
Psychological Meanings and Functions of Non-suicidal Self-Injury and Eating Disorders

5

Michelle M. Wedig

Abstract

Non-suicidal self-injury (NSSI) and eating disorder behaviors have many things in common, including some of the reasons why people do them. Many researchers have taken a syndromal approach, whereby such behaviors are seen as symptoms of some underlying illness, but it may be more fruitful to examine these behaviors from a functional approach, in which maladaptive behaviors are instead goal-directed behaviors performed to obtain some desired end. This chapter focuses on a functional perspective, presenting evidence for a four-factor model that might underlie both eating disorders and NSSI behavior. This model proposes two dichotomous dimensions including contingencies that are automatic versus social and reinforcement that is positive (i.e., followed by the presentation of a favorable stimulus) versus negative (i.e., followed by the removal of an aversive stimulus). Such an approach has a considerable impact on methodological considerations in research and clinical assessment and treatment. It suggests that a functional assessment might be useful in evaluating such patients and influencing treatment options, especially when these behaviors overlap.

5.1 Introduction

The reasons why some individuals intentionally harm themselves continue to puzzle scientists, clinicians, and the public. Most research over the past several decades has taken a syndromal approach to these behaviors, in which maladaptive behaviors are conceptualized as signs or symptoms of some underlying disease process, and they have been examined as independent disorders. An alternative approach is to consider the functions of these maladaptive behaviors—that is, what

M.M. Wedig (✉)

McLean Hospital and Harvard Medical School, Belmont, MA 02478, USA

e-mail: mwedig@mclean.harvard.edu

purposes they serve in their immediate environment. From a functional perspective, maladaptive behaviors are not necessarily manifestations of an underlying disease, but instead are goal-directed behaviors performed to obtain some desired end (Claes & Vandereycken, 2007).

This chapter will focus on the psychological meanings and functions of NSSI and eating disorder behaviors. First, the literature surrounding the functions of NSSI and eating disorder behaviors will be reviewed individually, then the overlap of the functions of the two behaviors will be discussed as well as the differences in the functions of the two behaviors. Finally, methodological considerations and clinical implications of such an approach to these behaviors are discussed.

5.2 Functions of Non-suicidal Self-Injury

There have been a number of functions given in the literature for NSSI. The first of these and perhaps the most well known is the four-function model provided by Nock and Prinstein (2004). This model is drawn from that of experimental studies of stereotypic self-injurious behaviors in the developmentally disabled. This population has demonstrated that their self-injurious behaviors are maintained through social (i.e., interpersonal or reinforced by others) and automatic (i.e., intrapersonal or reinforced by oneself) contingencies (Iwata et al., 1994). Drawing on these findings, Nock and Prinstein (2004) proposed and evaluated four functions of NSSI that differ among two dichotomous dimensions. These two dimensions are contingencies that are automatic versus social and reinforcement that is positive (i.e., followed by the presentation of a favorable stimulus) versus negative (i.e., followed by the removal of an aversive stimulus). In this model, *automatic-negative reinforcement* (ANR) refers to a process in which behavior is maintained by the removal of a negative affective state. In contrast, *automatic-positive reinforcement* (APR) refers to a process in which behavior is maintained by the consequent occurrence of a desired internal state. Engaging in a behavior for *social-negative reinforcement* (SNR) refers to doing so to avoid interactions with others or other social tasks. In contrast, the *social-positive reinforcement* (SPR) function focuses on getting attention from others or to communicate information to another. To test their theory, Nock and Prinstein used the Functional Assessment of Self-Mutilation (FASM, Lloyd-Richardson, Kelley, & Hope, 1997) as well as a confirmatory factor analysis to confirm the factors of their model. Important to note is that these authors found that over 50 % of self-injurers in their study indicated they engage in the behavior “to stop bad feelings,” an ANR function, suggesting that perhaps ANR is the most commonly used function of NSSI.

Additional authors have also examined other functions of NSSI. They have similarly found an emotion regulation function to be the most common function of NSSI. For example, Brown and colleagues (2002) reported that non-suicidal acts were intended to express anger, punish oneself, generate normal feelings, and distract oneself. These functions were differentiated from suicide attempts which

were reported to function “to make others better off.” But both suicidal and NSSI were reported to function to relieve negative emotions, again an ANR function.

