer (2004) in their adult sample (average α for the subscales = .85).

With respect to gender differences in ER difficulties, findings indicated factor loading equivalence for all subscales, and strong factorial invariance for the Lack of Emotional Clarity, Difficulties Controlling Impulsive Behaviors When Distressed, and Limited Access to ER Strategies subscales. With regard to the three subscales for which strong factorial invariance was not found (i.e., Lack of Emotional Awareness, Difficulties Engaging in Goal-Directed Behavior When Distressed, and Nonacceptance of Negative Emotional Responses), a (limited) portion of the observed gender differences obtained using these scales may reflect differences in the interpretation or rating of some of the items, in addition to actual differences in ER difficulties. For all other subscales, evidence of factorial invariance suggests that gender differences in mean levels can be attributed to true differences in self-reports of ER difficulties (cf. Gregorich, 2006).

Gender differences in levels of specific self-reported ER difficulties provided some support for the hypotheses, as female adolescents reported significantly greater emotional nonacceptance, greater emotional awareness, and less access to effective ER strategies than male adolescents. Findings that female adolescents may have less access to effective ER strategies than their male counterparts are consistent with findings that adolescent females score higher on measures of maladaptive coping than adolescent males (Hampel &

Table 3. Measurement Invariance Fit Statistics for DERS Factors for Female and Male Adolescents

Scale	χ^2	df	CFI	TLI	RMSEA	90% CI RMSEA	$\Delta\chi^2$	Δdf
Lack of Emotional Awareness (6)								
Configural	2.74	12	1.000	1.000	0.00	0.00-0.00		
Metric	16.00	17	1.000	1.000	0.00	0.00-0.04	13.26	5*
Strong factorial	74.69	22	0.956	0.940	0.07	0.06-0.09	58.69	5**
Lack of Emotional Clarity (5)								
Configural	16.90	6	0.991	0.971	0.07	0.03-0.10		
Metric	27.12	10	0.987	0.973	0.06	0.04-0.09	10.22	4*
Strong factorial	39.29	14	0.980	0.972	0.06	0.04-0.09	12.17	4*
Difficulties Controlling Impulsive Behavior When Distressed (6)								
Configural	16.23	16	1.000	1.000	0.01	0.00-0.05		
Metric	23.88	21	.999	.998	0.02	0.00-0.05	7.65	5
Strong factorial	34.06	26	.996	.996	0.03	0.00-0.05	10.18	5
Difficulties Engaging in Goal-Directed Behavior When Distressed (5)								
Configural	17.20	8	0.994	0.984	0.05	0.02-0.09		
Metric	19.07	12	0.995	0.992	0.04	0.00-0.07	1.87	4
Strong factorial	43.42	16	0.981	0.976	0.06	0.04-0.09	24.35	4**
Nonacceptance of Negative Emotional Responses (6)								
Configural	26.05	14	0.990	0.978	0.04	0.02-0.07		
Metric	37.57	19	0.985	0.976	0.05	0.02-0.07	11.52	5*
Strong factorial	63.46	24	0.968	0.960	0.06	0.04-0.08	25.89	5**
Limited Access to Emotion Regulation Strategies (8)								
Configural	122.04	38	0.963	0.946	0.07	0.06-0.09		
Metric	129.12	45	0.963	0.954	0.07	0.05-0.08	7.08	7
Strong factorial	156.80	52	0.954	0.951	0.07	0.06-0.08	27.68	7**

Note: DERS = Difficulties in Emotion Regulation Scale; CFI = comparative fit index; TLI = Tucker–Lewis index; RMSEA = root mean square error of approximation.

* $p < .05$, two-tailed. ** $p < .001$, two-tailed.

Table 4. Mean DERS, Anxiety, Depression, Aggression and Delinquency Scores (Standard Deviations) for Female and Male Adolescents

