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Cognitive Predictors and Behavioural Mediators of Vulnerability-Specific Stress Generation in Depressed Adults

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A thesis submitted in partial fulfillment of the requirements for the Master of Science degree in Psychology
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COGNITIVE PREDICTORS AND BEHAVIOURAL
MEDIATORS OF VULNERABILITY-SPECIFIC STRESS
GENERATION IN DEPRESSED ADULTS

(Thesis format: Monograph)

by

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Graduate Program in Psychology

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of the requirements for the degree of
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Abstract

This longitudinal study investigated the prospective relation of core beliefs and maladaptive behaviours with stress generation. A sample of 151 depressed females completed a battery of questionnaires to assess the presence of early maladaptive schemas, excessive reassurance seeking (ERS), avoidance, depression and anxiety. Approximately three months later, participants were administered the Beck Depression Inventory-II, a diagnostic interview, and a semi-structured contextual interview that assessed the number and severity of life events experienced since Baseline. ERS mediated the association between a Subjugation schema and dependent interpersonal stress, and behavioural-nonsocial avoidance mediated the relation of an Abandonment schema and dependent interpersonal stress. Furthermore, dependent interpersonal stress mediated the relation of Abandonment, Subjugation, ERS, and avoidance with depression at Follow-up, and ERS and behavioural avoidance both moderated the relation of Abandonment and dependent interpersonal stress. Findings suggest several causal mechanisms underlying the stress generation phenomenon.

Keywords: stress generation; stressful life events; depression; early maladaptive schemas; avoidance; excessive reassurance seeking; cognitive vulnerability

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Cognitive Predictors and Behavioural Mediators of Vulnerability-Specific Stress

Generation in Depressed Adults

Major depression is a serious and debilitating disorder with an overall lifetime

prevalence rate of 17 % (Kessler et al., 2005), and is the leading cause of disability

worldwide (World Health Organization, 2012). Depression is also chronic and recurrent,

with each episode increasing the risk of subsequent ones (Kessler, 2002). Fully

elucidating the processes involved in the onset, maintenance, and recurrence of this

common disorder has therefore become crucial.

Stress has long been established as a precipitant to depression, especially in

individuals who are vulnerable due to biological and environmental risk factors (see

Hammen, 2005; Harkness, 2008; Kessler, 1997; Paykel, 2003, for reviews). This

diathesis-stress model (e.g., Beck, 1967; 1987; Ingram & Luxton, 2005) has dominated

research in psychopathology over the past four decades. Depression-prone individuals are

not, however, merely passive respondents to life stress, but also play an active role in

generating depressogenic life events. In this process of 'stress generation' (Hammen,

1991), the occurrence of stressful life events that the individual has contributed to are

termed 'dependent' events (e.g., getting into an argument), as opposed to those that are

fateful or 'independent' (e.g., death of a relative, a natural disaster). The latter are not

accounted for by stress generation processes. Dependent events, especially those that are

interpersonal and involve conflict, are more strongly associated with depression than are

independent events (Hammen et al., 1985; Kendler, Karkowski, & Prescott, 1999). As

such, the stress generation process may maintain current depression or increase the

likelihood of a first onset or recurrence (Hammen, 1991; Joiner, Wingate, & Otamendi,

2005), and therefore may account for the chronicity of major depression (Belsher & Costello, 1998; Monroe & Harkness, 2005; Solomon et al., 2000). The stress generation phenomenon is therefore a promising line of inquiry for understanding the mechanisms underlying the course of depression.

The first study to report stress generation (Hammen, 1991) found that women with a history of depression reported higher rates of dependent stressful life events, especially those that were interpersonal. However, there was no significant difference in the number of independent events that they experienced compared to women with bipolar disorder, medical illness, or healthy controls. The finding that depressive symptoms or diagnoses are associated with higher levels of dependent stress has since been replicated in varying samples, including women with unipolar depression (e.g., Hammen, Shih, & Brennan, 2004), clinical samples of men (Cui & Vaillant, 1997), non-clinical samples of depression-prone college students (e.g., Joiner, Wingate, Gencoz, & Gencoz, 2005; Potthoff, Holahan, & Joiner, 1995) and older adults (Moos, Schutte, Brennan, & Moos, 2005), among others (see Liu & Alloy, 2010, for a review). Moreover, Hammen (1991) posited that negative dependent life events are caused, at least to some extent, by enduring maladaptive characteristics and behaviours of the depression-prone individual. Given that previously depressed individuals continue to generate dependent stress when they are in remission (e.g., Daley et al., 1997), it appears that stressors are not generated by depressive states per se, but by more stable characteristics and vulnerabilities that give rise to these states.

Consistent with this idea, past research has found that personality traits, such as neuroticism (e.g., Ellenbogen & Hodgins, 2004), impulsivity (Liu & Kleiman, 2012),

perfectionism (Flett, Hewitt, Garshowitz, & Martin 1997), dependency/self-criticalness (Mongrain & Zuroff, 1994; Priel & Shahar, 2000; Shahar, Joiner, Zuroff, & Blatt, 2004), low perceived control (Auerbach, Eberhart, & Abela, 2010) and sociotropy/autonomy (Nelson, Hammen, Daley, Burge, & Davila, 2001; Shih, 2006) are related to the generation of stressful life events. Social risk factors, including insecure attachment styles (Bottanari, Roberts, Kelly, Kashdan, & Ciesla, 2007; Hankin, Kassel, & Abela, 2005), ineffective interpersonal problem solving (Davila, Hammen, Burge, Paley, & Daley, 1995), and low perceived social support (Flynn, Kecmanovic, & Alloy, 2010) are also associated with the generation of negative dependent events.

