



## Autonomy support buffers the impact of self-criticism on depression

Theodore A. Powers<sup>a,\*</sup>, Emily Moore<sup>b</sup>, Shelby Levine<sup>c</sup>, Anne Holding<sup>d</sup>, David C. Zuroff<sup>c</sup>, Richard Koestner<sup>c</sup>

<sup>a</sup> University of Massachusetts Dartmouth, United States of America

<sup>b</sup> Stanford University School of Medicine, United States of America

<sup>c</sup> McGill University, Canada

<sup>d</sup> New York University, United States of America

### ARTICLE INFO

#### Keywords:

Self-criticism  
Autonomy support  
Depression

### ABSTRACT

The current study examined the associations among self-criticism, perceptions of autonomy support, and depression prior to and during the onset of the Covid pandemic. 283 students at a large Canadian university participated in a goal related study, and completed questionnaires assessing personality, autonomy support, and depressive symptoms starting in September of 2019 and ending in May of 2020. The results showed that self-criticism was associated with increases in depressive symptomatology, and that autonomy support was inversely associated with depression. The results also showed that autonomy support moderated the effect of self-criticism on depression such that individuals with higher baseline self-criticism who perceived high levels of autonomy support reported lower levels of depression during the beginning of the pandemic. These results confirm the deleterious impact of self-criticism and the potential benefits of autonomy support. The presence of autonomy support appears to buffer those who are high in self-criticism from increased depressive symptoms. These results have important clinical implications, suggesting the need to address the perniciousness of self-criticism and the need to develop innovative ways to enhance the delivery of autonomy support.

### 1. Introduction

When a crisis like the COVID-19 pandemic strikes, personality differences and social support are likely to predict the ability to cope (Flett & Hewitt, 2020). The CDC reported that during the pandemic levels of depression were clearly on the rise (Jia et al., 2021). Aspects of self-definition and experiences of social support can serve as buffers against depression or conversely as risk factors for depression (Blatt & Zuroff, 1992). Different personality styles are associated with varying degrees of coping and perceived support (Dunkley et al., 2003). The current study examined the potential associations among self-criticism, perceptions of autonomy support, and depression during the pandemic. We measured these variables as part of a larger study before the onset and during the beginning of the pandemic.

Self-criticism is conceptualized as a maladaptive form of self-definition, characterized by negative cognitive appraisals of the self, guilt, and fear of loss of approval for failing to live up to standards (Blatt, 2004; Blatt & Zuroff, 1992). Self-criticism is consistently associated with

a variety of personal and interpersonal difficulties and forms of psychopathology (Blatt, 2004; Powers et al., 2004; Zuroff et al., 1994). In particular, numerous studies show an association between self-criticism or self-critical perfectionism and depression (Levine et al., 2020; Moore et al., 2021; Powers et al., 2007; Powers et al., 2009; Shahar et al., 2003, 2006; Werner et al., 2019).

Self-critical individuals whether characterologically or on a more domain-specific level tend to either interpret or create environments that increase their stress levels and can in certain circumstances lead to higher levels of psychopathology (Shahar, 2015; Zuroff et al., 2021). There is a considerable body of evidence supporting this “stress generation” hypothesis (Shahar & Priel, 2003; Shahar, 2015; Levine et al., 2021). Dunkley and his colleagues demonstrated that self-criticism leads to a number of negative effects through increased “hassles” or stressful events, decreased social support, and maladaptive coping (Dunkley et al., 2000; Dunkley et al., 2003; Dunkley et al., 2014). Crises of any sort challenge one's adaptive capacity, and the pandemic was certainly a challenge writ large. It is likely that the personality tendencies of self-

\* Corresponding author at: Department of Psychology, University of Massachusetts Dartmouth, 285 Old Westport Rd., North Dartmouth, MA 02747-2300, United States of America.

E-mail address: [tpowers@umassd.edu](mailto:tpowers@umassd.edu) (T.A. Powers).

<https://doi.org/10.1016/j.paid.2022.111876>

Received 8 July 2022; Received in revised form 24 August 2022; Accepted 25 August 2022

Available online 2 September 2022

0191-8869/© 2022 Elsevier Ltd. All rights reserved.

criticism increased the vulnerability to depression during this crisis period.