	Total sample	Males	Females	F	Cohen's <i>d</i>
DERS	<i>N</i> = 870	<i>n</i> = 429	<i>n</i> = 441		
Lack of Emotional Awareness	18.45 (4.92)	19.63 (4.74)	17.31 (4.81)	51.47**	.49
Lack of Emotional Clarity	8.96 (3.27)	8.39 (3.00)	9.51 (3.46)	26.27**	-.35
Difficulties Controlling Impulsive Behavior When Distressed	10.82 (4.51)	10.94 (4.68)	10.71 (4.34)	.58	.05
Difficulties Engaging in Goal-Directed Behavior When Distressed	14.50 (4.57)	13.71 (4.56)	15.27 (4.45)	25.99**	-.35
Nonacceptance of Negative Emotional Responses	10.52 (4.00)	10.04 (3.59)	10.98 (4.31)	12.21**	-.22
Limited Access to ER Strategies	15.28 (5.64)	14.17 (4.80)	16.35 (6.17)	34.00**	-.39
Externalizing	<i>N</i> = 215	<i>n</i> = 108	<i>n</i> = 107		
Aggression	7.77 (5.03)	8.21 (5.83)	7.32 (4.05)	1.71	.18
Delinquency	3.65 (3.11)	4.53 (3.57)	2.77 (2.26)	18.66**	.59
Internalizing	<i>N</i> = 212	<i>n</i> = 98	<i>n</i> = 114		
Anxiety	55.39 (10.85)	50.74 (7.28)	59.38 (11.82)	39.54**	-.88
Depression	<i>N</i> = 197	<i>n</i> = 105	<i>n</i> = 92		
	51.45 (11.99)	48.86 (10.27)	54.41 (13.13)	11.04**	-.48

Note: DERS = Difficulties in Emotion Regulation Scale; ER = Emotion Regulation. *F* values as obtained from (post hoc) univariate analyses of variance.

** $p < .001$, two-tailed.

Petermann, 2006). In addition, findings that male adolescents reported lower levels of emotional awareness than female

adolescents are consistent with Gratz and Roemer's (2004) finding of gender differences on this subscale in particular.

Table 5. Zero-Order Correlations Between DERS Subscales and Externalizing and Internalizing Problems in Adolescents

	YSR		SCARED Anxiety N = 210	RADS-2 Depression N = 197
	Aggression N = 215	Delinquency N = 215		
DERS				
Lack of Emotional Awareness	.10	.22**	-.09	-.10
Lack of Emotional Clarity	.07	-.01	.51***	.62***
Difficulties Controlling Impulsive Behavior When Distressed	.30***	.10	.28***	.27***
Difficulties Engaging in Goal-Directed Behavior When Distressed	.29***	.04	.48***	.29***
Nonacceptance of Negative Emotional Responses	.11	.05	.52***	.52***
Limited Access to ER Strategies	.25***	.07	.69***	.64***

Note: DERS = Difficulties in Emotion Regulation Scale; YSR = Youth Self-Report; SCARED = Screen for Child Anxiety Related Emotional Disorders; RADS = Reynolds Adolescent Depression Scale; ER = Emotion regulation.
** $p < .01$, one-tailed. *** $p < .001$, one-tailed.

Table 6. Standardized Regression Weights of DERS Subscales Regressed on Internalizing and Externalizing Problems in Adolescents

	YSR			
	Aggression N = 215, $R^2 = .15$	Delinquency N = 215, $R^2 = .13$	SCARED Anxiety N = 210, $R^2 = .58$	RADS-2 Depression N = 197, $R^2 = .59$
DERS				
Lack of Emotional Awareness	.12	.20**	-.14	-.06
Lack of Emotional Clarity	-.13	-.15	.21**	.45***
Difficulties Controlling Impulsive Behavior When Distressed	.19*	.04	-.13	-.04
Difficulties Engaging in Goal-Directed Behavior When Distressed	.25**	.04	.08	.06
Nonacceptance of Negative Emotional Responses	-.03	.08	.20***	.23***
Limited Access to ER Strategies	.09	.07	.48***	.25***

Note: DERS = Difficulties in Emotion Regulation Scale; ER = Emotion Regulation.
* $p < .05$, two-tailed. ** $p < .01$, two-tailed. *** $p < .001$, two-tailed.

Indeed, the effect sizes of these gender differences were comparable across these two studies (Cohen's $d = .42$ as calculated from Gratz & Roemer's, 2004, report, and $d = .49$ in the present investigation). Contrary to hypotheses, however, female adolescents also reported lower emotional clarity and greater difficulties engaging in goal-directed behaviors when distressed. Furthermore, our hypothesis that male participants would report greater difficulties controlling impulsive behaviors when distressed was not confirmed. Although past studies have found that girls are better at inhibiting inappropriate behavioral responses than boys (Else-Quest et al., 2006), it is possible that boys develop better inhibitory control as they age, becoming closer to their female counterparts in this regard during adolescence. Despite providing suggestive support for gender differences in levels of specific ER difficulties, however, it is important to note that findings of gender differences in lack of emotional awareness, difficulties engaging in goal-directed

behavior when distressed, and nonacceptance of negative emotional responses in particular may be due in part to the fact that boys and girls use a different zero-point in response to some of the items of these subscales.