Given the stability of cognitive factors and the significance of cognition in the course of depression (e.g., Dozois & Beck, 2008; Hayden et al., 2008; see Gotlib & Joormann, 2010, for a review), an important line of inquiry is the role that various cognitive vulnerabilities to depression may play in generating stress over time. Harkness and Stewart (2009) found that cognitive-affective depressive symptoms (e.g., sadness, guilty feelings, worthlessness) were predictive of stress generation. Empirical research has also found that rumination (Flynn et al., 2010; Kercher & Rapee, 2009), dysfunctional attitudes (Safford, Alloy, Abramson, & Crossfield, 2007), negative inferential style (Gibb, Beevers, Andover, & Holleran, 2006; Kercher & Rapee, 2009 Safford et al., 2007), and early maladaptive schemas (Calvete, Orue, & Hankin, 2013; Eberhart, Auerbach, Bigda-Peyton, & Abela, 2011) predict the generation of dependent and negative life events.

Substantial evidence supports the notion that enduring maladaptive characteristics predict overall levels of dependent stress; however, there is a paucity of research that

examines levels of stress associated with particular content areas (e.g., Shahar et al., 2004), such as interpersonal and noninterpersonal (e.g., education, work, health) domains. Hammen et al. (1985) investigated schemas and stress using a diathesis-stress formulation and found that Dependence schemas interacted specifically with interpersonal stress to predict depression. Self-critical schemas, on the other hand, interacted with stress in the achievement domain, although this effect was less consistent across a series of follow-ups than the findings for Dependent schemas. These findings underscore the importance of examining specificity in the associations of vulnerabilities with subtypes of stress.

Vulnerabilities may also show specificity in the types of stress they generate. For example, a person who believes she will inevitably fail at whatever she does in areas of achievement (i.e., a noninterpersonal risk factor) may avoid attending classes or studying and fail a course as a result (i.e., noninterpersonal stress), putting her at risk for depression. A person who believes he cannot depend on others for support (i.e., interpersonal risk factor) may withdraw from friends, resulting in breakdowns in close relationships (i.e., interpersonal stress) and greater subsequent depressive symptoms. Some evidence exists for vulnerability-specific stress generation, particularly for predicting interpersonal stress (e.g., excessive reassurance seeking: Birgenhier, Pepper, & Johns, 2010; Prinstein, Borelli, Cheah, Simon, & Aikins, 2005; Shih et al., 2009; attachment: Hankin et al., 2005) However, specificity has not been a consistent finding (e.g., Segrin, 2001), possibly due to methodological issues discussed in detail below.

Interpersonal vulnerabilities are among the strongest predictors of the duration of a depressive episode (Joiner, 2000), and women report higher rates of life events

involving their social network prior to the onset of an episode than do men (Dalgard et al., 2006; Kendler, Thornton, & Prescott, 2001; Maciejewski, Prigerson, & Mazure, 2001). Cyranowski, Frank, Young, and Shear (2000) posited that women are particularly vulnerable to developing depression after experiencing interpersonal events because of their need for affiliation. Given that dependent interpersonal stress is most closely associated with depression (Hammen, Marks, Mayol, & deMayo, 1985; Kendler, Karkowski, & Prescott, 1999), coupled with the fact that interpersonal dependent events are more common than noninterpersonal events (e.g., Harkness & Stewart, 2009), stress generation appears to be largely an interpersonal process. Therefore, interpersonally-relevant vulnerabilities are hypothesized to be the most relevant to generating interpersonal events, and dependent interpersonal events are also expected to have the greatest impact on depressive symptoms. Noninterpersonally-relevant vulnerabilities are expected to predict noninterpersonal events, which may have less of an impact on depressive symptoms than the aforementioned relation.

This study examined the role of cognitive risk factors for depression and corresponding maladaptive behaviours in generating dependent stress in the interpersonal and noninterpersonal domains in individuals with mild to severe depressive symptoms. The extent to which stress generation was vulnerability-specific, such that the content area of risk factors (interpersonal versus noninterpersonal) predicts the same domain of stress, was also investigated. This study also examined depressive schemas. These cognitive structures have a dramatic influence on individuals' experiences and their interpretations of their environments (Dozois & Beck, 2008), and are therefore likely implicated in the process of stress generation.

Schemas

Schemas are core beliefs or "broad organizing principle[s] for making sense of one's life experience" (Young, Klosko, & Weishaar, 2003, p.7). They have also been described as "relatively enduring internal structures of stored generic or prototypical features of stimuli, ideas, or experiences that are used to organize new information" (Clark, Beck, & Alford, 1999, p. 79). According to Beck's cognitive theory of depression (1967; 1983), schemas initially develop in childhood and are later expanded upon, and used as heuristics for organizing information and expectations about the world, relationships with others, and oneself. However, these core beliefs can become maladaptive when they involve broad, pervasive and inflexible cognitions, or when they are no longer relevant for the situation or environment the individual finds him or herself in. Such depressive schemas have a significant impact on a person's experience of the world by negatively biasing and directing attention, encoding, and the retrieval of information and memories in ways that reinforce the core belief (Dozois & Beck, 2008; Hayden, Seeds, & Dozois, 2009). Consistent with a diathesis-stress model, schemas predict depression when activated by stressful life events (Hammen et al., 1985; see Scher, Ingram, & Segal, 2005, for review)