In a review paper of the functions of NSSI, Klonsky (2007) identified seven different models of the functions of NSSI. He reported based on 18 studies that NSSI serves to alleviate acute negative affect or aversive affective arousal (*affective-regulation model*; i.e., ANR); to end the experience of depersonalization or dissociation (*anti-dissociation model*); to replace, compromise with, or avoid the impulse to commit suicide (*anti-suicide model*); to assert one’s autonomy or a distinction between self and other (*interpersonal boundaries model*); to seek help from or manipulate others (*interpersonal-influence model*); to derogate or express anger toward oneself (*self-punishment model*); and to generate exhilaration or excitement (*sensation-seeking model*). Many of these functions appear to fit within the Nock and Prinstein four-function model, but additional research is required to confirm this, such that the specific functional domains fit under the two superordinate domains of interpersonally related functions and intrapersonal functions. One study by Glenn and Klonsky (2011) did confirm that the functions of NSSI fit under these two overarching functions. However, in two empirical studies, Klonsky (2009, 2011) found that self-injury related to affect regulation was the most highly endorsed function of the behavior.

Klonsky and Olino (2008) also conducted a latent class analysis of 205 young adults with a history of one or more NSSI behaviors. They found four subgroups of self-injurers; the first subgroup contained 61 % of the participants who performed relatively few NSSI behaviors and displayed the fewest clinical symptoms. This might suggest that most of those who engage in NSSI are “experimenting” with the behavior. In comparison to the first group, the second group had an earlier age of onset of NSSI and performed more NSSI behaviors. This group comprised 17 % of the sample. Therefore, this group appeared to represent more than just occasional experimentation. This second group might engage in NSSI to manage their psychiatric distress, as they had more psychiatric symptoms than the first group. The third group (11 % of the sample) utilized a variety of NSSI methods and heavily endorsed both automatic and social functions of the behavior. This group had an early age of onset of NSSI and displayed more symptoms of anxiety than any other group. The fourth group comprised of 10 % of the sample and engaged in their NSSI almost exclusively in private and reported waiting more than 1 h after the urge to engage in the behavior set in before acting, suggesting they were less impulsive in their behaviors. This group also heavily endorsed emotion regulation functions of their behaviors. These individuals were also more likely to carry a diagnosis of borderline personality disorder, have attempted suicide, and to have required medical treatment for a suicide attempt.

Similarly, Turner, Chapman, and Layden (2012) also supported the automatic and social model of Nock and Prinstein. They had 162 female participants’ complete online measures of self-injury, emotion regulation strategies and abilities, trait affectivity, social problem-solving styles, and interpersonal problems. They found through an exploratory factor analysis that each of these measures was associated with functions of emotion relief (i.e., ANR), feeling generation (i.e., APR), self-punishment,

interpersonal influence (i.e., SPR), and interpersonal communication (i.e., SPR). Franklin et al. (2010) also supported this model. They used 112 participants (33 controls, 39 no-pain controls, 16 NSSI individuals, and 24 controls matching the affect dysregulation levels of the NSSI group). They employed a startle task and a prepulse inhibition task (where a stimulus is presented 30–500 ms before a startle-eliciting stimulus and causes decreased startle activity to the startle stimulus relative to non-prepulse trials) (Blumenthal, 1999) and a cold pressor task as an NSSI-proxy. Their results showed not only support for an affect regulation function of NSSI but also a cognitive regulation function and an improvement in cognitive processing.

While an ANR has been shown to be the most common function of NSSI, social reinforcement functions cannot be forgotten. Evidence that NSSI is maintained by social reinforcement is suggested in at least a substantial minority of instances. NSSI may be used when more common, less intense strategies fail (e.g., speaking, yelling, crying) and may also gain attention and caregiving from others thus strengthening affiliation with others (Nock, 2008). A recent empirical article by Muehlenkamp and colleagues (2013) suggests that interpersonal reasons for NSSI were often given for initiating rather than repeating the behavior. It also suggests that approximately 59 % of participants had disclosed their NSSI, though rarely to mental health professionals, and that conversations with others about the behavior were rated as generally unhelpful. Such research suggests that addressing the interpersonal reinforcement functions along with the automatic and affective reinforcement functions of NSSI is imperative.