As expected, different dimensions of ER difficulties demonstrated statistically significant and specific associations with both externalizing and internalizing problems, providing support for the construct validity of DERS scores within this adolescent sample, as well as the utility (and distinctiveness) of the DERS subscales. Also, whereas ER difficulties together accounted for 15% and 13% of the variance in Aggressive Behavior and Delinquent Behavior, respectively, the DERS subscales accounted for 58% and 59% of the variance in Anxiety and Depression, respectively. Findings of a stronger relationship between ER difficulties as assessed with the DERS and internalizing (vs. externalizing) problems are consistent with the results of Garnefski et al. (2005), who found that cognitive ER strategies explained more of the

variance in internalizing than externalizing problems. Furthermore, the higher explained variance of DERS factors with internalizing than with externalizing problems was not attributable to item overlap between the DERS and internalizing scales. Moreover, findings that ER difficulties accounted for almost twice as much variance in aggressive behavior than in delinquent behavior are in line with past findings suggesting that aggression implies more emotional involvement than delinquency (specifically, psychopathic delinquency; see Herpertz et al., 2001).

Several limitations warrant consideration. First, the present study was based on a general community sample, and associations might be different for clinical populations of adolescents. Generalizability of the results is further restricted by the fact that all participants attended the same school. An additional limitation is the exclusive reliance on self-report measures, which may be influenced by an individual's willingness or ability to report accurately on their behaviors. Furthermore, whereas the sole use of self-report data does not pose a limitation for our conclusions regarding the factor structure and internal consistency of the DERS scores in this sample, it may have resulted in an overestimation of the links between ER difficulties and internalizing and externalizing problems due to shared-method variance (e.g., Fergusson & Horwood, 1987). Nonetheless, it is important to note that scores on the DERS and its subscales have been found to be associated with behavioral, neurological, and experimental measures of related constructs, including behavioral measures of the willingness to experience emotional distress (Gratz et al., 2007), an experimental measure of ER (Gratz et al., 2006), and activation of the rostral anterior cingulate cortex (an area of the brain thought to be associated with inhibitory control) among cocaine-dependent patients (Li et al., 2008). Given that the DERS items focus primarily on the regulation of negative emotional states, future research should examine the role of difficulties with the regulation of positive emotional states in adolescent psychopathology as well. A final limitation regards the generalizability of the relation between DERS scores and externalizing problems. Use of the YSR externalizing problem items out of the context of the standard items may have influenced the results in unknown ways.

Despite the clear clinical significance of this line of research, the study of ER in adolescents is still in its infancy. Future research needs to examine how dimensions of ER difficulties develop over the course of adolescence, how they relate to the development of psychopathology, and the moderating roles of personal and social factors (e.g., social relations and hormones and brain development) in the relationship between ER difficulties and psychopathology. This study suggests the potential utility of the DERS for future research on ER in adolescents, providing preliminary evidence for the reliability (specifically, internal consistency) and validity of scores on this measure among community adolescents.

Acknowledgment

The staff and the students from the selected school are kindly thanked for their participation in the present study.

Declaration of Conflicting Interests

The authors declared no potential conflicts of interests with respect to the authorship and/or publication of this article.

Funding

The authors received no financial support for the research and/or authorship of this article.