Social support during a period of crisis is also likely to play an important role in the development of psychopathology such as depressive reactions. However, with respect to support, it may not be simply the amount of support that one receives or perceives, but the nature of that support. Koestner et al. (2012, 2014) offer an important distinction between autonomy support and more directive forms of support. Self-determination theory proposes that interpersonal support for autonomy establishes the context for the development and thriving of healthy self-regulation (Deci & Ryan, 2000). Autonomy support involves acknowledging an individual's feelings and perspective, refraining from excessive control and pressure, and encouraging choices and options (Reeve et al., 1999; Silva et al., 2011; Gorin et al., 2020). By contrast more directive support involves well-meaning attempts at support that may nonetheless be experienced as intrusive or controlling, such as repeated reminders or conditional praise. Previous research shows differential effects for autonomy support and more directive forms of support from important others (Koestner et al., 2012, 2014).

Autonomy supportive environments are consistently associated with greater internalized motivation and the promotion of healthy adaptation and better functioning (Deci et al., 1994; Deci & Ryan, 2000; Koestner et al., 2006). Studies on autonomy support from significant others show the facilitation of a variety of health-related behaviors such as weight management (Williams et al., 2006; Powers et al., 2008; Gorin et al., 2014, 2020). Other studies demonstrate that autonomy support is consistently associated with relationship quality, subjective well-being, and better goal progress across a variety of goal domains (Koestner et al., 2012). Recent work even shows that autonomy support is beneficial for both the recipient and the provider of that support (Powers et al., 2021). More pertinent to the current study, previous research also indicates that autonomy support is negatively associated specifically with depression (Van der Giessen et al., 2013; Yu et al., 2016). So, the pressing question that remains is whether the salubrious effects of autonomy support might serve as a buffer against the damaging vulnerability to depression engendered by self-criticism.

To summarize, both theory and previous research suggest that self-criticism ought to be related to higher depression during a crisis such as the COVID pandemic and that autonomy support ought to be related to lower levels of depression. The current study explored the potential buffer that autonomy support may provide for those high on self-criticism against developing depressive symptomatology by examining possible moderation effects. If the self-critical individual receives and/or perceives autonomy support, then that support may serve as a protective factor for the deleterious impact of self-criticism on depression.

This study measured self-criticism, perceived autonomy support, and depression over a nine-month period prior to and including the onset of the COVID pandemic. We hypothesized the following:

1. Baseline self-criticism would be related to increased depression over time.
2. Autonomy support would be related to less depression (while more directive support would be unrelated).
3. The relation of self-criticism to depression would be moderated by autonomy support such that those individuals who are higher on self-criticism and who perceived higher levels of autonomy support would experience less depressive symptomatology.

## 2. Method

### 2.1. Participants and procedure

Participants were 283 students at a large Canadian university ( $M_{\text{age}} = 20.70$ ,  $SD = 3.80$ , 83 % female) collected over the 2019–2020 academic school year. The ethnic background of our sample was predominantly European descent (46 %) but included 38 % Asian descent, 3 %

African descent, 5 % Middle Eastern descent, and 4 % Hispanic. Participants were recruited through advertisements in classes and around campus to participate in a year-long study on goals. The four key time points of the study were September, November, March, and May. There was also a December assessment that we do not use in this study. We measured self-criticism at T1 and T4 (September and May), autonomy support at T2&3 (November and March), and depression at T1 and T4. Note the COVID-19 pandemic started to affect Canada in March of 2020. Montreal universities were closed March 13th and students were asked to return home where they were expected to shelter like the rest of the population. If participants completed each time-point they were compensated with \$50, if they completed a portion of the time points, they received partial compensation. Prior to taking part in the study, each participant was asked to read over and agree to the informed consent. In the initial assessment, all participants completed a series of demographic questions, as well as questions on personality, mental health, and their personal goals. The overall retention across the entire school year for the sample was 83 %. This research was approved by the university research and ethics board.

### 2.2. Measures

#### 2.2.1. Self-criticism

To assess self-criticism we used a brief 6-item scale derived from the Depressive Experiences Questionnaire (DEQ) (Blatt et al., 1976). Rudich et al. (2008) selected six DEQ items based on two a priori criteria. First, these items possessed excellent face validity, namely, their content clearly and unmistakably reflect self-criticism, defined as the tendency to set high self-standards and to adopt a punitive stance toward the self. Second, these items were found to be free of explicit mood adjectives (e. g., sadness, irritation), which will protect against their contributing to spurious associations with negative affect and depression. Sample items include “I have a tendency to be very self-critical” and “There is a significant gap between who I am today and who I would like to be.” The six-item scale correlates above 0.80 with the full DEQ self-criticism scale. In our study the reliability of the short self-criticism scale was acceptable,  $\alpha = 0.78$ .

