ABSTRACT

DO EATING DISORDER SYMPTOMS PREDICT SUICIDAL DESIRE AMONG EATING DISORDER PATIENTS? AN EXAMINATION OF THE INTERPERSONAL–PSYCHOLOGICAL THEORY OF SUICIDE

by Lauren N. Forrest

Eating disorders (EDs) are lethal illnesses, and suicide is a leading cause of death among affected individuals. It is thus crucial to identify transdiagnostic mechanisms that underlie suicidal behavior among ED groups. The Interpersonal–Psychological Theory of Suicide (IPTS) proposes two paths that lead to suicide: capability to make a lethal attempt (i.e., acquired capability for suicide) and suicidal desire. Most ED–suicide research has tested if ED symptoms contribute to acquired capability for suicide while few have tested if these symptoms contribute to suicidal desire, which according to the IPTS comprises thwarted belongingness and perceived burdensomeness. The present study used path modeling to test if current and lifetime ED symptoms predicted thwarted belongingness and perceived burdensomeness among ED patients ($n = 98$). In the current symptoms model, body dissatisfaction predicted thwarted belongingness, and body dissatisfaction, dietary restriction, and binging predicted perceived burdensomeness. In the lifetime symptoms model, dietary restriction predicted thwarted belongingness, and dietary restriction and laxative use predicted perceived burdensomeness. Given that transdiagnostic ED symptoms are related to suicidal desire, interventions that enhance belongingness and diminish burdensomeness may protect against suicide risk and lead to reduced eating pathology among people with EDs.
DO EATING DISORDER SYMPTOMS PREDICT SUICIDAL DESIRE AMONG EATING DISORDER PATIENTS? AN EXAMINATION OF THE INTERPERSONAL–PSYCHOLOGICAL THEORY OF SUICIDE

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Lauren N. Forrest
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Advisor: April R. Smith, PhD
Reader: Elise Clerkin, PhD
Reader: Elizabeth Kiel-Luebbe, PhD

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by

Lauren N. Forrest

has been approved for publication by

The College of Arts and Science

and

Department of Psychology

______________________________
April R. Smith, PhD

______________________________
Elise Clerkin, PhD

______________________________
Elizabeth Kiel-Luebbe, PhD
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Introduction

Adequate nourishment is fundamental to human life. When one’s ability to obtain nourishment is disrupted, such as is the case for those with eating disorders (EDs), harmful physiological and psychological consequences result. The most devastating consequence is mortality. People with anorexia nervosa (AN), bulimia nervosa (BN), binge eating disorder (BED) and other specified feeding and eating disorder (OSFED) have significantly elevated standardized mortality ratios relative to people in the general population (Crow et al., 2009; Crow, Swanson, Peterson, Crosby, Wonderlich, & Mitchell, 2012; Keshaviah et al., 2014). Yet not all of these deaths result from the physiological sequelae of the disorders (e.g., arrhythmia, stroke); suicide is a leading cause of death among those with EDs. In fact, compared to the general population, people with BN are 7.5 times more likely to die by suicide and those with AN are 31 times more likely to die by suicide (Chesney, Goodwin, & Fazel, 2014). Because BED was only recently recognized as a disorder (American Psychiatric Association [APA], 2013), data estimating the risk for death by suicide for people with BED are not available. However, BED was previously captured by a diagnosis of eating disorder not otherwise specified (EDNOS), and people with EDNOS are nearly 4 times more likely to die by suicide compared to people in the general population (Crow et al., 2009). Findings therefore converge to suggest that, among people with EDs, risk for elevated mortality, and suicide in particular, transcends discrete ED diagnoses.

In order to reduce the incidence of death by suicide—both in general and in those with EDs—it is crucial to identify and understand the mechanisms that underlie this devastating outcome. The Interpersonal–Psychological Theory of Suicide (IPTS; Joiner, 2005; Van Orden, Cukrowicz, Witte, Braithwaite, Selby, & Joiner, 2010) provides a theoretical basis from which to begin this investigation. The IPTS proposes that three constructs must be experienced simultaneously in order for lethal or nearly lethal suicide attempts to occur. The first two constructs, thwarted belongingness and perceived burdensomeness, converge to produce active suicidal desire. Desire for suicide will result in fatal (or near fatal) self-harm only when it is coupled with the third construct, acquired capability for suicide (hereafter referred to as acquired

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1 Prior to the publication of the Diagnostic and Statistical Manual for Mental Disorders (5th ed., American Psychiatric Association, 2013; DSM-5), diagnoses now classified as OSFED were referred to as eating disorder not otherwise specified (EDNOS).
This capability is acquired through repetitive painful and provocative experiences which (1) habituate an individual to the inherent fear associated with dying and (2) increase pain tolerance. In sum, the IPTS proposes that there are two routes that must intersect for dangerous suicidal behavior to occur: a path leading to suicidal desire and a path leading to acquired capability.

Informed by the IPTS framework, researchers have recently begun investigating if these proposed paths to suicidal behavior explain the high rates of death by suicide among people with EDs. Most investigations have focused on the path leading to acquired capability, given that the symptoms at the very core of EDs—severe and unrelenting caloric restriction, self-induced vomiting, eating past the point of being uncomfortably full, and exercising intensely despite illness or injury, to name a few—are extremely painful. Indeed, certain ED symptoms are associated with acquired capability and predict suicidal behavior among those with EDs. For instance, Selby and colleagues (2010) found that ED behaviors differentially increased the risk of suicide attempts in individuals with both subtypes of AN. For those with the binge–purge subtype, ED behaviors contributed to a latent variable of painful and provocative behaviors, which then predicted dangerous suicidal behavior. For those with the restricting subtype, severe and unrelenting dietary restriction directly predicted lifetime suicide attempts. In a series of studies, Smith et al. (2013) found that over-exercise predicted suicide attempts among women with BN, and that acquired capability mediated the relation between over-exercise and suicide attempts in a sample of college students. Finally, Witte and colleagues (2015b) found that vomiting and laxative use were associated with one or both facets that comprise acquired capability among women with EDs. Taken together, these findings suggest that ED symptoms are related to acquired capability, and this relationship may partially explain the elevated rates of death by suicide among those with EDs.

However, some research has failed to find expected associations among ED symptoms, acquired capability, and suicidal behavior (Witte et al., 2015b; Zuromski & Witte, 2015). For example, while dietary restriction is predictive of suicide attempts among ED patients (Witte et al., 2015b), restrictive eating is not associated with pain tolerance or fearlessness about death among samples of college students and ED patients (Witte et al., 2015b; Zuromski & Witte, 2015). While the link between suicide and EDs is clear, it is less clear if acquired capability fully accounts for this relation. In fact, these disparate findings raise the possibility that ED symptoms
could affect suicidal behavior among those with EDs through a different path—via suicidal desire. It is thus crucial to consider if ED symptomatology is related to suicidal desire, which according to the IPTS comprises thwarted belongingness and perceived burdensomeness. Preliminary research suggests that females with EDs experience elevated thwarted belongingness and perceived burdensomeness as compared to females without EDs (Smith et al., 2015), yet to my knowledge, no studies have examined if ED symptoms predict thwarted belongingness and perceived burdensomeness in individuals with EDs. To this end, the present study tested if ED symptoms predicted thwarted belongingness and perceived burdensomeness among females with EDs.