References

- Achenbach, T. M. (1991). *Manual for the Youth Self Report and 1991 profiles*. Burlington, VT: University Associates in Psychiatry.
- American Psychiatric Association. (1994). *Diagnostic and statistical manual of mental disorders* (4th ed.). Washington, DC: Author.
- Baer, R. A., Smith, G. T., Hopkins, J., Krietemeyer, J., & Toney, L. (2006). Using self-report assessment methods to explore facets of mindfulness. *Assessment, 13*, 27-45.
- Beauchaine, T. P., Gatzke-Kopp, L., & Mead, H. K. (2007). Polyvagal theory and developmental psychopathology: Emotion dysregulation and conduct problems from preschool to adolescence. *Biological Psychology, 74*, 174-184.
- Bentler, P. B., & Bonett, D. G. (1980). Significance tests and goodness-of-fit in the analyses of covariance structures. *Psychological Bulletin, 88*, 588-606.
- Birmaher, B., Ketharpal, S., Brent, D., Cully, M., Balach, M., Kaufman, J., et al. (1997). The screen for child anxiety related emotional disorders (SCARED): Scale construction and psychometric characteristics. *Journal of the American Academy of Child and Adolescent Psychiatry, 36*, 545-553.
- Bradley, S. J. (2000). *Affect regulation and the development of psychopathology*. New York: Guilford Press.
- Brody, L. R., & Hall, J. A. (1993). Gender and emotion. In J. Haviland & M. Lewis (Eds.), *Handbook of emotions* (pp. 447-460). New York: Guilford Press.
- Browne, M. W., & Cudeck, R. (1993). Alternative ways of assessing model fit. *Sociological Methods and Research, 21*, 230-258.
- Centraal Bureau voor de Statistiek. (2008a, April). Voortgezet onderwijs; deelname van de leerlingen naar herkomstgroepering [Secondary education; participation of students based on immigrant status]. Retrieved September 10, 2008, from [http://statline.cbs.nl/StatWeb/table.asp?STB=G2,G3&LA=n1&DM=SLNL&PA=71215ned&D1=a&D2=1&D3=0-3&D4=0,6-9&D5=a,!2,!5-9&D6=0-2&D7=a&D8=\(1-2\)-l&LYR=G1:0,G5:0,G6:0,G7:2&HDR=T,G4](http://statline.cbs.nl/StatWeb/table.asp?STB=G2,G3&LA=n1&DM=SLNL&PA=71215ned&D1=a&D2=1&D3=0-3&D4=0,6-9&D5=a,!2,!5-9&D6=0-2&D7=a&D8=(1-2)-l&LYR=G1:0,G5:0,G6:0,G7:2&HDR=T,G4)
- Centraal Bureau voor de Statistiek. (2008b, August). Aantal leerlingen in het voltijd voortgezet onderwijs [Number of full-time students in secondary education]. Retrieved September 10, 2008, from [http://statline.cbs.nl/StatWeb/table.asp?STB=G1&LA=n1&DM=SLNL&PA=37545vol&D1=0&D2=0-4,16-17,29,\(1-3\)-l&D3=a&D4=5,10,\(1-1\)-l&HDR=T,G2,G3](http://statline.cbs.nl/StatWeb/table.asp?STB=G1&LA=n1&DM=SLNL&PA=37545vol&D1=0&D2=0-4,16-17,29,(1-3)-l&D3=a&D4=5,10,(1-1)-l&HDR=T,G2,G3)