Young (1990; 1994; Young & Brown, 2003) expanded on Beck's theory by suggesting that early maladaptive schemas (EMSs) develop in childhood and are elaborated on throughout life. Young proposed 15 specific EMSs, organized into five domains: Disconnection and Rejection (difficulty forming secure and satisfying relationships with close others and a belief that needs for stability, nurturance, love and belonging will not be met), Impaired Autonomy (low perceived ability to function

independently and having a poorly developed sense of identity), Other-Directedness

(meeting the needs of others before one's own needs in order to gain conditional

acceptance), Impaired Limits (beliefs that one is superior and entitled to special

privileges and that one lacks self-discipline and an ability to delay gratification), and

Over-vigilance and Inhibition (sacrificing relationships, relaxation, and happiness in

order to meet strict self-imposed standards; see Appendix A). These schemas arise in

response to unmet developmental needs and contain memories, emotions, cognitions and

bodily sensations that influence how one thinks, feels, acts, and relates to others. These

self-defeating cognitive patterns are conceptualized as dimensional constructs that vary in

severity and put individuals at risk for developing psychopathology. EMSs have high

temporal stability over 6 months in children as young as 9 years old (Rijkeboer, van den

Bergh, & van den Bout, 2005) and over 2.5-5 years in adults (Riso et al., 2006).

Furthermore, all five schema domains are positively associated with depressive

symptomatology (Eberhart et al., 2011; Schmidt, Joiner, Young, & Telch, 1995). The

bulk of past research has, however, only examined main effect models whereby schemas

were correlated with depression (for an exception, see Dozois, Martin, & Faulkner,

2013). As such, there is a paucity of research examining how these schemas impact

depressive symptoms. Given the significant role that schemas play in shaping information

processing and experiences, it is likely that they also shape depressed persons'

interactions with their environment in such a way as to generate stress. Indeed, the idea

that schemas create life stress is consistent with the underlying assumptions of the

practice of schema therapy (Young et al., 2003).

Only two studies have examined the relation of schemas to life stress using a stress generation framework. Calvete, Orue, and Hankin (2013) found that Disconnection and Rejection schemas predicted stress in a non-clinical sample of adolescents. In contrast, no significant findings were obtained for Impaired Autonomy schemas. The checklist measure of life stress used in this study was interpersonally-focused, and the authors suggested that Impaired Autonomy may influence stress in other domains of life (in a manner consistent with vulnerability-specificity stress generation). Eberhart and colleagues (2011) found that interpersonal schemas (Disconnection and Rejection, Impaired Autonomy and Performance, Other-directedness domains) predicted interpersonal stress which, in turn, predicted increases in depressive symptoms. Stressors also mediated the relation between several schemas and subsequent depression, and there was little evidence for interactive effects of schemas with stress (i.e., a diathesis-stress model). However, this study was limited in that it only studied a subset of schemas and used a non-clinical sample. Furthermore, this research investigated minor, everyday hassles on a weekly basis using a checklist measure. This methodology is problematic because the evidence linking minor events to major depression is fairly weak and inconsistent (Harkness, 2008; Mazure, 1998) and cognitive vulnerabilities are more closely related to the generation of major stressors (Safford et al., 2007) than with daily hassles (Gibb et al., 2006). Furthermore, checklist measures of life stress have severe limitations, as discussed below.

The current study explored the relation of Young's schemas to dependent life stress. Interpersonally-relevant schemas, such as Abandonment/instability, Mistrust/abuse, Defectiveness/shame, Social isolation/alienation, Subjugation, Self-

sacrifice, Dependence/incompetence, and Enmeshment/undeveloped self, were hypothesized to predict dependent interpersonal stress (and not noninterpersonal stress). Failure, Insufficient Self-Control, and Unrelenting standards were expected to predict noninterpersonal stress (and not interpersonal stress). There were no specific hypotheses for Entitlement/grandiosity and Vulnerability to harm schemas.

Hypothesized Behavioural Mediators

Schemas do not contain behaviours; rather, Young contends that behaviours occur in response to the content of schemas (Young et al., 2003). Furthermore, he suggests that these behaviours are coping mechanisms used to adapt to and escape the overwhelming emotions schemas produce. Although these strategies may initially help the individual manage his or her distress, they eventually reinforce the individual's negative core beliefs, ultimately rendering these behaviours maladaptive. Understanding how schemas may predispose individuals to generate life stress through intervening behaviours and interactions is important for elucidating the mechanisms by which EMSs cause individuals to be vulnerable to future depressive symptomatology. Behaviours resulting from schema content may partially or fully account for the influence of cognitive vulnerabilities on the generation of life stress. In the present study, two types of behaviour that are closely associated with depression were investigated: avoidance and excessive reassurance seeking.

Avoidance.

Avoidance has received relatively little attention in the depression literature despite being a key feature in Ferster's (1973) functional analysis of depression. Ferster described avoidance in depressed individuals as a way to escape from internal and

external aversive stimuli by withdrawing and gradually reducing positively reinforcing behaviour, so that eventually the depressed individuals' behaviour is marked by passivity. Avoidance is also an important component of Lewinsohn's (1974) model of depression, whereby an event disturbs an individual's pattern of responding, such that his or her behaviour no longer evokes enough positive reinforcement to continue to initiate or maintain goal-directed behaviours, gradually resulting in increased inactivity and avoidance.