**Components of Suicidal Desire: Thwarted Belongingness and Perceived Burdensomeness**

The constructs of thwarted belongingness and perceived burdensomeness are multidimensional, cognitive–affective states. When either thwarted belongingness or perceived burdensomeness is experienced in isolation, a person will experience passive suicidal ideation but will not necessarily desire death. However, when thwarted belongingness and perceived burdensomeness are experienced simultaneously, passive ideation becomes active suicidal desire (Van Orden, Witte, Gordon, Bender, & Joiner, 2008). While thwarted belongingness and perceived burdensomeness are related to one another, each originates from distinct thoughts and feelings that uniquely elevate the misperception that life is not worthwhile.

**Thwarted belongingness.** According to the IPTS, the presence of reciprocal, meaningful, and caring relationships with others is as fundamental to human life as adequate nourishment. In the subjective or objective absence of such relationships, significant cognitive and emotional pain results and gives rise to suicidal ideation. The overarching construct of thwarted belongingness is composed of two factors: loneliness and the absence of reciprocal care. Loneliness may be provoked by having few social or communal supports while the absence of reciprocal care can stem from social withdrawal, current or past abuse, or family conflict (Van Orden et al., 2010).

**Perceived burdensomeness.** The IPTS further proposes that a sense of personal effectiveness is critical to a person’s desire and vigor for life. When one subjectively or objectively perceives oneself as being wholly ineffective, one may perceive that one’s death would be worth more to others than one’s life, and this extremely painful state weakens one’s drive to live. Two factors also comprise the overarching construct of perceived burdensomeness:
perceptions of being a liability to others and self-hatred. Perceptions of liability may result from distress due to a physical or psychiatric illness, feeling as if one is unwanted or expendable, or from beliefs that one is a burden on one’s family. Self-hatred may develop from low self-esteem, self-blame, shame, or agitation (Van Orden et al., 2010).

**Thwarted belongingness, perceived burdensomeness, and eating disorders.** Few studies have directly examined the overarching constructs of thwarted belongingness and perceived burdensomeness in ED groups. Mounting evidence suggests that the two lower-order factors of each construct (i.e., loneliness and the absence of reciprocal care for thwarted belongingness, and perceptions of liability and self-hatred for perceived burdensomeness) are not only prevalent among those with EDs but may be directly related to particular ED symptoms. However, the direction of some relations may be reciprocal, and as will be reviewed below, there is evidence that certain ED symptoms are (1) a cause, (2) a consequence, or (3) both a cause and a consequence of proxies of thwarted belongingness and perceived burdensomeness.

**Thwarted Belongingness and Eating Disorders**

People with EDs often have disrupted psychosocial relationships. Such disturbance is present not only in the acute stages of illness (e.g., Bohn, Doll, Cooper, O’Connor, Palmer, & Fairburn, 2008) but may persist into partial or full recovery (Bardone-Cone et al., 2010; Keel, Mitchell, Miller, Davis, & Crow, 2000; Striegel-Moore, Seeley, & Lewinsohn, 2003). In fact, multiple theoretical accounts propose that poor interpersonal functioning may be central to the maintenance of eating psychopathology (Arcelus, Haslam, Farrow, & Meyer, 2013; Fairburn, Cooper, & Shafran, 2003; Rieger, van Buren, Bishop, Tanofsky-Kraff, Welch, & Wilfley, 2010). Interpersonal difficulties may be salient for people with EDs because they often experience loneliness, reduced or unstable social support, and a reduced capacity to feel rewarded by relationships with others.

Two types of interpersonal experiences comprise thwarted belongingness—loneliness and the absence of reciprocal care. Each of these facets is often associated with EDs. For instance, Harney and colleagues (2014) found that women with current AN, BN, and EDNOS reported more loneliness than women without current EDs. In addition, people with AN, BN, and BED have fewer social supports than controls (Fairburn, Cooper, Doll, & Welch, 1999; Fairburn, Doll, Welch, Hay, Davies, & O’Connor, 1998; Fairburn, Welch, Doll, Davies, & O’Connor, 1997; Tiller, Sloane, Schmidt, Troop, Power, & Treasure, 1997). Compounding the
quantitatively lower amounts of social support, people with EDs tend to perceive their social supports as depleted. For instance, people with BN desire more emotional support than they receive (Tiller et al., 1997). At the same time, people with EDs often experience conflict in important relationships. In large community-based studies, people with AN, BN, and BED report more parental conflict as compared to people without EDs and even as compared to psychiatric controls (Fairburn et al., 1997; Fairburn et al., 1999; Fairburn et al., 1998).

Given that people with EDs perceive their interpersonal relationships to be reduced in quantity and quality, researchers have investigated if people with EDs have a disturbed capacity to derive pleasure from social interactions. Indeed, people with EDs report less pleasure from social interactions than do people without EDs (Harrison, Mountford, & Tchanturia, 2014; Tchanturia, Davies, Harrison, Fox, Treasure, & Schmidt, 2012), and lower pleasure from social interactions significantly predicts social and work impairment among women with AN and BN (Harrison et al., 2014). Considering the multitude of interpersonal difficulties often experienced by people with EDs—loneliness, smaller social support networks, perceiving inadequate or unstable social support, and a reduced capacity to feel rewarded by social connections—thwarted belongingness may thus be a transdiagnostic problem for those with EDs.

**Relations between thwarted belongingness and specific eating disorder symptoms.**

Thwarted belongingness appears to be prevalent across ED diagnoses. One explanation for this overlap may be that thwarted belongingness is related to specific ED symptoms. Specifically, thwarted belongingness may be related to body dissatisfaction, dietary restriction, and binging, all of which may be experienced by individuals with AN, BN, BED, and OSFED.

**Body dissatisfaction.** Body dissatisfaction may be related to the loneliness component of thwarted belongingness, as it shows unique relations with low social support. Longitudinal studies have found that low perceived social support from family and peers predicts increases in future body dissatisfaction among males and females (Bearman, Presnell, Martinez, & Stice, 2006; Stice & Whitenton, 2002). Further, body dissatisfaction prospectively predicts suicidal ideation in males and females (Kim & Kim, 2009) and even raises the risk of suicide attempts for females (Dave & Rashad, 2009). Given this, body dissatisfaction may have distinct associations with thwarted belongingness.