5.3 Functions of Eating Disorders

The functions of eating disorder behaviors are less well researched than those of NSSI. This may be partly due to the predominantly syndromal approach taken to these behaviors based on their status in the DSM-IV. Eating disorder behaviors also vary considerably from restricting food intake to binge eating and purging, suggesting that each behavior may have a separate function.

One study of anorexia nervosa surveyed 18 women ages 20–34 from three different clinical institutions in Norway. Using unstructured interviews this study found that anorectic behavior can be summarized in eight functions: *security* (feeling of stability and safety), *avoidance* (avoiding negative emotions), *mental strength* (inner sense of mastery), *self-confidence* (feeling acknowledged and worthy of compliments), *identity* (achieving a new identity), *care* (eliciting care from others), *communication* (communicating difficulties), and *death* (wishing to starve oneself to death) (Nordbo, Espeset, Gulliksen, Skarderud, & Holte, 2006).

Another study (Jackson, Cooper, Mintz, & Albino, 2003) examined “motivations to eat” in general, including restricting behaviors, binge eating, and purging. They based their model on a four-factor model of drinking alcohol proposed by Cooper (1994), and Jackson et al. found that motivations to eat fit into this same model proposed by Cooper: *coping*, *social*, *compliance*, and *pleasure*. Cooper’s model was further supported by the fact that each eating motivation was associated with a

unique pattern of eating behavior. Coping and compliance motivations both positively predicted restrictive eating, bingeing, and purging, though coping predicted bingeing more strongly and compliance predicted restricting and purging more strongly. Pleasure also positively predicted binge eating and negatively predicted restricting, but showed no relation to purging. Finally, social motivations negatively predicted restrictive eating and purging but positively predicted bingeing.

Heatherton and Baumeister (1991) have proposed that bingeing functions to escape from negative self-awareness. According to this theory, some people, especially those who maintain high standards for themselves, find it aversive to be aware of themselves and their shortcomings and thus binge to avoid the negative feelings that may arise from this awareness (Heatherton, Herman, & Polivy, 1991; Heatherton, Striعة, & Wittenber, 1998). A similar model has been proposed for NSSI where NSSI is hypothesized to be maintained by avoidance of negative experiences (Chapman, Gratz, & Brown, 2006). Several studies support this model by showing that people often report high negative mood before the occurrence of binge episodes (Agras & Telch, 1998; Davis, Freeman, & Garner, 1988; Davis, Freeman, & Solyom, 1985; Lingswiler, Crowther, & Stephens, 1989; Powell & Thelen, 1996; Telch & Agras, 1996) and decreases in negative mood following binge eating (Kaye, Gwirtsman, George, Weiss, & Jimerson, 1986). Others have suggested that negative mood may actually increase immediately following binge episodes (Hilbert & Tuschen-Caffier, 2007) but then decrease following compensatory behaviors (i.e., purging) (Lynch, Everingham, Dubitzky, Hartman, & Kasser, 2000; Smyth et al., 2007).

Additional work provides support for other functions. For instance, dissociation often precedes binge eating episodes (Engelberg, Steiger, Gauvin, & Wonderlich, 2007; Lyubomirsky, Casper, & Sousa, 2001), suggesting that binge eating may function as an attempt to ground oneself via feeling generation. However, in this case, binge eating may also occur as an attempt to relieve the distress caused by dissociation. Furthermore, although the link between bingeing and purging and social influence is less clear, research has highlighted the overlap between bulimia and social anxiety (Grabhorn, Stenner, Kaufbold, Overbeck, & Stangier, 2005; McLean, Miller, & Hope, 2007). Thus, binge eating may be used to avoid others in the context of this anxiety. Furthermore, an evolutionary perspective has suggested bulimia may be the result of competition for mates (Faer, Hendriks, Abed, & Figueredo, 2005). In this theory, high body dissatisfaction and drive for thinness contribute to bulimic symptoms which function to improve this body dissatisfaction and increase attraction from potential mates.