#### 2.2.2. Support

Perceived autonomy support and directive support were assessed for two supporters at T2 and T3 using three items for autonomy support and four for directive support, which have been used to measure autonomy and directive support in previous research (Koestner et al., 2002). First participants were asked to think of one friend and one family member who helped them while pursuing all their goals, and then they were asked a series of questions on how supportive each of these individuals have been. A sample item for autonomy support is “I feel this person understands how I see things with respect to my goal.” A sample item for directive support is “This person likes to provide encouragement and guidance for how I can reach my goals.” All ratings were made on a 7-point scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). A mean of all items for each supporter was taken and then averaged to compute an autonomy support and directive support score ( $\alpha_{AS} = 81$ ,  $\alpha_{DS} = 0.85$ ).

#### 2.2.3. Depressive symptoms

The Centre for Epidemiologic Studies Depression Scale Revised (CESD-R 10) was used to assess symptoms of depression (Andresen et al., 1994). The CESD-R 10 is a validated and reliable self-report measure of depression symptoms that focuses on the affectivity component of depressed mood (Andresen et al., 1994). The scale includes items such as “I could not get going” and “I was bothered by things that usually don't bother me.” It is measured on a four-point Likert scale ranging from 1 “rarely or none of the time (<1 day)” to 4 “most or all the time (5 - 7 days).” A depressive symptoms score was computed by averaging the ten items ( $\alpha = 0.86$ ). Although the CESD-R 10 was originally developed for

older adults, the scale has shown excellent reliability in studies with community samples of diverse ages (Grzywacz et al., 2006).

### 3. Results

Table 1 presents the means and standard deviations for all variables in the study. Depressive symptoms increased dramatically from September to May,  $t(243) = 10.19, p < .001$ . September and May levels of depression were moderately correlated,  $r = 0.33, p < .001$ . Self-criticism and autonomy-support were both relatively high on the 1–7 scales. Self-criticism was significantly positively related to depression levels whereas autonomy support was significantly negatively related. An attrition analysis showed that participants who dropped out of the study did not differ from those who remained, in terms of baseline depression, baseline self-criticism, autonomy support or directive support ( $ps > .20$ ).

The first question was whether self-criticism and autonomy support were related to changes in depression from September 2019 to May 2020. Data screening found the variables of interest to be normally distributed, making them suitable for regression analyses. End of year depression was regressed on the following variables entered sequentially in a hierarchical multiple regression: Baseline depression, baseline self-criticism, midyear directive support and midyear autonomy support, and the interaction of autonomy support and baseline self-criticism. The regression model resulted in a highly significant multiple R of 0.482,  $F(6, 227) = 13.76, p < .001$ . Self-criticism was significantly positively associated with depression ( $\beta = 0.236, t(227) = 3.85, p < .001$ ) whereas autonomy support was significantly negatively related to depression ( $\beta = -0.274, t(226) = -3.61, p < .001$ ). Directive support was marginally related to higher depression ( $\beta = 0.136, t(225) = 1.63, p = .10$ ). The interaction of self-criticism and autonomy support was also significant ( $\beta = 0.136, t(224) = 2.26, p = .03$ ).

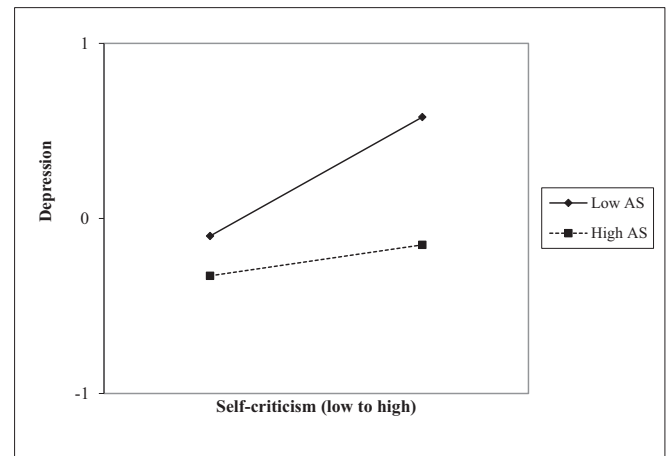
A moderation analysis was performed to more closely examine how the level of autonomy supported influenced the relation of self-criticism to change in depression over the school year. Directive support was included as a covariate. Specifically, we planned to test a model in which the relation of self-criticism to depression was tested at the level of 1 standard deviation above and below the mean for autonomy support (Hayes, 2022).