**Dietary restriction.** Historical and contemporary studies alike support the notion that dietary restriction may be associated with thwarted belongingness. During World War II, many
Europeans were severely malnourished and before these people were re-fed, Keys and colleagues (1950) conducted the Minnesota Semi-Starvation Experiment to understand the physiological and psychological effects of re-feeding malnourished people. In this experiment, the team recruited physically and psychologically healthy adult males to endure 24 weeks of severe caloric restriction. After the “semi-starvation” was accomplished and the previously healthy men were re-fed, they exhibited behaviors and personality characteristics that closely resembled those of ED patients. Not only did the males hoard food and become preoccupied with food, they also were socially withdrawn and inhibited, much like many adolescents and adults with AN (Holliday, Uher, Landau, Collier, & Treasure, 2006; Thompson-Brenner, Eddy, Satir, Boisseau, & Westen, 2008; for a review, see Zucker, LaBar, Losh, Bulik, Piven, & Pelphrey, 2007). These findings highlight that severe caloric restriction may contribute to social withdrawal—a subcomponent of thwarted belongingness—even in the absence of an ED diagnosis.

Contemporary findings complement and extend support for this relation. Dodd and colleagues (2014) studied a sample of undergraduates and tested if Time 1 ED symptoms (i.e., dietary restraint, bingeing and purging, body dissatisfaction, and drive for thinness) predicted Time 2 thwarted belongingness (and perceived burdensomeness). Further, they examined if negative life events (including negative interpersonal interactions) mediated these relations. Interestingly, bingeing and purging, body dissatisfaction, and drive for thinness were not associated with thwarted belongingness (and perceived burdensomeness), but restraint was. Specifically, there was a significant indirect effect of restraint on thwarted belongingness (and burdensomeness) through negative life events. While negative social interactions and lowered belongingness may result from many ED symptoms (Rieger et al., 2010), the results of Dodd et al. (2014) and Keys et al. (1950) suggest that dietary restriction negatively affects feelings of belongingness in ways that other ED symptoms do not. For instance, dietary restriction leads to social avoidance (Keys et al., 1950), but bingeing and purging often involve withdrawing from or avoiding others as well (e.g., bingeing alone due to embarrassment over one’s eating, purging alone in one’s bathroom). However, social avoidance as a result of bingeing or purging is likely temporary (e.g., one can return to a group following purging), whereas people engaging in restrictive eating may entirely avoid social situations, particularly those that involve food. Restriction may thus predict more interpersonal disconnection relative to other ED symptoms, and this relation appears to hold even in the absence of an ED diagnosis. In other words,
depriving the body of adequate caloric nourishment may have serious consequences for maintaining interpersonal connectedness.

**Bingeing.** Although bingeing was not related to either perceived burdensomeness or thwarted belongingness in Dodd et al.’s (2014) non-clinical sample, other research suggests that bingeing may in fact be related to the IPTS constructs of suicidal desire, particularly among individuals with EDs. In fact, bingeing may be specifically related to the loneliness facet of thwarted belongingness, as bingeing is associated with low social support. For instance, in a prospective longitudinal study of risk factors for binge eating among adolescent females, Stice, Presnell, and Spangler (2002) found that low perceived social support from peers at Time 1 was among a set of risk factors that predicted the onset of binge eating two years later. Furthermore, many individuals who binge eat are overweight or obese (e.g., Robinson, Safer, Austin, & Etkin, 2015) and due to their size, may receive harsh judgments and comments from others (i.e., experience weight stigma; Fairburn et al., 1997; Fairburn et al., 1998). In the presence of reduced social support and negative comments from others, overweight individuals often experience loneliness (Masheb & Grilo, 2006) and binge eat in response (Almeida, Savoy, & Boxer, 2011; Ashmore, Friedman, Reichmann, & Musante, 2008). In line with these findings, the interpersonal model of ED pathology maintains that negative interpersonal interactions confer negative social evaluation (e.g., being rejected from others) and cause ED symptoms (e.g., bingeing) to be exhibited (Rieger et al., 2010). The model further proposes that ED symptoms in turn compound negative interpersonal interactions and predict increased negative social evaluation and rejection by others. In other words, this conceptualization holds that negative interpersonal interactions are both a cause and a consequence of ED symptomatology. Given that low social support predicts binge eating, it would be fruitful to investigate if bingeing in turn predicts thwarted belongingness.

In sum, there is evidence to suggest that body dissatisfaction, dietary restriction, and bingeing may predict thwarted belongingness among people with EDs. To date, research has found evidence that over-exercise and purging are related to acquired capability (Selby et al., 2010; Smith et al., 2013; Smith, Yeager, & Dodd, 2015), but there is less support for a relation between either over-exercise or purging and thwarted belongingness.

**Perceived Burdensomeness and Eating Disorders**
In addition to people with EDs often feeling disconnected from others, they may also feel so ineffective that they perceive their lives to be burdensome to others. As noted previously, perceived burdensomeness is comprised of two lower-order factors: perceptions of being a liability and self-hatred. Many ED-related attributes could affect each of these factors. For instance, EDs have high illness-associated costs (Crow, 2014), and proxies of self-hatred appear to play a crucial role in maintaining ED symptomatology (Fairburn et al., 2003; see discussion in Kelly & Carter, 2013). Consequently, those with EDs may misperceive that their deaths would be worth more to others than their lives.

Individuals who provide care to loved ones with EDs often experience both psychological and financial burden as a result of their caregiving roles. The psychological cost of caring for a loved one with an ED often results in significant distress, anxiety, and depressive symptoms (Zabala, Macdonald, & Treasure, 2009). The financial cost is also considerable, given that the average length and cost of inpatient treatment for EDs is 80 days at a daily cost of nearly $1000, resulting in an average cost of $80,000 for inpatient treatment alone (Frisch, Herzog, & Franko, 2006). To compound the treatment costs, people with EDs may be less likely to be employed than people without EDs, and of those who are employed, those with a comorbid psychiatric illness may earn less than those with no comorbidities (Samnaliev, Noh, Sonneville, & Austin, 2015). Thus on top of the financial burden associated with ED treatment, those with EDs may be less able to financially support themselves and may need to rely on others for monetary assistance. However, it is unknown if patients with EDs perceive liability from their caregivers or financial burdens associated with their disorders. Despite this gap in the literature, the economic and social costs of EDs are substantial (Crow, 2014; Simon, Schmidt, & Pilling, 2005) and could contribute to perceptions of liability among those with EDs.

In addition to perceived liability, low self-esteem and shame—two proxies of the self-hatred facet of perceived burdensomeness—are common among those with eating pathology. The transdiagnostic, cognitive-behavioral conceptualization of EDs holds that pervasive low self-esteem may maintain ED symptomatology for some, and an important goal of treatment is to improve core low self-esteem (Fairburn et al., 2003). Shame may also be implicated in the maintenance and treatment of EDs. Shame predicts the severity of both AN and BN symptoms (Troop, Allan, Serpell, & Treasure, 2008), and early reductions in shame predict treatment response in patients with AN, BN, and EDNOS (Kelly, Carter, & Borairi, 2014). Some
researchers have argued that, like low self-esteem, shame may be a potent maintaining factor of ED symptomatology (see discussion in Kelly & Carter, 2013). Given the high caregiver and financial burden conferred by EDs and the components of self-hatred that may underlie and maintain ED pathology, perceived burdensomeness may be pervasive among those with EDs.