- Chen, F. F., Sousa, K. H., & West, S. G. (2005). Testing measurement invariance of second-order factor models. *Structural Equation Modeling, 12*, 471-492.
- Cheung, G. W., & Rensvold, R. B. (2002). Evaluating goodness-of-fit indices for testing measurement invariance. *Structural Equation Modeling, 9*, 233-255.
- Cole, P. M., Michel, M., & Teti, L. (1994). The development of emotion regulation and dysregulation: A clinical perspective. *Monographs of the Society for Research in Child Development, 59*, 73-100.
- de Groot, A., Koot, H. M., & Verhulst, F. C. (1996). Cross-cultural generalizability of the Youth Self-Report and Teacher's Report Form cross-informant syndromes. *Journal of Abnormal Child Psychology, 24*, 651-664.
- Else-Quest, N. M., Hyde, J. S., Goldsmith, H. H., & van Hulle, C. A. (2006). Gender differences in temperament: A meta-analysis. *Psychological Bulletin, 132*, 33-72.
- Fergusson, D. M., & Horwood, L. J. (1987). The trait and method components of ratings of conduct disorder: II. Factors relating to the trait component of conduct disorder scores. *Journal of Child Psychology and Psychiatry, 28*, 261-272.
- Fernandez-Berrocal, P., Alcaide, R., Extremera, N., & Pizarro, D. (2006). The role of emotional intelligence in anxiety and depression among adolescents. *Individual Differences Research, 4*, 16-27.
- Fox, H. C., Axelrod, S. R., Paliwal, P., Sleeper, J., & Sinha, R. (2007). Difficulties in emotion regulation and impulse control during cocaine abstinence. *Drug and Alcohol Dependence, 89*, 298-301.
- Garnefski, N., Kraaij, V., & Spinhoven, P. (2002). *CERQ: Manual for the use of the cognitive emotion regulation questionnaire*. Leiderdorp, Netherlands: DATEC.
- Garnefski, N., Kraaij, V., & van Etten, M. (2005). Specificity of relations between adolescents' cognitive emotion regulation strategies and internalizing and externalizing psychopathology. *Journal of Adolescence, 28*, 619-631.
- Gratz, K. L., Bornovalova, M. A., Delany-Brumsey, A., Nick, B., & Lejuez, C. W. (2007). A laboratory-based study of the relationship between childhood abuse and experiential avoidance among inner-city substance users: The role of emotional non-acceptance. *Behavior Therapy, 38*, 256-268.
- Gratz, K. L., Paulson, A., Jakupcak, M., & Tull, M. T. (2009). Exploring the relationship between childhood maltreatment and intimate partner abuse: Gender differences in the mediating role of emotion dysregulation. *Violence and Victims, 24*, 68-82.
- Gratz, K. L., & Roemer, L. (2004). Multidimensional assessment of emotion regulation and dysregulation: Development, factor structure, and initial validation of the Difficulties in Emotion Regulation Scale. *Journal of Psychopathology and Behavioral Assessment, 26*, 41-54.
- Gratz, K. L., & Roemer, L. (2008). The relationship between emotion dysregulation and deliberate self-harm among female undergraduate students at an urban commuter university. *Cognitive Behaviour Therapy, 37*, 14-25.
- Gratz, K. L., Rosenthal, M. Z., Tull, M. T., Lejuez, C. W., & Gunderson, J. G. (2006). An experimental investigation of emotion dysregulation in borderline personality disorder. *Journal of Abnormal Psychology, 115*, 850-855.
- Gratz, K. L., Tull, M. T., Baruch, D. E., Bornovalova, M. A., & Lejuez, C. W. (2008). Factors associated with co-occurring borderline personality disorder among inner-city substance users: The roles of childhood maltreatment, negative affect intensity/reactivity, and emotion dysregulation. *Comprehensive Psychiatry, 49*, 603-615.
- Gregorich, S. E. (2006). Do self-report instruments allow meaningful comparisons across diverse population groups? Testing measurement invariance using the confirmatory factor analyses framework. *Medical Care, 44*, 78-94.
- Gross, J. J. (1998). The emerging field of emotion regulation: An integrative review. *Review of General Psychology, 2*, 271-299.
- Hale, W. W., III, Raaijmakers, Q., Muris, P., & Meeus, W. (2005). Psychometric properties of the Screen for Child Anxiety Related Emotional Disorders (SCARED) in the general adolescent population. *Journal of the American Academy for Child and Adolescent Psychiatry, 44*, 283-290.
- Hamilton, J. A., & Jensvold, M. (1992). Personality, psychopathology and depressions in women. In L. S. Brown & M. Ballou (Eds.), *Personality and psychopathology: Feminist reappraisals* (pp. 116-143). New York: Guilford Press.
- Hampel, P., & Petermann, F. (2006). Perceived stress, coping, and adjustment in adolescents. *Journal of Adolescent Health, 38*, 409-415.
- Herpertz, S. C., Werth, U., Lukas, G., Qunaibi, M., Schuerkens, A., Kunert, H., et al. (2001). Emotion in criminal offenders with psychopathy and borderline personality disorder. *Archives of General Psychiatry, 58*, 737-745.
- Johnson, K. A., Zvolensky, M. J., Marshall, E. C., Gonzalez, A., Abrams, K., & Vujanovic, A. A. (2008). Linkages between cigarette smoking outcome expectancies and negative emotional vulnerability. *Addictive Behaviors, 33*, 1416-1424.
- Kincaid, J. P., Fishburne, R. P., Rogers, R. L., & Chissom, B. S. (1975). *Derivation of new readability formulas for navy enlisted personnel*. Millington, TN: Navy Research Branch.
- Lengua, L. J. (2002). The contribution of emotionality and self-regulation to the understanding of children's responses to multiple risks. *Child Development, 73*, 144-161.
- Li, C. R., Huang, C., Yan, P., Bhagwagar, Z., Milivojevic, V., & Sinha, R. (2008). Neural correlates of impulse control during stop signal inhibition in cocaine-dependent men. *Neuropsychopharmacology, 33*, 1798-1806.
- Luebbers, S., Downey, L. A., & Stough, C. (2007). The development of an adolescent measure of EI. *Personality and Individual Differences, 42*, 999-1009.
- Muris, P., Merckelbach, H., Mayer, B., van Brakel, A., Thissen, S., Moulart, V., et al. (1998). The Screen for Child Anxiety Related Emotional Disorders (SCARED) and traditional childhood anxiety measures. *Journal of Behavior Therapy and Experimental Psychiatry, 29*, 327-339.