The results showed a significant self-criticism X autonomy support interaction effect,  $R^2$  change = 0.02,  $F(1,228) = 5.10, p = .029$ . The conditional effect of self-criticism on change in depression was significant at the level of -1SD autonomy support,  $\beta = 0.35, SE = 0.08, t(75) = 4.33, p = .000, 95\% \text{ CI } [0.19, 0.51]$ . It was also significant at 0SD autonomy support,  $\beta = 0.22, SE = 0.06, t(73) = 3.70, p = .000, 95\% \text{ CI } [0.10, 0.34]$ . By contrast, the conditional effect of self-criticism on change in depression was not significant at the level of +1SD autonomy support,  $\beta = 0.09, SE = 0.08, t(78) = 1.14, p = .26, 95\% \text{ CI } [-0.07, 0.26]$ . Thus, the negative effect of self-criticism on the development of depressive symptoms over the pandemic year disappeared when university students had received high levels of autonomy support. Fig. 1 presents the moderator results graphically.

**Table 1**  
Means, standard deviations and correlations of main variables.

	M	SD	AS	DS	Depr T1	Depr T4
Self-Criticism T1	5.28	1.10	-0.089	0.032	0.267*	0.311*
Aut Support T2 & T3	5.56	0.89		0.682	-0.209*	-0.268*
Dir Support T2 & T3	5.14	1.02			-0.069	-0.070
Depression T1	8.92	3.71				0.332*
Depression T4	12.93	6.14				

\*  $p < .01$ .



**Fig. 1.** The interaction of self-criticism and autonomy support on depression at one standard deviation above and below the mean for self-criticism and autonomy support.

### 4. Discussion

The relations of self-criticism and autonomy support to depression were examined in the context of the COVID pandemic. The study assessed these variables prospectively over a nine-month period prior to and during the onset of the pandemic. The results provided a clear picture of the negative association between self-criticism and depression. These results are consistent with theoretical predictions and previous research demonstrating the deleterious impact of self-criticism (Blatt & Zuroff, 1992; Dunkley et al., 2003, 2014; Powers et al., 2004, 2007, 2009; Shahar et al., 2006; Moore et al., 2021). Once again it appears that the self-denigration and harsh internal judgment of the self-critic has a pernicious effect that creates an increased vulnerability to psychopathology.

The results of this study also showed that autonomy support was associated with lower depression scores. This finding was consistent with previous research (Van der Giessen et al., 2013; Yu et al., 2016). There was no significant effect for directive support, but in fact a trend toward an association with higher depression scores. A significant moderation effect was also detected. Individuals who were high on baseline self-criticism and who perceived greater autonomy support prior to the pandemic reported lower depression scores during the onset of the pandemic. At low and moderate levels of autonomy support, baseline self-criticism predicted significant increases in depressive symptoms over the course of the pandemic year. It was only at high levels of autonomy support that the positive relation of self-criticism to greater symptoms over time was attenuated. High levels of autonomy support appear to provide a buffer against the deleterious impact of self-criticism on the development of depression. These results highlight the harmful impact of self-criticism and the positive impact of autonomy support.

#### 4.1. Limitations

The generalizability of this study is limited by the exclusive use of university students and mostly women. Expanding the sample to the general public, especially regarding the response to the pandemic, would be necessary to generalize the conclusions of the study. It is also important to note that this was not a clinical sample, and when we refer to depression we are considering depressive symptoms as assessed by the CES-D 10. It is certainly possible that the results may differ in a clinical sample. The study is also limited by the use of self-report of the major variables, and more objective assessment would be useful. In particular, the study assesses the perception of autonomy support, so it is

impossible to determine if the self-critics are actually receiving less support or are perceiving less as a result of potential cognitive distortions. It is likely that both are true to some extent. Studies that include objective measures of autonomy support have shown the positive impact of that support and including such measures would certainly be useful (Powers et al., 2021). Within-person situation variability in the self-critics' responses to stressors has been shown in other studies, and future research could be improved by examining such potential variability (Zuroff et al., 2021). While a strength of this study is its prospective design and associative pathways were identified, we recognize that the design does not allow for causal inferences to be confirmed. Finally, it is not possible to discern if the current results are specific to the COVID crisis period or more generalized. Certainly, depression increased significantly during this period, and it is likely that similar results would be found in response to similar stressful circumstances. Whether similar results would be found under normal or non-crisis circumstances is also a matter for future research.