5.4 Overlap of Functions of Non-suicidal Self-Injury and Eating Disorders

It may be clear by now that there are many overlaps in the functions of NSSI and the various eating disorders, primarily, that a four-function model seems to fit best for both types of behaviors. That is, an automatic negative reinforcement function (ANR; emotion regulation), automatic positive reinforcement (APR; feeling

generation), social negative reinforcement (SNR; to avoid others), and social positive reinforcement function (SPR; to bring others closer) fit both types of behaviors. A similar four-function model has been demonstrated as appropriate for the psychological functions of self-injury (Nock & Prinstein, 2004), alcohol use (Cooper, Frone, Russell, & Mudar, 1995; Cox & Klinger, 1988), and healthy eating patterns (Jackson et al., 2003).

Klonsky (2007) suggests a number of functions of self-injury that might fit into Nock and Prinstein's four-function model. Similarly, his latent class analysis (Klonsky & Olino, 2008) supports both intrapersonal and interpersonal functions. Turner et al. (2012) also supported the automatic and social model of Nock and Prinstein, as did Franklin et al. (2010). Thus, while there are some papers that emphasize a four-function model, others find that a two-function model fits better (i.e., automatic/intrapersonal versus social/interpersonal, Zetterqvist, Lundh, Dahlstrom, & Svedin, 2013). Furthermore, in his 2008 paper Nock emphasized the importance of not excluding the social functions of NSSI, and Muehlenkamp et al. (2013) reinforced this in her article on the importance of interpersonal reinforcement functions of NSSI.

Similarly, many eating disorder functions seem to fit into this same model. Prior theoretical models of bingeing and purging are consistent with the Nock and Prinstein four-function model of NSSI (Heatherton & Baumeister, 1991; Polivy & Herman, 1999). Heatherton and Baumeister's model is consistent with the common ANR model as it is proposed that binge eating diminishes the aversive self-awareness. As pointed out above, the Chapman et al. (2006) article also seems to fit this model. This is also true for the several studies that show negative affect prior to binge eating and a decrease in binge eating following the behavior or following purging. Binge eating secondary to dissociation (Engelberg et al., 2007; Lyubomirsky et al., 2001) may be an example of APR, as individuals may be trying to generate feelings, or it may be an attempt to reduce the aversive experience of dissociating (ANR). Binge eating to avoid social anxiety may also be ANR but might also be SNR, if it is done in the service of avoiding other people.

Claes and colleagues (2010) examined 177 female inpatients with eating disorders and investigated the affect regulation function of different types of NSSI in these patients. They found a clear pattern for the reason "to avoid or suppress negative feelings" referring to the ANR function of NSSI. However, though they looked at this in those with eating disorders, they did not look at the functions of the participants' eating disorder behaviors.

One study has explicitly examined whether binge eating and purging statistically fit this four-function model. Wedig and Nock (2010) collected 298 adult females who had engaged in binge eating or purging in the last 3 months and who provided data for an online survey. They modified the Functional Assessment of Self-Mutilation (Lloyd-Richardson et al., 1997) to be used with a wide range of maladaptive behaviors and titled it the Functional Assessment of Maladaptive Behaviors. They performed confirmatory factor analyses for binge eating and

purging separately and found a good fit for both models for the four-function model. This suggests that the model found to be useful with NSSI (Nock & Prinstein, 2004) may also help to explain pathological eating behaviors, particularly binge eating and purging.

5.5 Differences in Functions of Non-suicidal Self-Injury and Eating Disorders

There are some differences in the functions of NSSI and eating disorders though they seem to be few. One of the most obvious differences is the emphasis on weight and shape in eating disorders, which is not as prevalent in NSSI. Those with eating disorders often engage in behaviors in an attempt to lose weight, which is different from those who engage in NSSI. The issue of perfectionism is often more highly cited in the eating disorder literature as well (i.e., Claes, Soenens, Vansteenkiste, & Vandereycken, 2012).

5.6 Methodological Considerations

The results reported here suggest that certain methodological considerations should be considered. First, these results show the importance of conducting a functional assessment of both NSSI and eating disorder behaviors to understand what is driving the behaviors. How this assessment is done is another question and may vary depending on one's professional setting (e.g., clinical versus academic). Most of the studies reported above have used predominantly self-report methods, but other methods might be considered, such as ecological momentary assessment (EMA, i.e., Muehlenkamp et al., 2009; Nock, Prinstein, & Sterba, 2009). One study found specifically that EMA was a better predictor of actual binge eating episodes than was retrospective self-reporting (Anestis et al., 2010). Regardless, it is important to conduct one's assessment from a theoretical model.