Avoidance has been conceptualized previously as a coping strategy, a problem-solving style, and a personality dimension, all three of which have been found to be associated with depression, both concurrently and over time (Ottenbreit & Dobson, 2004). As a coping strategy, avoidance can be divided into two domains: cognitive and behavioral avoidance. 'Cognitive avoidance coping,' includes responses that deny or minimize a problem or its consequences, or that accept a situation due to the belief that circumstances are unchangeable (Ottenbreit & Dobson, 2004). 'Behavioural avoidance coping' encompasses responses that involve seeking alternative rewards, or escaping the situation and avoiding direct responses to a stressor (Ottenbreit & Dobson, 2004). In contrast, approach coping involves directly addressing a problem. Holahan, Moos, Holahan, Brennan, and Schutte (2005) found that baseline avoidance predicted chronic and acute life stress four years later, which predicted greater depression ten years from baseline in a sample of mixed clinical and non-clinical late middle aged adults. Life stress was a full mediator for men and a partial mediator for women. From a problem-solving perspective, avoidance is the outcome of ineffective problem solving, whereas active problem-solving is optimal (D'Zurilla & Nezu, 1999). Davila (1993) found that

individuals with an avoidant problem solving style had greater insecure attachment cognitions and generated more stressful life events than did those who used active problem solving. Research on avoidance as a personality dimension has investigated 'harm avoidance,' the tendency to inhibit behaviour in order to avoid punishment and novel stimuli (Ottenbreit & Dobson, 2004). Although harm avoidance has never been examined in the context of stress generation, Cummings and colleagues (2013) found that symptoms of Avoidant Personality Disorder in a non-clinical sample led to higher levels of daily stress generation, which was mediated by poor conflict management skills. The authors asserted that avoidance may be especially detrimental in conflict situations since withdrawal merely postpones an argument or may lead to social isolation and rejection.

Ottenbreit and Dobson (2004) developed the Cognitive Behavioural Avoidance Scale (CBAS) to provide an integrative measure that incorporates various dimensions of avoidance. Previously used indices were subscales of broad coping or personality measures that had used varying definitions of avoidance, making the comparison of results across studies difficult. The CBAS uses a trait conceptualization of avoidance since there is evidence for stability of avoidance coping over time. The CBAS measures two factors: cognitive/behavioural avoidance and social/nonsocial avoidance. The coverage of these domains permits the investigation of what avoidance strategies individuals employ and, in turn, how this impacts the generation of interpersonal versus noninterpersonal stressful life events.

In this study, avoidance was hypothesized to mediate the relation of schemas on dependent life stress. It was also expected that social avoidance would be specific to dependent interpersonal stress and non-social avoidance to noninterpersonal stress.

Excessive reassurance seeking.

Coyne's (1976) interpersonal theory of depression states that individuals susceptible to depression, in response to their symptoms of low self-worth, tend to persistently seek reassurance from close others regarding their worth and lovability and the value of the relationship. This is done to attain the care and interest of others and to increase self-esteem, regardless of whether this assurance has already been provided. Depressed individuals may fail to use or may question the authenticity of the provided support, thinking that reassurance is motivated by pity, and engage in a repetitive pattern of seeking and discounting reassurance as insincere. Although close others may at first provide reassurance, they eventually become frustrated, leading to a deterioration of the relationship and rejection of the depressed individual. This outcome confirms to the depressed person his or her negative self-perceptions and increases doubt regarding the genuineness of the initial feedback provided. Consistent with Coyne's model, ERS is related to both depressive symptoms and interpersonal rejection (see Starr & Davila, 2008, for a review).

Not surprisingly, ERS has also been found to relate to interpersonal stress generation. Pothoff, Holahan, and Joiner (1995) found that minor stressful life events mediated the relation between ERS and depression over five weeks in a non-clinical sample of college students. Shahar and colleagues (2004) found that ERS predicted only spousal stress over 5 weeks. The lack of association with other types of relational stress (e.g., involving friends or roommates) might have been due to the fact that these relationships involve less intimacy than a spousal relationship. As such, the negative effects of ERS may be less salient. For example, the person engaging in ERS may not be

aware of how annoyed he or she is making the relationship partner feel. Using a daily diary method, Shih and Auerbach (2010) found that ERS predicted stressful interpersonal dependent (and not achievement) events in women but not men. Using a contextual threat based interview measure and daily diary, Eberhart and Hammen (2009) found that ERS predicted conflict stress generation over four weeks for women in exclusive romantic relationships. Eberhart and Hammen (2010) also found that the relationship of ERS to depression was mediated by conflict stress in a romantic relationship over a four-week period, whereas a diathesis-stress model (whereby conflict stress was hypothesized to interact with ERS to predict depression) was not supported. Furthermore, Birgenheir et al. (2010) found that ERS predicted greater negative life events and also mediated the relation of sociotropy to negative interpersonal life events, and Shih, Abela and Starrs (2009) found that children of depressed parents who engage in ERS generate more interpersonal but not non-interpersonal stress (with the exception of children younger than 10 years old).

Ironically, individuals with depression commonly report engaging in ERS as a way to increase self-esteem, decrease anxiety, receive affection, and prevent social harm (Parrish & Radomsky, 2010). Therefore, it appears that ERS is a coping mechanism used in response to personal and relationship insecurities, which backfires and results in rejection and subsequent depression. Past studies have found that ERS predicts interpersonal (e.g., rejection), but not noninterpersonal stress, providing evidence for vulnerability-specific stress generation. Furthermore, because ERS appears to be a behaviour used to cope with underlying beliefs, it is expected to mediate the relation of interpersonal schemas and dependent interpersonal, but not achievement, stress.