#### 4.2. Clinical implications

The current research may inform clinical practice in several important ways. The data suggest that the easing of self-criticism can have beneficial effects on the development of depressive symptoms (perhaps particularly during a period of crisis such as the pandemic). Intervention strategies aimed at mitigating self-critical tendencies, such as punitive self-talk and the preoccupation with failure and criticism from others may improve therapeutic outcomes. If individuals can be helped to strive for their best rather than focusing on mistakes and failure that may contribute to greater well-being. Interventions can be designed to address self-critics' tendencies to experience higher levels of stress in their daily lives by addressing their distorted cognitions about daily events, encouraging greater acceptance and self-compassion, and/or by facilitating more effective problem-solving. The current results also suggest the fundamental need to address the interpersonal relationships of the self-critic. The data indicate that autonomy support perceived from significant others can serve as a mitigating factor in the development of depression for those high in self-criticism. Studies show that assessing the specific domains in which individuals are more or less self-critical may also facilitate more targeted and efficient interventions (Zuroff et al., 2021). Therapeutic interventions with self-critics will not be an easy task. Evidence suggests that self-critics can be particularly resistant to treatment, and that they perceive less support in their therapeutic relationships (Blatt, 1995; Zuroff et al., 2000). However, this difficult task may be facilitated by recognizing the particular needs and challenges facing the self-critic. Finally, regarding significant others it appears that providing autonomy support as opposed to more directive forms of support may be the most useful way to help. As such, it would then be important to assist support partners and to develop interventions that facilitate the delivery of autonomy support.

#### 5. Conclusion

The COVID-19 pandemic proved to be a very difficult time for most people, but in particular for those predisposed to adverse reactions to stress. The current study confirms previous work indicating that self-criticism increases the vulnerability to highly stressful circumstances such as the pandemic. This vulnerability increased the likelihood of developing depressive symptoms. The study also highlights the importance of interpersonal support, specifically autonomy support as suggested by Self-determination Theory. The presence of perceived autonomy support apparently served to buffer those who are high in self-criticism from increased depressive symptoms, at least temporarily. These results have important implications for both clinical practice and for further research. There is a significant need to address the challenges that self-criticism poses and to assist with the development of innovative ways to enhance the delivery of support.

#### CRedit authorship contribution statement

The order of authorship reflects the degree of contribution, except for the last author who is the head of the lab and contributed significantly.

#### Data availability

Data will be made available on request.

#### Acknowledgements

The research was funded by a grant from Fonds de Recherche du Québec - Santé.