**Relations between perceived burdensomeness and specific eating disorder symptoms.** Just as thwarted belongingness may transcend ED diagnoses, so too may perceived burdensomeness because of its relations with specific ED symptoms. Specifically, perceived burdensomeness may be uniquely related to body dissatisfaction, dietary restriction, bingeing, and purging, which may be experienced by those with AN, BN, BED, and OSFED.

**Body dissatisfaction.** Body dissatisfaction is closely associated with self-esteem, and therefore may be related to the self-hatred facet of perceived burdensomeness. The link between body dissatisfaction and low self-esteem persists across gender, weight status, race and ethnicity, socioeconomic status, and time (Van den Berg, Mond, Eisenberg, Ackard, & Neumark-Sztainer, 2010). Despite prospective findings that these factors are reciprocally related (i.e., body dissatisfaction predicts low self-esteem and low self-esteem predicts body dissatisfaction [e.g., Tiggemann, 2005]), body dissatisfaction appears to exert greater effects on low self-esteem than vice versa. Through a prospective and longitudinal study, Tiggemann (2005) found that initial body dissatisfaction predicted changes in self-esteem but initial self-esteem did not predict changes in body dissatisfaction. Other longitudinal studies support this conclusion, as body dissatisfaction remains a significant predictor of low self-esteem, even when controlling for body dissatisfaction experienced five years prior (Paxton et al., 2006). Together, these investigations suggest body dissatisfaction is a potent predictor of low self-esteem. Given that low self-esteem is an indicator of the self-hatred component of perceived burdensomeness, body dissatisfaction is likely also predictive of perceived burdensomeness.

**Dietary restriction.** Dietary restriction may be related to both the liability and self-hatred facets of perceived burdensomeness. With respect to perceptions of liability, treatment trials for those with AN and BN find that low intake BMI (an indicator of severe restriction) is associated with poor treatment response and poor long-term outcome (Agras, Crow, Halmi, Mitchell, Wilson, & Kraemer, 2000; Eisler, Simic, Russell, & Dare, 2007). Because dietary restriction appears to negatively impact treatment, restriction may contribute to higher perceptions of burdensomeness.
With respect to self-hatred, dietary restriction appears to be specifically related to shame. In a longitudinal study, women with AN, BN, and EDNOS reported levels of bodily shame (i.e., shame experienced in relation to one’s body) and ED symptoms at baseline and 2.5 years later at follow-up (Troop & Redshaw, 2012). Bodily shame predicted changes in AN symptoms 2.5 years later and specifically the degree to which women with AN (but not BN or EDNOS) were underweight. These results suggest that shame—a proxy of self-hatred—may predict dietary restriction for some.

As discussed earlier, these relations may be reciprocal. Among a sample of females with EDs, Witte and colleagues (2015a) used path modeling to test if ED behaviors were associated with lifetime suicide attempts and the two subcomponents that comprise acquired capability (i.e., fearlessness about death and pain tolerance). Dietary restriction was associated with suicide attempts but was not associated with either component of acquired capability. Given that the relation between restriction and suicide attempts was not explained by acquired capability, an alternate IPTS-derived explanation is that restriction may relate to suicidal behavior through the path of suicidal desire—that is, restriction may elevate perceived burdensomeness (and thwarted belongingness). Indeed, research supports this idea, as dietary restraint indirectly predicts perceived burdensomeness (and thwarted belongingness) through negative life events among undergraduates (Dodd et al., 2014).

**Bingeing.** Bingeing appears to be related to the self-hatred component of perceived burdensomeness. Self-hatred is strongly related to low self-esteem (Van Orden et al., 2010), and low self-esteem prospectively predicts binge eating. In their longitudinal study of binge eating onset among adolescent females, Stice and colleagues (2002) found that low self-esteem predicted binge eating among the sample. In addition, Rieger and colleagues’ (2010) interpersonal model of EDs states that low self-esteem is both an antecedent and consequence of ED symptoms. Given that low self-esteem predicts binge eating and that the diagnostic criteria for BED state that binges must be accompanied by a set of negative experiences, one of which is guilt and shame about the binge (APA, 2013), it is possible that bingeing in turn predicts the self-hatred facet of perceived burdensomeness.

**Purging.** Purging may be related to perceived burdensomeness through its association with perceptions of posing a liability to others. As previously discussed, individuals who care for loved ones with EDs experience high caregiver burden (Zabala et al., 2009). While it is unclear
whether patients with EDs perceive the burden their caregivers may experience, this is a possibility. In fact, burdensomeness may be differentially perceived depending on what ED symptoms are exhibited (Sepulveda et al., 2014). In one study, caregivers of patients with EDs were divided into subgroups based on the presence or absence of purging (i.e., self-induced vomiting and/or laxative use) on the part of the patient, rather than being divided by patients’ specific ED diagnoses. Caregivers of patients that purged reported significantly more psychological distress than did caregivers of patients who did not purge (Sepulveda et al., 2014). No other ED symptoms were examined or controlled for in analyses and it is possible that bingeing, which frequently co-occurs with purging, may at least partially explain the observed association between purging and increased caregiver burden. Nonetheless, results suggest that the presence of purging may be associated with caregiver burden, which could translate to higher perceptions of liability among ED patients.

Taken together, research suggests that body dissatisfaction, dietary restriction, bingeing, and purging may be predictive of perceived burdensomeness among people with EDs. As previously mentioned, there is support for over-exercise relating to acquired capability (Smith et al., 2013; Smith et al., 2015) but there is less support for a relation between over-exercise and perceived burdensomeness.

**The Present Study**

The present study used path modeling to test if ED symptoms predicted thwarted belongingness and perceived burdensomeness—two key components of the IPTS that may account for the higher suicide rate among individuals with EDs versus controls—in adult ED patients. First, I tested if current (i.e., past month) ED symptoms predicted thwarted belongingness and perceived burdensomeness. Second, given that people with EDs have lifetime elevated suicide risk (i.e., risk is not limited only to acute stages of the disorders [Guillame et al., 2011]) and that research using these data found differing relations among current versus lifetime ED symptoms and acquired capability (Witte et al., 2015a), I also tested if lifetime ED symptoms predicted thwarted belongingness and perceived burdensomeness. In the current model, I hypothesized that current body dissatisfaction, dietary restriction, and bingeing would predict thwarted belongingness and perceived burdensomeness (Hypothesis 1). In addition, I hypothesized that current purging would predict perceived burdensomeness but I did not make this prediction for thwarted belongingness, as there is support for the former (i.e., Sepulveda et
al., 2014) but not the latter. In the lifetime model, I hypothesized that lifetime dietary restriction and bingeing would predict thwarted belongingness and perceived burdensomeness (Hypothesis 2). I also hypothesized that lifetime purging would predict perceived burdensomeness. Finally, I hypothesized that current ED symptoms would be stronger predictors of suicidal desire as compared to lifetime symptoms (Hypothesis 3), as thwarted belongingness and perceived burdensomeness are dynamic states that change over time (Van Orden et al., 2010) and are likely influenced more by current versus previous behaviors and cognitions.