Additionally, one might consider other models besides the four-function model for there might be other functions of these behaviors the model does not include, such as focusing on a two-function model or some of Klonsky's (2007) functions found in his review like his anti-dissociation function, anti-suicide function, self-punishment model, and sensation-seeking model. It might be important when assessing both NSSI and eating disorders to assess for these functions as well as it is not yet clear that these functions are not part of the model. Furthermore, the focus here was on the consequences of the behaviors, and a focus on the antecedents might also be useful (e.g., sexual abuse, overevaluation of weight and shape, the breaking of dietary restraint).

5.7 Clinical Implications

The functional model supported by the research presented here has implications for understanding and treating these behaviors. This model suggests that people do not engage in NSSI or bingeing or purging for any one reason, but instead do so in the service of several different functions, and treatment may be most effective if it appropriately targets these functions in each individual case. For example, a person who engages in these behaviors to escape negative emotions (ANR) may benefit most from learning skills for better emotion regulation and distress tolerance, while an individual who does so to avoid social interactions (SNR) may benefit more from work on exposure to social situations.

Several existing treatments have components that map directly onto the four functions hypothesized in our model. For instance, dialectical behavior therapy (DBT, Linehan, 1993a, 1993b) includes modules aimed at teaching people to regulate distressing affect and to develop interpersonal effectiveness skills. These modules are designed to help individuals develop more adaptive methods of serving these functions. This treatment was initially developed to treat suicidal and non-suicidal self-injury (Linehan, 1993a, 1993b) but has been successfully adapted for those with substance use disorders (Linehan et al., 1999), as well as bulimia nervosa (Chen, Matthews, Allen, Kuo, & Linehan, 2008; Safer, Telch, & Agras, 2000, 2001) and binge eating disorder (BED, Chen et al., 2008; Telch, 1997; Telch, Agras, & Linehan, 2001, 2000). Similarly, acceptance and commitment therapy (ACT) is based on the idea that maladaptive behaviors function as a way of avoiding emotional experience (Hayes, Strosahl, & Wilson, 1999; Hayes, Wilson, Gifford, Follette, & Strosahl, 1996) and these concepts have also been applied to the treatment of eating disorders (see Wilson, 1996, 2004). The success of these treatment modules, which were designed to target specific functional areas, with the very behaviors shown to serve similar functions, provides additional support for the idea that matching treatment to functionality may be an effective form of treatment and that these functions might operate transdiagnostically.

It will be important for future treatment studies to include pretreatment measures of the functions served by the maladaptive behavior being targeted and to test the usefulness of tailoring treatment to match the identified function in each individual case. We have no knowledge yet whether such matching of treatment to function is effective, but research to date has suggested that this may be an effective way to treat both NSSI and various forms of eating disorders. Using measures such as the Functional Assessment of Maladaptive Behaviors (Wedig & Nock, 2010) may be useful in both research and clinical practice, with the caveat that this measure has only been tested on binge eating and purging and requires further validation for other behaviors. The Functional Assessment of Self-Mutilation (Lloyd-Richardson et al., 1997; Nock & Prinstein, 2004) may be useful for the assessment of NSSI, but how to translate that into effective treatment is still in question.

Oftentimes, we see “symptom substitution,” where one symptom (e.g., cutting) is substituted for another (e.g., restricting). This might provide additional support for a functional approach suggesting that these behaviors might serve the same

function. Hopefully future research will embrace the functional approach underlying these disorders and empirically test whether matching treatment to function is in fact the most effective way to treat these behaviors.