#### References

- Andresen, E. M., Malmgren, J. A., Carter, W. B., & Patrick, D. L. (1994). Screening for depression in well older adults: Evaluation of a short form of the CES-D. *American Journal of Preventive Medicine*, 10, 77–84. [https://doi.org/10.1016/S0749-3797\(18\)30622-6](https://doi.org/10.1016/S0749-3797(18)30622-6)
- Blatt, S. J. (1995). The destructiveness of perfectionism: Implications for the treatment of depression. *American Psychologist*, 50(12), 1003–1020. <https://doi.org/10.1037/0003-066X.50.12.1003>
- Blatt, S. J. (2004). *Experiences of depression: Theoretical, clinical and research perspectives*. Washington, DC: American Psychological Association.
- Blatt, S. J., D'Affliti, J. P., & Quinlan, D. M. (1976). Experiences of depression in normal young adults. *Journal of Abnormal Psychology*, 85, 383–389.
- Blatt, S. J., & Zuroff, D. C. (1992). Interpersonal relatedness and self-definition: Two prototypes for depression. *Clinical Psychology Review*, 12, 527–562.
- Deci, E. L., Eghrari, H., Patrick, B. C., & Leone, D. R. (1994). Facilitating internalization: The self-determination theory perspective. *Journal of Personality*, 62, 119–142.
- Deci, E. L., & Ryan, R. M. (2000). The “what” and “why” of goal pursuits: Human needs and the self-determination of behavior. *Psychological Inquiry*, 11, 227–268.
- Dunkley, D. M., Blankstein, K. R., Halsall, J., Williams, M., & Winkworth, G. (2000). The relation between perfectionism and distress: Hassles, coping, and perceived social support as mediators and moderators. *Journal of Counseling Psychology*, 47(4), 437–453. <https://doi.org/10.1037/0022-0167.47.4.437>
- Dunkley, D. M., Zuroff, D. C., & Blankstein, K. R. (2003). Self-critical perfectionism and daily affect: Dispositional and situational influences on stress and coping. *Journal of Personality and Social Psychology*, 84, 234–252.
- Dunkley, D. M., Ma, D., Lee, I. A., Preacher, K. J., & Zuroff, D. C. (2014). Advancing complex explanatory conceptualizations of daily negative and positive affect: Trigger and maintenance coping action patterns. *Journal of Counseling Psychology*, 61(1), 93–109. <https://doi.org/10.1037/a0034673>
- Flett, G., & Hewitt, (2020). The perfectionism pandemic meets COVID 19: Understanding the stress, distress, and problems in living for perfectionists during the global health crisis. *Journal of Concurrent Disorders*, 2(1), 80–105.
- Gorin, A. A., Powers, T. A., Koestner, R. K., Wing, R. R., & Raynor, H. A. (2014). Autonomy support, self-regulation and weight loss. *Health Psychology*, 33(4), 332–339.
- Gorin, A. A., Powers, T. A., Gettens, K., Cornelius, T., Koestner, R., Mobley, A. R., Pescatello, L. S., & Huedo-Medina, T. B. (2020). A randomized controlled trial of a theory-based weight-loss program for couples. *Health Psychology*, 39(2), 137–146. <https://doi.org/10.1037/hea0000808>
- Grzywacz, J. G., Hovey, J. D., Seligman, L. D., Arcury, T. A., & Quandt, S. A. (2006). Evaluating short-form versions of the CES-D for measuring depressive symptoms among immigrants from Mexico. *Hispanic Journal of Behavioral Sciences*, 28(3), 404–424.
- Hayes, A. F. (2022). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach* (3rd ed.). Guilford: NY.
- Jia, H., Guerin, R. J., Barile, J. P., et al. (2021). National and state trends in anxiety and depression severity scores among adults during the COVID-19 pandemic. *MMWR. Morbidity and Mortality Weekly Report*, 2021(70), 1427–1432. <https://doi.org/10.15585/mmwr7040e3external icon>
- Koestner, R., Lekes, N., Powers, T. A., & Chicoine, E. (2002). Attaining personal goals: Autonomy plus implementation intentions equals success. *Journal of Personality and Social Psychology*, 83, 231–244.
- Koestner, R., Horberg, E. J., Gaudreau, P., Powers, T. A., DiDio, P., Bryan, C., Jochum, R., & Salter, N. (2006). Bolstering implementation plans for the long haul: The benefits of simultaneously boosting self-concordance or self-efficacy. *Personality and Social Psychology Bulletin*, 32, 1–12.
- Koestner, R., Powers, T. A., Carbonneau, N., Milyavskaya, M., & Chua, S. N. (2012). Distinguishing autonomous and directive forms of goal support their effects on goal progress, relationship quality, and subjective well-being. *Personality and Social Psychology Bulletin*, 38(12), 1609–1620.
- Koestner, R., Powers, T. A., Milyavskaya, M., Carbonneau, N., & Hope, N. (2014). Goal internalization and persistence as a function of autonomous and directive forms of goal support. *Journal of Personality*, 83, 179–190.
- Levin, S. L., Milyavskaya, M., & Zuroff, D. C. (2020). Perfectionism in the transition to university: Comparing diathesis-stress and downward spiral models of depressive symptoms. *Clinical Psychological Science*, 8(1), 52–64.