**Method**

The present study is a secondary analysis of a larger dataset from a parent study that is detailed in Smith et al. (2015). While other analyses have been conducted using these data, the present research questions and subsequent data analyses are unique and have not been addressed in previous investigations. The method and procedures described below will detail only a portion of the parent study’s overall methodology.

**Participants**

Adult females with EDs (N = 100) participated in this study. All participants were recruited for participation after beginning residential (n = 80) or partial hospitalization ED treatment at a southeastern ED treatment facility. Roughly one-third of the sample met DSM-5 (APA, 2013) diagnostic criteria for AN (n = 34), BN (n = 27), and other DSM-5 EDs (n = 39). Participants in this former group met DSM-IV-TR (APA, 2000) diagnostic criteria for EDNOS. Study data were collected prior to the publication of DSM-5, and therefore data are lacking the specificity necessary to distinguish specific DSM-5 ED diagnoses other than AN and BN. The sample ranged in age from 18–58 (M = 26.92; SD = 7.86). Ninety-six percent identified as non-Hispanic (n = 96). Ninety-four percent identified as white (n = 94), 2% as African American (n = 2), 1% as Native Hawaiian or Other Pacific Islander (n = 1), and 1% as American Indian or Alaska Native (n = 1).

Two participants from the EDNOS group were missing data on nearly all study variables. These participants were excluded from the analyses reported below, which resulted in a sample size of 98.

**Procedure**

During the treatment facility’s intake process, all incoming patients were informed of the study. Patients who indicated interest were formally consented. If they agreed to participate, they
provided consent by signing the study’s approved consent form. Within four days of admission, participants completed study questionnaires (described below) online via a secure website. Participants were not compensated for their time. All study procedures were conducted following approval from relevant institutions’ Institutional Review Boards.

**Measures**

**Interpersonal Needs Questionnaire.** The Interpersonal Needs Questionnaire (INQ; Van Orden, Cukrowicz, Witte, & Joiner, 2012) is a 15-item self-report assessment of thwarted belongingness and perceived burdensomeness. The scale is divided into two subscales, one for each IPTS construct. Each subscale demonstrates convergent and criterion validity; the burdensomeness subscale demonstrates good divergent validity while the belongingness scale does not, although this lack of discriminant relations is likely due to the pervasiveness of the human need to belong (Van Orden et al., 2012). Each item provides a description of perceptions of thwarted belongingness and perceived burdensomeness. Example items include These days, I rarely interact with people who care about me and These days, I think my death would be a relief to the people in my life for belongingness and burdensomeness, respectively. Respondents rate the extent to which each description is currently true for them on a seven-point Likert-type scale ranging from 1 (not at all true for me) to 7 (very true for me). Higher scores indicate higher severity of thwarted belongingness and perceived burdensomeness. Reliability in the sample was good for thwarted belongingness (α = .85) and excellent for perceived burdensomeness (α = .95).

**Eating Disorder Inventory.** The Eating Disorder Inventory–3 (EDI; Garner, 2004) is a 91-item self-report assessment of ED symptomatology. The EDI has good discriminant validity (Clausen et al., 2011) and contains 12 subscales, although only the Body Dissatisfaction subscale was used in the present analyses to assess current body dissatisfaction. The Body Dissatisfaction subscale consists of 10 items, and each item presents a description of dissatisfaction with aspects of one’s appearance. Example items include I think that my stomach is too big and I think that my thighs are too large. Respondents rate the extent to which each description is typically true for them using a Likert scale ranging from 1 (never) to 6 (always). Higher scores indicate more severe body dissatisfaction. Reliability in the present sample was good (α = .89).

**Eating Disorder Examination–Questionnaire.** The Eating Disorder Examination–Questionnaire Version 6 (EDE-Q; Fairburn & Beglin, 1994) is a 28-item self-report assessment of current ED symptomatology (i.e., ED symptomatology experienced in the past 28 days). Five
items on the scale assess the frequency of ED behaviors, and only these items were used in the present analyses. Specifically, item 2 measures the frequency of dietary restriction in the past month (Have you gone for long periods of time [8 waking hours or more] without eating anything at all in order to influence your shape or weight?) and is scored on a Likert scale ranging from 0 (no days) to 6 (every day). Items 14, 16, 17, and 18 assess the number of times respondents engaged in objective binge eating, self-induced vomiting, laxative use, and over-exercise, respectively, over the past 28 days. Responses on these items are not chosen from a scale; rather, respondents provide estimates of the frequency of each behavior.

**Eating Behaviors Painful and Provocative Events Scale.** The Eating Behaviors Painful and Provocative Events Scale (EPPES; copy available on request from A. R. Smith) is a 20-item self-report assessment of ED behaviors (i.e., dietary restriction, bingeing, purging, and over-exercise) and consequences (e.g., popping blood vessels from vomiting, esophageal tears or gastric ruptures). Respondents are presented with descriptions of ED behaviors and consequences (e.g., Have you continued to eat even after you felt painfully full?) and rate how many times over their lifetime they have experienced those behaviors or consequences, on the following 10-point scale: 0 times, 1 time, 2–3 times, 4–10 times, 11–20 times, 21–40 times, 41–60 times, 61–80 times, 81–100 times, and 101 or more times. Five ED behavior items on the EPPES are worded similarly to the EDE-Q items that assess the frequency of dietary restriction, objective binge eating, self-induced vomiting, laxative use, and over-exercise. Thus, these EPPES items were used as lifetime indicators of dietary restriction, bingeing, vomiting, laxative use, and over-exercise.

**Body mass index.** Current body weight and height were measured at intake. In addition, participants estimated their lowest adult body weights. These data were used to calculate participants’ current and lowest body mass indexes (\([\text{kg/m}^2]\); BMIs), respectively. Body weight (c.f. BMI) is often an indicator of the severity of dietary restriction; current and lifetime lowest BMIs indicate the current and lifetime severities, respectively.

**Data Reduction and Analytic Strategy**

---

2 The EPPES also includes a section where respondents estimate the past month frequency of dietary restriction, bingeing, self-induced vomiting, laxative use, and over-exercise. To assess if the EPPES assesses similar behaviors as measured by the EDE-Q, I conducted bivariate correlations between the past month EPPES and EDE-Q frequencies of ED behaviors. Each measure’s assessment of the same ED behaviors (e.g. EPPES dietary restriction and EDE-Q dietary restriction) were significantly correlated (\(n = 98\); all \(r_s \geq .39\), all \(p_s < .001\)), thus providing support that the EPPES is a valid measure of ED behavior frequency.
Data were analyzed using SPSS version 22.0 (IBM Corp., 2013) and Mplus version 7.3 (Muthén & Muthén, 1998–2012). Sample characteristics and bivariate correlations are presented in Tables 1 and 2, respectively.