- Muthén, L. K., & Muthén, B. O. (1998-2007). *Mplus users' guide* (4th ed.). Los Angeles, CA: Muthén & Muthén.
- Petrides, K. V., Frederickson, N., & Furnham, A. (2004). The role of trait emotional intelligence in academic performance and deviant behavior at school. *Personality and Individual Differences, 36*, 277-293.
- Reynolds, W. M. (2002). *Reynolds Adolescent Depression Scale: Professional manual* (2nd ed.). Lutz, FL: Psychological Assessment Resources.
- Roemer, L., Lee, J. K., Salters-Pedneault, K., Erisman, S. M., Orsillo, S. M., & Mennin, D. S. (2009). Mindfulness and emotion regulation difficulties in generalized anxiety disorder: Preliminary evidence for independent and overlapping contributions. *Behavior Therapy, 40*, 142-154.
- Salovey, P., Mayer, J. D., Goldman, S. L., Turvey, C., & Palfai, T. P. (1995). Emotional attention, clarity, and repair: Exploring emotional intelligence using the trait meta-mood scale. In J. W. Pennebaker (Ed.), *Emotion, disclosure, and health* (pp. 125-154). Washington, DC: American Psychological Association.
- Salters-Pedneault, K., Roemer, L., Tull, M., Rucker, L., & Mennin, D. S. (2006). Evidence of broad deficits in emotion regulation associated with chronic worry and generalized anxiety disorder. *Cognitive Therapy and Research, 30*, 469-480.
- Shields, A., Cicchetti, D., & Ryan, R. M. (1994). The development of emotional and behavioral self-regulation and social competence among maltreated school-age children. *Development and Psychopathology, 6*, 57-75.
- Silk, J. S., Steinberg, L., & Morris, S. A. (2003). Adolescents' emotion regulation in daily life: Links to depressive symptoms and problem behavior. *Child Development, 74*, 1869-1880.
- Southam-Gerow, M. A., & Kendall, P. (2001). Emotion regulation and understanding implications for child psychopathology and therapy. *Clinical Psychology Review, 22*, 189-222.
- Stegge, G. T. M., & Meerum Terwogt, M. (2007). Awareness and regulation of emotion in typical and atypical development. In J. J. Gross (Ed.), *Handbook of emotion regulation* (pp. 269-286). New York: Guilford Press.
- Thompson, R. A. (1994). Emotion regulation: A theme in search of definition. *Monographs of the Society for Research in Child Development, 59*, 25-52.
- Tull, M. T., Barrett, H. M., McMillan, E. S., & Roemer, L. (2007). A preliminary investigation of the relationship between emotion regulation difficulties and posttraumatic stress symptoms. *Behavior Therapy, 38*, 303-313.
- Tull, M. T., & Gratz, K. L. (2008). Further examination of the relationship between anxiety sensitivity and depression: The mediating role of experiential avoidance and difficulties engaging in goal-directed behavior when distressed. *Journal of Anxiety Disorders, 22*, 199-210.
- Tull, M. T., & Roemer, L. (2007). Emotion regulation difficulties associated with the experience of uncued panic attacks: Evidence of experiential avoidance, emotional nonacceptance, and decreased emotional clarity. *Behavior Therapy, 38*, 378-391.
- Varni, J. W., Seid, M., & Rode, C. A. (1999). The PedsQL: Measurement model for the Pediatric Quality of Life Inventory. *Medical Care, 37*, 126-139.
- Verhulst, F. C., van der Ende, J., & Koot, H. M. (1997). *Handleiding voor de Youth Self-Report (YSR)* [Manual for the Youth Self-Report]. Rotterdam, The Netherlands: Afdeling Kinder-en jeugdpsychiatrie, Sophia Kinderziekenhuis/Academisch Ziekenhuis Rotterdam/Erasmus Universiteit Rotterdam.
- Vujanovic, A. A., Zvolensky, M. J., & Bernstein, A. (2008). The interactive effects of anxiety sensitivity and emotion dysregulation in predicting anxiety-related cognitive and affective symptoms. *Cognitive Therapy and Research, 32*, 803-817.
- Zeman, J., Cassano, M., Perry-Parrish, & Stegall, S. (2006). Emotion regulation in children and adolescents. *Developmental and Behavioral Pediatrics, 27*, 155-168.