References

- Agras, W. S., & Telch, C. F. (1998). The effects of caloric deprivation and negative affect on binge-eating in obese binge-eating disordered women. *Behavior Therapy, 29*, 491–503.
- Anestis, M. D., Selby, E. A., Crosby, R. D., Wonderlich, S. A., Engel, S. G., & Joiner, T. E. (2010). A comparison of retrospective self-report versus ecological momentary assessment measures of affective lability in the examination of its relationship with bulimic symptomatology. *Behaviour Research and Therapy, 48*(7), 607–613.
- Blumenthal, T. D. (1999). Short lead interval modification. In M. E. Dawson, A. M. Schell, & A. H. Bohmelt (Eds.), *Startle modification: Implications for neuroscience, cognitive science, and clinical science* (pp. 51–71). Cambridge: Cambridge University Press.
- Brown, M. Z., Comtois, K. A., & Linehan, M. (2002). Reasons for suicide attempts and nonsuicidal self-injury in women with borderline personality disorder. *Journal of Abnormal Psychology, 111*(1), 198–202.
- Chapman, A. L., Gratz, K. L., & Brown, M. Z. (2006). Solving the puzzle of deliberate self-harm: The experiential avoidance model. *Behaviour Research and Therapy, 44*(3), 371–394.
- Chen, E. Y., Matthews, L., Allen, C., Kuo, J. R., & Linehan, M. M. (2008). Dialectical behavior therapy for clients with binge-eating disorder or bulimia nervosa and borderline personality disorder. *International Journal of Eating Disorders, 41*(6), 505–512.
- Claes, L., Klonsky, E. D., Muehlenkamp, J., Kuppens, P., & Vandereycken, W. (2010). The affect-regulation function of nonsuicidal self-injury in eating-disordered patients: Which affect states are regulated? *Comprehensive Psychiatry, 51*(4), 386–392.
- Claes, L., Soenens, B., Vansteenkiste, M., & Vandereycken, W. (2012). The scars of the inner critic: Perfectionism and nonsuicidal self-injury in eating disorders. *European Eating Disorder Review, 20*(3), 196–202.
- Claes, L., & Vandereycken, W. (2007). Self-injurious behavior: Differential diagnosis and functional differentiation. *Comprehensive Psychiatry, 48*(2), 137–144.
- Cooper, M. L. (1994). Motivations for alcohol use among adolescents: Development and validation of a four factor model. *Psychological Assessment, 6*, 117–128.
- Cooper, M. L., Frone, M. R., Russell, M., & Mudar, P. (1995). Drinking to regulate positive and negative emotions: A motivational model of alcohol use. *Journal of Personality and Social Psychology, 69*(5), 990–1005.
- Cox, W. M., & Klinger, E. (1988). A motivational model of alcohol use. *Journal of Abnormal Psychology, 97*(2), 168–180.
- Davis, R., Freeman, R. J., & Garner, D. M. (1988). A naturalistic investigation of eating behavior in bulimia nervosa. *Journal of Consulting and Clinical Psychology, 56*(2), 273–279.
- Davis, R., Freeman, R., & Solyom, L. (1985). Mood and food: An analysis of bulimic episodes. *Journal of Psychiatric Research, 19*(2/3), 331–335.
- Engelberg, M. J., Steiger, H., Gauvin, L., & Wonderlich, S. A. (2007). Binge antecedents in bulimic syndromes: An examination of dissociative and negative affect. *International Journal of Eating Disorders, 40*, 531–536.
- Faer, L. M., Hendriks, A., Abed, R. T., & Figueredo, A. J. (2005). The evolutionary psychology of eating disorders: Female competition for mates or for status? *Psychology and Psychotherapy: Theory, Research and Practice, 78*, 397–417.
- Franklin, J. C., Hessel, E. T., Aaron, R. V., Arthur, M. S., Heilbron, N., & Prinstein, M. J. (2010). The functions of nonsuicidal self-injury: Support for cognitive-affective regulation and