Furthermore, past research has found that the interaction of ERS and an Abandonment schema results in greater depression (Evraire & Dozois, 2014), likely because the combination of ERS with this cognitive risk factor is particularly aversive to relationship partners. These findings suggest that ERS may moderate (rather than mediate) the relationship of particular schemas and dependent stress. It is possible that other schemas might also interact with various depressotypic behaviours in a manner that renders the individuals' interactions more conflictual or aversive to others, thereby resulting in the generation of greater interpersonal stress. For example, individuals may engage in certain maladaptive behaviours more intensely or over a prolonged duration (which may be more toxic to relationships) when they also have a particular schema. Therefore, moderation of maladaptive behaviours was also tested for schemas. To reduce the number of analyses conducted, moderation was only tested for schemas that predicted dependent interpersonal stress.

Measuring Stressful Life Events

The importance of examining the dependency and the severity of life events makes the measurement of stress a particularly significant consideration. There are two primary methods of measuring life stress: checklist indices and contextual interview rating systems. Checklists are easy to administer and score and are much less labour- and time-intensive than are interview-based assessments of life stress. As such, checklists remain widely used despite serious limitations (Harkness, 2008). For example, respondents may have idiosyncratic criteria for whether an experience 'counts' as a particular stressful life event, and a respondent's opinion of what constitutes a serious event may diverge from the investigator's conceptualization (Monroe, 2008). For

example, one individual may report a serious illness in the family when their child had the flu, whereas others may not. Meanwhile, the investigator may define a serious illness as the diagnosis of a chronic or life-threatening disease. Unfortunately, participants often do not have an opportunity to ask the investigator for clarification. Respondents may also endorse items due to demand characteristics (Uher & McGuffin, 2010). That is, they may recognize that stress is being measured and respond in a manner consistent with their general views about stress. Depressed individuals, in particular, may experience cognitive dissonance and systematically over-endorse events because they are seeking an explanation for their poor mental health.

Interviews circumvent many of these problems. They are comprised of standardized questions that all participants are asked, and interviewers have the opportunity to use provided probes, or follow-up questions, to glean important contextual information (Harkness, 2008). Therefore, an interviewer specifies what he or she means by a 'serious illness,' for example, and provides clarification when necessary. If a participant reports a serious illness, the interviewer asks about the nature of the illness and what impact it had on day-to-day life. Collecting detailed idiographic information also prevents events from being 'double-counted,' as participants may report an event more than once under different categories when using a checklist measure (Monroe, 2008). For example, a car accident may be reported as both a health and a financial event.

Furthermore, checklists are susceptible to memory and mood-congruent biases, such that depressed individuals tend to interpret, remember and report life events as more negative (Simons, Angell, Monroe, & Thase, 1993), resulting in issues of shared-method variance in studies exclusively using self-report measures. Interview-based measures can

assess more objectively how threatening events are by distinguishing the severity of the actual event from the participant's perception of threat, which may be inflated (Monroe & Depue, 1991) or contaminated by cognitive and personality variables (Shih et al., 2009). This is achieved by asking only about objective facts associated with life events rather than about the participants' subjective reactions, and by keeping raters blind to the clinical status and subjective reactions of the respondent, which could be confounded with the dependent variable of interest. As mentioned above, interviews also take idiosyncratic contextual differences into account (Harkness, 2008). For example, finding out that one is pregnant has very different implications for a woman who planned the pregnancy, has a reliable partner and is financially stable, compared to a single woman with low socioeconomic status who had not wanted to become pregnant. Despite these two experiences being vastly different in terms of their severity, checklist measures would treat them equally. Context is also important for understanding the degree to which the event was dependent on the individual's actions or choices (Harkness, 2008). Finally, interviews use calendars and timelines to aid autobiographical memory and to establish when an event occurred, which is important for ensuring that events did, in fact, occur during the time period of interest. The use of interviews guards against 'telescoping' (i.e., reporting events as occurring more recently than they did).

Interviews are also advantageous over checklists in terms of their psychometric properties. Checklist measures have low test-retest reliability ($r = .08$ over 6 months in psychiatric patients; Horowitz, Schaefer, Hiroto, Wilner, & Levin, 1977) and low agreement in endorsement of events among married couples living together (e.g., only 46% agreement for hospitalization of a family member; Horowitz et al., 1977).

Investigator-defined events (using standardized and operational criteria) and events defined by participants using a checklist have a surprisingly low correlation (McQuaid, Monroe, Roberts, & Johnson, 1992) and, when participants are subsequently interviewed about events they had previously endorsed, many change their report. Some respondents reported that they had endorsed events that only vaguely corresponded to events that had occurred in their lives because they did not want to appear 'boring.' Duggal and colleagues (2000) found that checklists only captured 32% of severe life events occurring prior to an onset of depression, and Lewinsohn, Rohde, and Gau (2003) reported that the overall percentage of valid events captured by a checklist as defined by a criterion was well below 50%. In contrast, interviews detect severe life events (Duggal et al., 2000) and are able to distinguish life events that are stressful as opposed to trivial, the latter of which may be unpleasant but do not increase the risk for depression (Gorman, 1993). Interviews also show high predictive validity, and are able to predict depressive symptoms (McQuaid, Monroe, Roberts, Kupfer, & Frank, 2000), unipolar and bipolar depressive episodes (Johnson et al., 2008), remission (McQuaid et al., 2000), and treatment outcome (McQuaid et al., 2000; Monroe et al., 2006). Interviews are more sensitive and reliable in detecting events relevant to depression and provide more precise ratings of severity, all of which results in greater statistical power (Monroe, 2008).