**Data screening.** Data were inspected in SPSS for collinearity and non-normality. Variance inflation factor (VIF) and tolerance scores for current and lifetime data were within acceptable ranges (current model: VIF = 1.11–1.51 [average VIF = 1.32], tolerance = 0.66–0.90; lifetime model: VIF = 1.14–1.76 [average VIF = 1.43], tolerance = 0.57–0.88); collinearity was therefore not a problem for either model. To test for non-normality, homoscedasticity was examined through residual plots and skew and kurtosis indexes were computed (see Table 1). Several variables indicated skew and kurtosis (absolute value > 1) and to accommodate data non-normality, maximum likelihood estimation with robust standard errors (i.e., MLR) was used in Mplus analyses.

**Missing data.** The percentages of missing data are displayed in Table 1. Little’s missing completely at random (MCAR) test in SPSS indicated that data were consistent with a MCAR pattern, $\chi^2_{(151)} = 164.39, p = .22$. There were no missing values on either endogenous variable (i.e., thwarted belongingness and perceived burdensomeness). Because full information maximum likelihood in Mplus can handle missing data on endogenous variables only, this procedure was therefore not necessitated. To handle missing data on exogenous variables, I used SPSS to impute ($m = 40$) all predictors. I then averaged the imputed values for predictors and used each average in all analyses, including bivariate correlations.

**Path analyses.** Two path models were used to test the direct effects of ED symptoms on thwarted belongingness and perceived burdensomeness. The disturbances of each dependent variable were covaried in both models. The first model tested the direct effects of *current* ED symptoms on IPTS variables and the second tested the direct effects of *lifetime* ED symptoms on IPTS variables. Each model is just-identified. Fit statistics are therefore not reported, as model $\chi^2 = 0$.

**Power.** I conducted post-hoc power analyses in G*Power (Faul, Erdfelder, Buchner, & Lang, 2009). For the current and lifetime models with seven and six predictors, respectively, I was 96.7% powered in detecting a medium effect size.

**Results**

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Hypothesis 1: Current ED Symptoms Predicting Thwarted Belongingness and Perceived Burdensomeness

As seen in Table 3 and Figure 1, several current ED symptoms were significant predictors of thwarted belongingness and perceived burdensomeness. In partial support of Hypothesis 1, body dissatisfaction significantly predicted thwarted belongingness when controlling for all other current ED symptoms ($B = 0.39$, S.E. = 0.20, $p < .001$, 95% CI [0.20, 0.58]); current restriction, bingeing, vomiting, laxative use, over-exercise, and BMI did not ($p_s > .07$), although laxative use approached significance ($B = 0.07$, S.E. = 0.04, $p = .07$, 95% CI [-0.01, 0.15]). The model explained 18.6% of the variance in belongingness.

Also in partial support of Hypothesis 1, current body dissatisfaction ($B = 0.39$, S.E. = 0.08, $p < .001$, 95% CI [0.23, 0.54]), restriction ($B = 1.00$, S.E. = 0.41, $p = .01$, 95% CI [0.20, 1.79]), and bingeing ($B = 0.17$, S.E. = 0.07, $p = .02$, 95% CI [0.02, 0.31]), significantly predicted burdensomeness when controlling for all other current ED symptoms; current vomiting, laxative abuse, over-exercise, and BMI did not ($p_s > .05$), although laxative use approached significance ($p = .05$). The model explained 35.0% of the variance in burdensomeness.

Hypothesis 2: Lifetime ED Symptoms Predicting Thwarted Belongingness and Perceived Burdensomeness

As seen in Table 4 and Figure 2, two lifetime ED symptoms were significant predictors of either or both thwarted belongingness and perceived burdensomeness. In partial support of Hypothesis 2, lifetime restriction significantly predicted thwarted belongingness when controlling for all other lifetime ED symptoms ($B = 1.11$, S.E. = 0.41, $p = .01$, 95% CI [0.30, 1.92]), while lifetime bingeing, vomiting, laxative use, over-exercise, and lowest BMI did not ($p_s > .22$). The model explained 7.2% of the variance in belongingness.

Also in partial support of Hypothesis 2, lifetime restriction ($B = 1.53$, S.E. = 0.32, $p < .001$, 95% CI [0.91, 2.16]) and laxative use ($B = 0.75$, S.E. = 0.37, $p = .04$, 95% CI [0.03, 1.47]) significantly predicted burdensomeness when controlling for all other lifetime ED symptoms, while lifetime bingeing, vomiting, over-exercise, and lowest BMI did not ($p_s > .26$). The model explained 21.4% of the variance in burdensomeness.

Hypothesis 3: Comparison of Current and Lifetime Models

Hypothesis 3 was partially supported, as current ED symptoms explained more variance on each theory variable than did lifetime symptoms. However, the symptoms that predicted IPTS
variables were not identical across models. That is, current restriction predicted burdensomeness and not belongingness, but lifetime restriction predicted both belongingness and burdensomeness. Current bingeing predicted burdensomeness, but lifetime bingeing did not. Current laxative use did not predict burdensomeness (although the result approached significance), but lifetime laxative use did. In sum, current and lifetime ED symptoms differentially predicted thwarted belongingness and perceived burdensomeness, and current ED symptoms accounted for more variance in the theory variables than lifetime ED symptoms.

Discussion

The majority of the literature investigating suicide risk among patients with EDs (through the lens of the IPTS) has studied how ED symptoms may elevate acquired capability. Despite an array of research suggesting that ED symptomatology may affect the IPTS constructs that produce suicidal desire, few studies have tested this. The present study is the first, to my knowledge, to test if ED symptoms predict thwarted belongingness and perceived burdensomeness among patients with EDs. I found that numerous ED symptoms predicted each IPTS construct. Given the elevated suicide risk among people with EDs (Chesney et al., 2014) and that nearly all theories of suicide posit that suicidal desire is necessary for suicide attempts to occur (for a review, see Joiner, 2005), the present findings suggest that core ED symptoms, exhibited acutely and chronically, may help to explain why people with EDs die by suicide.

ED Symptomatology Predicting Thwarted Belongingness

In their respective models, current body dissatisfaction and lifetime restriction were significant predictors of thwarted belongingness when controlling for the effect of all other variables. Current laxative use trended towards significance in the prediction of thwarted belongingness. Current and lifetime bingeing, vomiting, and over-exercise were not significant predictors, and neither were current and lifetime lowest BMIs.

Body dissatisfaction. As expected, current body dissatisfaction was related to thwarted belongingness. This could be because people with EDs often upwardly and unrealistically compare themselves to others, focusing on how their bodies differ from a perceived ideal appearance (Fairburn, 2008). Attending to self–other differences in upward comparisons often leads people to contrast—as opposed to assimilate— with their comparison targets (Mussweiler, Rüter, & Epstude, 2004). The more people perceive differences between themselves and others
in a profoundly important aspect (i.e., shape and weight; Fairburn, 2008), the more belongingness may become thwarted.