- opponent processes from a novel psychophysiological paradigm. *Journal of Abnormal Psychology*, 119(4), 850–862.
- Glenn, C. R., & Klonsky, E. D. (2011). One-year test-retest reliability of the Inventory of Statements about Self-Injury (ISAS). *Assessment*, 18(3), 375–378.
- Grabhorn, R., Stenner, H., Kaufbold, J., Overbeck, G., & Stangier, U. (2005). Shame and social anxiety in anorexia and bulimia nervosa. *Zeitschrift für Psychosomatische Medizin und Psychotherapie*, 51(2), 179–193.
- Hayes, S. C., Strosahl, K., & Wilson, K. G. (1999). *Acceptance and commitment therapy: An experiential approach to behavior change*. New York: The Guilford Press.
- Hayes, S. C., Wilson, K. G., Gifford, E. V., Follette, V. M., & Strosahl, K. (1996). Experiential avoidance and behavioral disorders: A functional dimensional approach to diagnosis and treatment. *Journal of Consulting and Clinical Psychology*, 64(6), 1152–1168.
- Heatherton, T. F., & Baumeister, R. F. (1991). Binge eating as escape from self-awareness. *Psychological Bulletin*, 110(1), 86–108.
- Heatherton, T. F., Herman, C. P., & Polivy, J. (1991). The effects of physical threat and ego threat on eating. *Journal of Personality and Social Psychology*, 60, 138–143.
- Heatherton, T. F., Striipe, M., & Wittenber, L. (1998). Emotional distress and disinhibited eating: The role of self. *Personality and Social Psychology Bulletin*, 24(3), 301.
- Hilbert, A., & Tuschen-Caffier, B. (2007). Maintenance of binge eating through negative mood: A naturalistic comparison of binge eating disorder and bulimia nervosa. *International Journal of Eating Disorders*, 40, 521–530.
- Iwata, B. A., Pace, G. M., Dorsey, M. F., Zarcone, J. R., Vollmer, T. R., Smith, R. G., et al. (1994). The functions of self-injurious behavior: An experimental-epidemiological analysis. *Journal of Applied Behavior Analysis*, 27(2), 215–240.
- Jackson, B., Cooper, M. L., Mintz, L., & Albino, A. (2003). Motivations to eat: Scale development and validation. *Journal of Research in Personality*, 37, 297–318.
- Kaye, W. H., Gwirtsman, H. E., George, D. T., Weiss, S. R., & Jimerson, D. C. (1986). Relationship of mood alterations to bingeing behaviour in bulimia. *British Journal of Psychiatry*, 149, 479–485.
- Klonsky, E. D. (2007). The functions of deliberate self-injury: A review of the evidence. *Clinical Psychology Review*, 27, 226–239.
- Klonsky, E. D. (2009). The functions of self-injury in young adults who cut themselves: Clarifying the evidence for affect-regulation. *Psychiatry Research*, 166(2–3), 260–268.
- Klonsky, E. D. (2011). Non-suicidal self injury in United States adults: Prevalence, sociodemographics, topography and functions. *Psychological Medicine*, 41, 1981–1986.
- Klonsky, E. D., & Olino, T. M. (2008). Identifying clinical distinct subgroups of self-injurers among young adults: A latent class analysis. *Journal of Consulting and Clinical Psychology*, 76(1), 22–27.
- Linehan, M. M. (1993a). *Cognitive-behavioral treatment of borderline personality disorder*. New York: The Guilford Press.
- Linehan, M. M. (1993b). *Skills training manual for treating borderline personality disorder*. New York: The Guilford Press.
- Linehan, M. M., Schmidt, H., Dimeff, L. A., Craft, J. C., Kanter, J., & Comtois, K. A. (1999). Dialectical behavior therapy for patients with borderline personality disorder and drug-dependence. *American Journal on Addictions*, 8(4), 279–292.
- Lingswiler, V. M., Crowther, J. H., & Stephens, M. A. P. (1989). Affective and cognitive antecedents to eating episodes in bulimia and binge eating. *International Journal of Eating Disorders*, 8(5), 533–539.
- Lloyd-Richardson, E. E., Kelley, M. L., & Hope, T. (1997). *Self-mutilation in a community sample of adolescents: Descriptive characteristics and provisional prevalence rates*. Poster session presented at the annual meeting of the Society for Behavioral Medicine, New Orleans, LA.