Unfortunately, the vast majority of past research has used checklist measures despite their many disadvantages, all of which result in random and/or systematic error. This overuse of checklist indices may account for some conflicting findings in the literature (Hammen, 2005), such as inconsistencies in whether vulnerability-specific

stress generation is found. Hammen (2005) also noted that a true test of the stress generation hypothesis requires the use of a contextual interview-based measure.

The current study

This study expands on the stress generation hypothesis, as originally advanced by Hammen (1991). The prospective impact that schemas have on the generation of negative dependent events (over and above the influence of Baseline depressive symptoms) was examined using a follow-up period of approximately three months. It was hypothesized that these variables would contribute to stress generation, such that the presence of early maladaptive schemas would be predictive of negative dependent events occurring over subsequent months. Furthermore, this study investigated a vulnerability-specificity model for schemas, such that negative interpersonally relevant schemas were hypothesized to predict interpersonal events (and not noninterpersonal events), and schemas relevant to noninterpersonal domains of life (i.e., Failure, Insufficient Self-Control, Unrelenting standards) would predict noninterpersonal events (and not interpersonal events).

Furthermore, it was hypothesized that the behaviours of excessive reassurance seeking and avoidance would mediate the prospective relation of schemas with dependent stress. In line with its interpersonal focus and the findings of previous studies, it was hypothesized that ERS would mediate only interpersonal schemas to predict interpersonal stress. Cognitive/behavioural avoidance was expected to mediate the relation of cognitive vulnerabilities to both interpersonal and noninterpersonal stress. In line with the vulnerability-specific stress generation hypothesis, social avoidance was expected to mediate interpersonal stress, and nonsocial avoidance to mediate noninterpersonal stress. Moderation was also explored as an alternative mechanism whereby some schemas may

interact with particular behaviours in predicting dependent interpersonal stress. These analyses were conducted only for schemas that related to dependent life events after controlling for Baseline depressive symptoms and any additional clinical or demographic covariates. Finally, interpersonal stress generation was expected to have a relatively greater impact than noninterpersonal stress generation on subsequent depression.

Hypotheses were tested in a sample of women, as females are more likely than males to experience depressive episodes (e.g., Nolen-Hoeksema & Girgus, 1994), life events (Harkness, Alavi, Monroe, Slavich, Gotlib, & Bagby, 2010), and interpersonal stressors in particular (e.g., Shih et al., 2006). That is, the stress generation phenomenon may be more pervasive in women. Therefore, rather than use this variable as a statistical covariate, gender was controlled experimentally. Symptoms of anxiety and worry were also controlled for due to the high comorbidity of anxiety and depression, and evidence that anxiety may also predict stress generation (e.g., Judah et al., 2013). A semi-structured contextual interview was used to measure stress.

Method

Participants

The sample was comprised of 151 female undergraduate and graduate students at the University of Western Ontario (UWO). Participants were recruited by advertisements distributed throughout campus and on Facebook, and by short presentations advertising the study in large undergraduate classes. Furthermore, individuals who participated in a previous depression-related study, and who had provided consent to be re-contacted, were invited by phone or email to participate in the current study. Interested individuals were provided with a link to a secure website with a screening survey, which consisted of

the Depression scale of the Depression Anxiety and Stress Scales (DASS-21; Lovibond

& Lovidbond, 1995). Only individuals who scored ≥ 7 (indicating at least moderate

depressive symptoms) were eligible for the study. These individuals were contacted and

scheduled for their Baseline Assessment. Furthermore, only those with a score ≥ 14 on

the BDI (indicating at least minimal depressive symptoms) at Baseline Assessment were

invited to participate in the Follow-up (see Figure 1 for a participant flow diagram). This

procedure ensured that a final sample of individuals exhibiting at least minimal

depressive symptoms was obtained. Participants were entered in a draw to win an iPad