- Levine, S. L., Tabri, N., & Milyavskaya, M. (2021). Trajectories of depression and anxiety symptoms over time in the transition to university: Their co-occurrence and the role of self-critical perfectionism. *Development and Psychopathology*, 1–12.
- Moore, E., Holding, A. C., Moore, A., Levine, S. L., Powers, T. A., Zuroff, D. C., & Koestner, R. (2021). The role of goal-related autonomy: A self-determination theory analysis of perfectionism, poor goal progress, and depressive symptoms. *Journal of Counseling Psychology*, 68(1), 88.
- Powers, T. A., Zuroff, D. C., & Topciu, R. A. (2004). Covert and overt expressions of self-criticism and perfectionism and their relation to depression. *European Journal of Personality*, 18, 61–72.
- Powers, T. A., Koestner, R., & Zuroff, D. C. (2007). Self-criticism, goal motivation and goal progress. *Journal of Social and Clinical Psychology*, 26, 814–828.
- Powers, T. A., Koestner, R., & Gorin, A. A. (2008). Autonomy support from family and friends and weight loss in college women. *Families, Systems, & Health*, 26, 404–416.
- Powers, T. A., Koestner, R., Lacaille, N., Kwan, L., & Zuroff, D. C. (2009). Self-criticism, motivation and goal progress of athletes and musicians: A prospective study. *Personality and Individual Differences*, 47, 279–283.
- Powers, T. A., Koestner, R., Denes, A., Cornelius, T., & Gorin, A. A. (2021). Autonomy support in a couples' weight loss trial: Helping yourself while helping others. *Families, Systems, & Health*. <https://doi.org/10.1037/fsh0000663>. Advance online publication.
- Reeve, J., Bolt, E., & Cai, Y. (1999). Autonomy-supportive teachers: How they teach and motivate students. *Journal of Educational Psychology*, 91(3), 537–548.
- Rudich, Z., Lerman, S. F., Gurevich, B., Weksler, N., & Shahar, G. (2008). Patients' self-criticism is a stronger predictor of physician's evaluation of prognosis than pain diagnosis or severity in chronic pain patients. *The Journal of Pain*, 9(3), 210–216.
- Shahar, G., Henrich, C. C., Blatt, S. J., Ryan, R., & Little, T. (2003). Interpersonal relatedness, self-definition, and their motivational orientation during adolescence: A theoretical and empirical integration. *Developmental Psychology*, 39, 470–483.
- Shahar, G., Kanitzki, E., Shulman, S., & Blatt, S. J. (2006). Personality, motivation and the construction of goals during the transition to adulthood. *Personality and Individual Differences*, 40, 53–63.
- Shahar, G. (2015). *Erosion: The psychopathology of self-criticism*. Oxford, England: Oxford University Press.
- Shahar, G., & Priel, B. (2003). Active vulnerability, adolescent distress, and the mediating/suppressing role of life events. *Personality and Individual Differences*, 35(1), 199–218.
- Silva, M., Markland, D., Carraca, E. V., Vieira, P. N., Coutinho, S. R., Minderico, C. S., Matos, M. G., Sardinha, L. B., & Teixeira, P. J. (2011). Exercise autonomous motivation predicts 3-yr weight loss in women. *Medicine and Science in Sports and Exercise*, 43, 728–737.
- Van der Giessen, D., Branje, S., & Meesus, W. (2013). Perceived autonomy support from parents and best friends: Longitudinal associations with adolescents' depressive symptoms. *Social Development*, 23(3), 537–555.
- Werner, A. M., Tibubos, A. N., Rohrman, S., & Reiss, N. (2019). The clinical trait self-criticism and its relation to psychopathology: A systematic review. *Journal of Affective Disorders*, 246, 530–547.
- Williams, G. C., Lynch, M. F., McGregor, H. A., Ryan, R. M., Sharp, D., & Deci, E. L. (2006). Validation of the "important other" climate questionnaire: Assessing autonomy support for health-related change. *Families, Systems & Health*, 24, 179–194.
- Yu, C., Li, X., Wang, S., & Zhang, W. (2016). Teacher autonomy support reduces adolescent anxiety and depression: An 18-month longitudinal study. *Journal of Adolescence*, 49, 115–123.
- Zuroff, D. C., Koestner, R., & Powers, T. A. (1994). Self-criticism at age 12: A longitudinal study of adjustment. *Cognitive Therapy and Research*, 18, 367–385.
- Zuroff, D. C., Blatt, S. J., Sotsky, S. M., Krupnick, J. L., Martin, D. J., Sanislow, ... Simmens, S. (2000). Relation of therapeutic alliance and perfectionism to outcome in brief outpatient treatment of depression. *Journal of Consulting and Clinical Psychology*, 68(1), 114.
- Zuroff, D. C., Clegg, K. A., Levine, S. L., Haward, B., & Thode, S. (2021). Contributions of trait, domain, and signature components of self-criticism to stress generation. *Personality and Individual Differences*, 173, Article 110603.