**Dietary restriction.** In partial support of hypotheses, lifetime dietary restriction was the only lifetime ED behavior to significantly predict thwarted belongingness. This finding extends those of Keys et al. (1950) and Dodd et al. (2014), who found that limiting one’s calories negatively affects a person’s perceived social connectedness. Yet, while lifetime restriction predicted thwarted belongingness, current restriction did not. This suggests that the social–interpersonal consequences of restriction may follow a longitudinal course, accumulating over time. These findings align with Treasure and colleagues’ (2015) suggestion that AN—but not BN or BED—may follow a longitudinal trajectory, where over time the disorder and its sequelae can become more severe, enduring, and treatment resistant. Suicide risk appears to be one consequence of AN that follows such a trajectory, given that suicide risk in people with AN applies to those with lifetime diagnoses and is not limited only to those with current diagnoses (Chesney et al., 2014; Guillaume et al., 2011). Given the present results, one reason for elevated suicide risk in people with lifetime AN could be that self-starvation has long-lasting deleterious effects on interpersonal connectedness.

**Bingeing.** The null current and lifetime bingeing findings are contrary to my predictions but are perhaps unsurprising given that the only evidence to suggest that bingeing would predict reduced belongingness is theoretical (i.e., the interpersonal model of EDs; Rieger et al., 2010). However, research suggests that a predictive relation may exist in the opposite direction of what I tested—that is, thwarted belongingness could predict bingeing (Stice et al., 2002; Masheb & Grilo, 2006). As discussed below, future research should test for bidirectional relations between ED symptoms and IPTS variables.

**ED Symptomatology Predicting Perceived Burdensomeness**

In the current model, body dissatisfaction, restriction, and bingeing were significant predictors of perceived burdensomeness when controlling for the effects of all other variables. In the lifetime model, restriction and laxative use were significant predictors of perceived burdensomeness. Current and lifetime vomiting and over-exercise were not significant predictors, and neither were current or lifetime lowest BMIs.

**Body dissatisfaction.** As expected, current body dissatisfaction predicted perceived burdensomeness. Self-discrepancy theory (Higgins, 1987) proposes that when one’s current self
is deficient relative to one’s ideal (e.g., one’s ideal appearance) and/or ought selves (e.g., the appearance one believes one should possess), negative emotional experiences are provoked. This provides a theoretical explanation for why body dissatisfaction (i.e., appearance-related self-discrepancy) predicts low self-esteem, as previous research has found (Paxton et al., 2006; Tiggemann, 2005). Further, given that some of the negative emotions elicited by self-discrepancies are also related to the self-hatred component of perceived burdensomeness (e.g., shame and agitation; Van Orden et al., 2010), self-discrepancy theory may also explain why body dissatisfaction was related to perceived burdensomeness.

**Dietary restriction.** In line with predictions, both current and lifetime restriction predicted perceived burdensomeness. As noted above, lifetime restriction also predicted thwarted belongingness. This pattern of findings was relatively unique, as body dissatisfaction and restriction were the only symptoms to predict both perceived burdensomeness and thwarted belongingness. Notably, passive suicidal ideation transitions to active ideation when burdensomeness and thwarted belongingness are experienced simultaneously. AN, which is characterized by extreme restriction, has a longer course (Treasure et al., 2015) and greater prevalence of fatal suicide attempts than the other EDs (Chesney et al., 2014). One reason for the increased lifetime risk of suicide in AN patients versus those with BN or EDNOS could be that chronic, intense restriction leads to active (versus passive) suicidal desire.

**Bingeing.** In partial support of hypotheses, current but not lifetime bingeing predicted perceived burdensomeness. Low self-esteem (a component of burdensomeness) has been shown to predict bingeing (Stice et al., 2002) and likewise bingeing appears to fuel self-hatred (APA, 2013). Thus, bingeing and burdensomeness may be both causes and consequences of one another. It is interesting that proximal but not chronic bingeing was related to burdensomeness. This may be because bingeing often results from and exacerbates elevated negative affect (Haedt-Matt & Keel, 2011), and intense emotions have been shown to predict suicide ideation acutely but not chronically (Selby, Yen, & Spirito, 2013).

**Purging.** In line with my predictions, lifetime laxative use was related to perceived burdensomeness. Although purging behaviors as a whole may be related to caregiver burden and could thus predict burdensomeness (Sepulveda et al., 2014), research suggests that laxative use in particular may be related to burdensomeness. For instance, laxative use is associated with borderline personality symptoms (Tozzi et al., 2006) while vomiting is not (Reba et al., 2005).
Furthermore, specific borderline personality symptoms (i.e., anger, feelings of emptiness, and suicide and self-harm) predict the odds of laxative use (Tozzi et al., 2006) and these symptoms are also directly related to perceived burdensomeness (Van Orden et al., 2010). This may explain my finding that laxative use—but not vomiting—had distinct relations with perceived burdensomeness and not thwarted belongingness.

**BMI and over-exercise.** The null BMI and over-exercise findings for both thwarted belongingness and perceived burdensomeness, while in line with expectations, do not suggest that BMI and over-exercise are not implicated in the overall elevated rates of suicidal ideation and behavior among women with EDs. Rather, BMI may be nonlinearly related to suicidal desire, as previous research on overweight participants found a quadratic relation between BMI and perceived burdensomeness, where the relation grew stronger as BMI increased (Dutton, Bodell, Smith, & Joiner, 2013). In addition, previous research indicates that over-exercise is related to acquired capability (Smith et al., 2013); therefore, over-exercise may affect suicidal behavior by elevating pain tolerance rather than increasing burdensomeness or decreasing belongingness.

**Clinical Implications**

Suicide ideation affects approximately one-fifth to one-half of individuals with EDs (Swanson, Crow, Le Grange, Swendsen, & Merikangas, 2011). Given the relatively high prevalence of ideation and that the symptoms at the very core of eating pathology appear to contribute to the variables that drive suicide ideation (Joiner, 2005; Van Orden et al., 2010), the present findings have several implications for clinical work with ED patients. First, findings highlight the importance of monitoring ED patients’ perceptions of belongingness and burdensomeness. Second, findings provide ideas for important intervention targets. For instance, when identifying the consequences of overvaluation of shape and weight (Fairburn, 2008), it may be impactful to explore how current body dissatisfaction weakens social relationships and intensifies burdensomeness, and then discuss how these deficits could be repaired. At the same time, interventions aiming primarily to improve interpersonal functioning may strengthen belongingness and diminish burdensomeness, while also reducing ED symptomatology. In fact, Specialist Supportive Clinical Management is a treatment for severe and enduring AN that focuses on improving quality of life (which includes aims to increase belongingness and decrease burdensomeness); reducing ED symptoms is only a secondary treatment aim (see...
McIntosh et al., 2006). Yet patients who receive this therapy experience significantly improved quality of life and reduced ED symptomatology (Touyz et al., 2013), although symptom improvement is greater from treatments like cognitive-behavioral therapy for EDs (Fairburn et al., 2009). Nonetheless, improving interpersonal functioning may simultaneously recover both zeal for life and normative eating.