- Lynch, W. C., Everingham, A., Dubitzky, J., Hartman, M., & Kasser, T. (2000). Does binge eating play a role in the self-regulation of moods? *Integrative Physiological and Behavioral Science*, 35(4), 298–313.
- Lyubomirsky, S., Casper, R. C., & Sousa, L. (2001). What triggers abnormal eating in bulimic and nonbulimic women? *Psychology of Women Quarterly*, 25(3), 223–232.
- McLean, C. P., Miller, N. A., & Hope, D. A. (2007). Mediating social anxiety and disordered eating: The role of expressive suppression. *Eating Disorders*, 15(1), 41–54.
- Muehlenkamp, J. J., Brausch, A., Quigley, K., & Whitlock, J. (2013). Interpersonal features and functions of nonsuicidal self-injury. *Suicide and Life-Threatening Behavior*, 43, 67–80.
- Muehlenkamp, J. J., Engel, S. G., Wadson, A., Crosby, R. D., Wonderlich, S. A., Simonich, H., et al. (2009). Emotional states preceding and following acts of non-suicidal self-injury in bulimia nervosa patients. *Behaviour Research and Therapy*, 47(1), 83–87.
- Nock, M. K. (2008). Actions speak louder than words: An elaborated theoretical model of the social functions of self-injury and other harmful behaviors. *Applied and Preventive Psychology*, 12(4), 159–168.
- Nock, M. K., & Prinstein, M. J. (2004). A functional approach to the assessment of self-mutilative behavior. *Journal of Consulting and Clinical Psychology*, 72(5), 885–890.
- Nock, M. K., Prinstein, M. J., & Sterba, S. K. (2009). Revealing the form and function of self-injurious thoughts and behaviors: A real-time ecological assessment study among adolescents and young adults. *Journal of Abnormal Psychology*, 118(4), 816–827.
- Nordbo, R. H., Espeset, E. M., Gulliksen, K. S., Skarderud, F., & Holte, A. (2006). The meaning of self-starvation: Qualitative study of patients' perception of anorexia nervosa. *International Journal of Eating Disorders*, 39(7), 556–564.
- Polivy, J., & Herman, C. P. (1999). Distress and eating: Why do dieters overeat? *International Journal of Eating Disorders*, 26, 153–164.
- Powell, A. L., & Thelen, M. H. (1996). Emotions and cognitions associated with bingeing and weight control behavior in bulimia. *Journal of Psychosomatic Research*, 40(3), 317–328.
- Safer, D. L., Telch, C. F., & Agras, W. S. (2000). Dialectical behavior therapy adapted for bulimia: A case report. *International Journal of Eating Disorders*, 30, 101–106.
- Safer, D. L., Telch, C. F., & Agras, W. S. (2001). Dialectical behavior therapy for bulimia nervosa. *American Journal of Psychiatry*, 158(4), 632–634.
- Smyth, J. M., Wonderlich, S. A., Heron, K. E., Sliwinski, M. J., Crosby, R. D., Mitchell, J. E., et al. (2007). Daily and momentary mood and stress are associated with binge eating and vomiting in bulimia nervosa patients in the natural environment. *Journal of Consulting and Clinical Psychology*, 75(4), 629–638.
- Telch, C. F. (1997). Skills training treatment for adaptive affect regulation in a woman with binge-eating disorder. *International Journal of Eating Disorders*, 22, 77–81.
- Telch, C. F., & Agras, W. S. (1996). Do emotional states influence binge eating in the obese? *International Journal of Eating Disorders*, 20(3), 271–279.
- Telch, C. F., Agras, W. S., & Linehan, M. M. (2000). Group dialectical behavior therapy for binge-eating disorder: A preliminary, uncontrolled trial. *Behavior Therapy*, 31, 569–582.
- Telch, C. F., Agras, W. S., & Linehan, M. (2001). Dialectical behavior therapy for binge eating disorder. *Journal of Consulting and Clinical Psychology*, 69(6), 1061–1065.
- Turner, B. J., Chapman, A. L., & Layden, B. K. (2012). Intrapersonal and interpersonal functions of non-suicidal self injury: Associations with emotional and social functioning. *Suicide and Life-Threatening Behavior*, 42(1), 36–55.
- Wedig, M. M., & Nock, M. K. (2010). The functional assessment of maladaptive behaviors: An evaluation of binge eating and purging. *Psychiatry Research*, 178(3), 518–524.
- Wilson, G. T. (1996). Acceptance and change in the treatment of eating disorders and obesity. *Behavior Therapy*, 27(3), 417–439.

-
- Wilson, G. T. (2004). Acceptance and change in the treatment of eating disorders. In S. C. Hayes, V. M. Follette, & M. Linehan (Eds.), *Mindfulness and acceptance*. New York: The Guilford Press.
- Zetterqvist, M., Lundh, L. G., Dahlstrom, O., & Svedin, C. G. (2013). Prevalence and Function of Non-Suicidal Self-Injury (NSSI) in a Community Sample of Adolescents, Using Suggested DSM-5 Criteria for a Potential NSSI Disorder. *Journal of Abnormal Child Psychology*, *41*, 759–773.