and were compensated with $20 for each wave of the study, for a total of $40 for

completers.
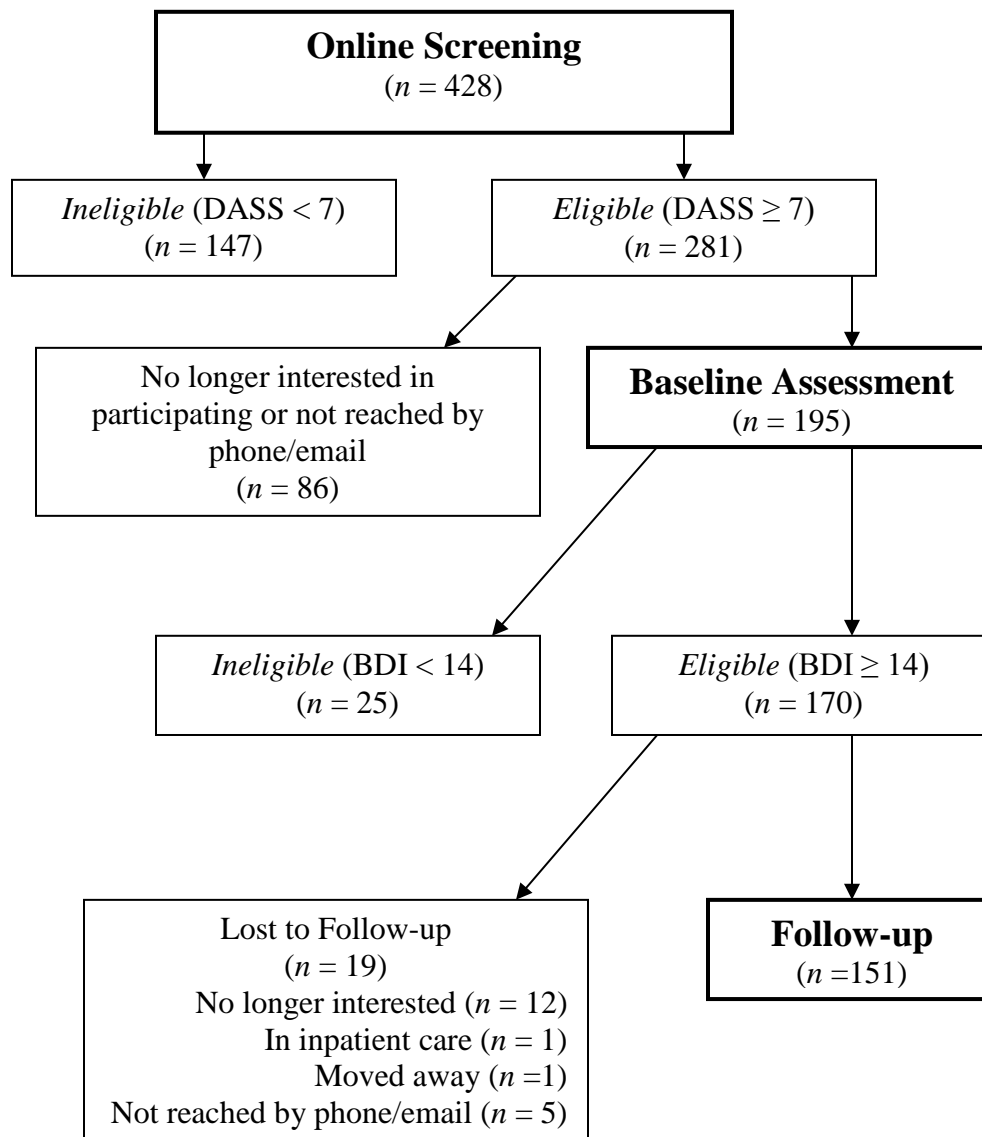
Figure 1. Participant Flow.

The final sample was comprised of 151 women, which represented a retention rate of 89% from Baseline Assessment to Follow-up. The final sample was primarily comprised of Caucasian and Asian individuals and participants ranged in age from 18 to 28 years ($M = 19.69$, $SD = 2.15$). Furthermore, 34.4% of participants ($n = 52$) were in a current episode of Major Depressive Disorder (MDD) at Follow-up according to the Fifth edition of the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-5; American Psychological Association, 2013). In addition, 43% ($n = 65$) of participants met past criteria for MDD but were not currently depressed, 4.0% ($n = 6$) had Dysthymia, 6.6% ($n = 10$) had Adjustment Disorder, 1.3% ($n = 2$) were in a current episode of Other Specified Depressive Disorder, and 13.2% ($n = 20$) had no history of depression. Length of follow-up ranged from 92 to 164 days ($M = 126.53$, $SD = 15.07$).

Materials

Depression subscale of the Depression Anxiety and Stress Scales – 21 (DASS-21; Lovibond & Lovibond, 1995). Individuals interested in participating in the study completed an online screening survey, which was comprised of the 7 items from the Depression subscale of the DASS-21, a self-report questionnaire of depressive symptomatology. Items are ranked on a 4-point scale from 0 (*Did not apply to me at all*) to 3 (*Applied to me very much, or most of the time*) based on their applicability during the past week, with possible scores ranging from 0 to 21. The depression scale shows good convergent validity with the Beck Depression Inventory (Lovibond & Lovidbond, 1995; see Dozois & Dobson, 2010, for review). In the present study, the internal consistency (Cronbach's alpha) of the DASS-21 was .80.

Beck Anxiety Inventory (BAI; Beck, Epstein, Brown, & Steer, 1988; Beck & Steer, 1990). The BAI is a 21-item self-report questionnaire that assesses the severity of anxiety symptoms. Participants rate how much they have been bothered by each symptom in the past week from 0 (*not at all*) to 3 (*severely - I could barely stand it*). Total scores are computed by summing ratings. The BAI has shown strong psychometric properties in adult samples, including good test-retest reliability, convergent validity with other measures of anxiety, and divergent validity with indices of depression (e.g., Beck et al., 1988; Hewitt & Norton, 1993). Cronbach's alpha was .89 in this study.

Penn State Worry Questionnaire (PSWQ; Meyer, Miller, Metzger, & Borkovec, 1990). The PSWQ is a 16-item self-report measure that assesses trait worry. Individuals rate statements on a 5-point Likert-type scale, from 1 (*not at all typical of me*) to 5 (*very typical of me*). After reverse scoring selected items, items are added to produce a total score. This instrument has strong psychometric properties in both clinical and nonclinical samples, including high test retest reliability, and convergent, discriminant, and criterion validity (Brown, Antony, & Barlow, 1992; Davey, 1993). Cronbach's alpha was .92 in this study.

Young Schema Questionnaire-Short Form (YSQ-SF; Young and Brown, 2003). The YSQ-SF is a 75-item self-report questionnaire that assesses 15 early maladaptive cognitive schemas: Emotional inhibition, Emotional deprivation, Mistrust/abuse, Social isolation/alienation, Defectiveness/shame, Abandonment/instability, Failure, Dependence/incompetence, Vulnerability to harm or illness, Enmeshment/undeveloped self, Subjugation, Entitlement/grandiosity, Insufficient self-control/self-discipline, Self-sacrifice and Unrelenting standards. Participants rate the self-descriptiveness of each

statement on a 6-point scale from 1 (*completely untrue of me*) to 6 (*describes me*

perfectly). Higher scores reflect the greater presence of maladaptive schemas. This

instrument has strong psychometric properties (e.g., Hoffart et al., 2005; Welburn,

Coristine, Dagg, Pontefract, & Jordan, 2002). The average Cronbach's alpha across

schemas was .86 in this study.