**Strengths, Limitations, and Future Directions**

The present findings should be interpreted in conjunction with the study’s strengths and limitations, which each inform directions for future research. With respect to strengths, because suicidality and ED symptoms transcend discrete ED diagnoses, it is important to study suicide risk among people with EDs from a transdiagnostic perspective, which I did in the current study. In addition, my hypotheses were driven by a cogent theory of why people die by suicide (i.e., the IPTS). Finally, my tests of how current and lifetime ED symptomatology predicted suicidal desire provided some insight into why people with EDs have lifetime elevated suicide risks.

With respect to limitations, the sample size limited my ability to test complex models that could more fully address the ED symptomatology–suicidal desire link. For example, while I speculate that certain ED symptoms affect particular facets of thwarted belongingness and perceived burdensomeness (e.g., body dissatisfaction predicts the loneliness facet of belongingness and the self-hatred facet of burdensomeness; dietary restriction predicts the absence of reciprocally caring relationships facet of belongingness and both the liability and self-hatred facets of burdensomeness), these predictions are theoretically derived and should be empirically addressed in future research. Considering this, it could be informative to use structural equation modeling, which allows for the use of latent variables, to test how ED symptoms contribute to the specific factors that comprise thwarted belongingness (i.e., loneliness and the absence of reciprocally caring relationships) and perceived burdensomeness (i.e., perceptions of liability and self-hatred). Furthermore, there may be bidirectional relations between certain ED symptoms and IPTS variables, but the small sample size and cross-sectional data precluded me from testing such relations in cross-lagged models. Future research would benefit from addressing how ED symptomatology and IPTS variables affect one another over time. A final limitation is that the measure of lifetime ED behaviors (i.e., the EPPES) is a new assessment that has not yet been validated. However, the current EPPES items correlated significantly with the EDE-Q items, so it is likely that the behaviors being measured are similar
across assessments. With that said, ED behaviors are often exhibited numerous times each day for many months or years, and recalling the lifetime frequency of any behavior that has occurred so regularly is likely prone to high measurement error. The lifetime model should be therefore be interpreted with this limitation in mind.

Conclusion

Previous work investigating why people with EDs die by suicide has focused on how ED symptoms elevate acquired capability. Contrary to expectations, some research has not found associations between painful ED behaviors such as fasting and acquired capability (Witte et al., 2015b; Zuromski & Witte, 2015), thus leading to the hypothesis that ED symptoms—while undeniably painful—may affect death by suicide by paving the path for suicidal desire. I found that body dissatisfaction and dietary restriction predicted thwarted belongingness, and that body dissatisfaction, dietary restriction, bingeing, and laxative use predicted perceived burdensomeness. These findings highlight that symptoms fundamental to EDs contribute to the determinants of suicidal desire. It would thus be informative for researchers and clinicians to consider this overlap in their work with, and prevention of suicidal behavior among, ED patients.
References


Table 1

*Descriptive statistics*

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<th>Measure</th>
<th>( M )</th>
<th>( SD )</th>
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<th>Max</th>
<th>Skew</th>
<th>Kurtosis</th>
<th>Missing n (%)</th>
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<td>0.34</td>
<td>-0.96</td>
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</tr>
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<td>43.65</td>
<td>1.61</td>
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<td>3.17</td>
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<td>65.00</td>
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<td>-0.88</td>
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</table>

*Note.* Thw belongingness = thwarted belongingness; Perc burdensomeness = perceived burdensomeness; the lifetime EPPES was added to the protocol after the first 25 participants had been enrolled.
Table 2

*Intercorrelations between study measures (n = 98)*

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<td>3. Body diss</td>
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</table>

*Note.* Thw belong = thwarted belongingness; Burden = Perceived burdensomeness; Body diss = Body dissatisfaction; C = Current eating disorder (ED) behavior, as measured by Eating Disorder Examination–Questionnaire (excluding BMI); Lax use = Laxative use; Over-ex = Over-exercise; BMI = Body mass index; L = Lifetime ED behavior, as measured by Eating Behaviors Painful and Provocative Events Scale (excluding BMI).
Table 3
Path analysis depicting relations among current ED symptoms with thwarted belongingness and perceived burdensomeness

<table>
<thead>
<tr>
<th></th>
<th>Thwarted belongingness</th>
<th>Perceived burdensomeness</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Unstd B. (95% CI)</td>
<td>S.E.</td>
</tr>
<tr>
<td>Dietary restriction</td>
<td>0.32 (-0.60, 1.23)</td>
<td>0.47</td>
</tr>
<tr>
<td>Bingeing</td>
<td>0.06 (-0.13, 0.24)</td>
<td>0.09</td>
</tr>
<tr>
<td>Vomiting</td>
<td>-0.01 (-0.13, 0.11)</td>
<td>0.06</td>
</tr>
<tr>
<td>Laxative use</td>
<td>0.07 (-0.01, 0.15)</td>
<td>0.04</td>
</tr>
<tr>
<td>Over-exercise</td>
<td>-0.11 (-0.32, 0.10)</td>
<td>0.11</td>
</tr>
<tr>
<td>Body dissatisfaction</td>
<td>0.39 (0.20, 0.58)</td>
<td>0.10</td>
</tr>
<tr>
<td>BMI</td>
<td>0.07 (-0.31, 0.45)</td>
<td>0.20</td>
</tr>
</tbody>
</table>

*Note.* 95% CIs are unstandardized.
Table 4

Path analysis depicting relations among lifetime ED symptoms with thwarted belongingness and perceived burdensomeness

<table>
<thead>
<tr>
<th></th>
<th>Thwarted belongingness</th>
<th>Perceived burdensomeness</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Unstd B. (95% CI)</td>
<td>S.E.</td>
</tr>
<tr>
<td>Dietary restriction</td>
<td>1.11 (0.30, 1.92)</td>
<td>0.41</td>
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<tr>
<td>Bingeing</td>
<td>0.06 (-0.75, 0.86)</td>
<td>0.41</td>
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<tr>
<td>Vomiting</td>
<td>-0.17 (-0.99, 0.65)</td>
<td>0.42</td>
</tr>
<tr>
<td>Laxative use</td>
<td>0.29 (-0.52, 1.09)</td>
<td>0.41</td>
</tr>
<tr>
<td>Over-exercise</td>
<td>-0.59 (-1.54, 0.35)</td>
<td>0.48</td>
</tr>
<tr>
<td>BMI</td>
<td>0.18 (-0.44, 0.81)</td>
<td>0.32</td>
</tr>
</tbody>
</table>

Note. 95% CIs are unstandardized.
Figure 1
Path analysis depicting relations among current ED symptoms with thwarted belongingness and perceived burdensomeness

† Sig ≤ .10, * Sig ≤ .05, ** Sig ≤ .01
Figure 2

*Path analysis depicting relations among lifetime ED symptoms with thwarted belongingness and perceived burdensomeness*

* Sig ≤ .05, ** Sig ≤ .01