      Depressive Interpersonal Relationships Inventory-Reassurance Seeking Subscale

(DIRI; Joiner, Alfano, & Metalsky, 1992). The DIRI is a 4-item self-report questionnaire

that assesses individuals' tendency to engage in reassurance seeking behaviour in their

current relationships (e.g., "Do you find yourself often asking the people you feel close to

how they truly feel about you?) and the reactions of close others to the behaviour (e.g.,

"Do the people you feel close to sometimes get fed up with you seeking reassurance from

them about whether they really care about you?"). Participants rate how much they agree

with these statements on a Likert-type scale from 1 (*not at all)* to 7 (*very much*). Ratings

are summed, with higher scores indicative of greater reassurance seeking. This measure

has been found to have high internal consistency (Joiner et al., 1992) and demonstrates

good construct and criterion validity when compared with judges' ratings of ERS (Joiner

& Metalsky, 2001). The DIRI is a reliable measure of reassurance seeking that is distinct

from general dependency, dependence on close others, negative affectivity and doubt in

others' sincerity (Haeffel, Vlelz, & Joiner, 2007; Joiner & Metalsky, 2001). Cronbach's

alpha was .90 in the current study.

      Cognitive-Behavioural Avoidance Scale (CBAS; Ottenbriet & Dobson, 2004). The

CBAS is a 31-item self-report measure of avoidance across four dimensions as

determined by its factor structure: behavioural-social (e.g., *I find that I often want to*

leave social gatherings), behavioural-nonsocial (e.g., *I quit activities that challenge me too much*), cognitive-social (e.g., *I try not to think about problems in my personal relationships*), and cognitive-nonsocial (e.g., *I avoid making decisions about my future*). Participants rate their agreement with statements on a 5-point Likert-type scale from 1 (*not at all true for me*) to 5 (*extremely true for me*), such that higher scores indicate greater levels of avoidance. The behavioural-social (BS) scale is composed of 8 items (possible scores range from 8-40), the behavioural-nonsocial (BN) scale is composed of 6 items (scores range from 6-30), the cognitive-social (CS) scale consists of 7 items (scores range from 7-35), and the cognitive-nonsocial (CN) scale is comprised of 10 items (scores range from 10-50). The CBAS has good psychometric properties, including good internal consistency, strong test-retest reliability over three weeks, and evidence of divergent and convergent validity (Ottenbriet & Dobson, 2004). In the current sample, Cronbach's alpha was .90 for the behavioural-social scale, .69 for the behavioural-nonsocial scale, .74 for the cognitive-social scale, and .85 for the cognitive-nonsocial scale.

Beck Depression Inventory-II (BDI-II; Beck, Steer, & Brown, 1996). The BDI-II is a 21-item instrument that assesses the presence and severity of unipolar depressive symptoms. Individuals rate each statement on a 0 to 3 scale according to how well it describes how they have felt over the past two weeks. Total scores are yielded by summing items, with higher scores indicating greater depressive symptoms. The BDI-II has been widely used with adult samples and is recognized for its strong psychometric properties (e.g., Beck, Steer, & Garbin, 1988, see Dozois & Covin, 2004, for a review). In the current study, Cronbach's alpha was .83 at Time 1 and .91 at Time 2.

Life Events and Difficulties Schedule (LEDS-II; Bifulco et al., 1989). The LEDS is a semi-structured, contextual interview and rating system used to assess the number and severity of stressful life events occurring over a specified period of time in ten domains: health, education, housing, reproduction, dating relationships, other relationships, employment, crime/legal, finance, and other crises/deaths. The LEDS interview uses probes that encourage respondents to discuss the context surrounding each life event. This procedure allows for sensitive ratings to be made that take the individual's life circumstances into account. Interviewers were trained not to ask about participants' subjective reactions to, or perceptions of, stressors. In addition, interviewers were trained not to ask about how stressors related to the participants' depression, or to query about events directly related to participants' mental health (e.g., beginning pharmacotherapy, inpatient stay at a psychiatric ward). During interviews, a time line that included anchoring events, such as holidays and birthdays, was used to help participants with event dating. Participants were asked only about events that occurred since they completed the first session of the study. Brown and Harris (1989) determined that respondents are able to report accurately on past life events, and dating reliability using the LEDS is high for up to two years.

Interviews were conducted by three graduate-level clinical psychology students, and were rated by four undergraduate-level research assistants. Interviews were audio-recorded, and interviewers subsequently wrote vignettes of each life event reported by a participant, excluding any information regarding the participant's emotional reactions and depression. Interviewers later presented these vignettes to a panel of two raters who were trained extensively in the Bedford College LEDS procedure for defining and rating life

events (see Brown & Harris, 1989). This system has the benefit of allowing raters rather than respondents to decide whether an event is significant enough to be included in the coding system. Ratings were determined using the LEDS manual, which provides operational criteria and explicit rules for defining various life events, as well as over 5,000 illustrative examples. Each event rating was standardized and anchored by the threat and independence ratings of representative case examples. Ratings of whether an event was interpersonal or noninterpersonal were based on the operational definitions of these constructs in the LEDS manual. 'Interpersonal' events are those for which the focus or primary content of the event involves a relationship (e.g., participant breaks up with her partner). Noninterpersonal events are those that are not focused on an interpersonal relationship (e.g., participant is diagnosed with diabetes). Raters made independent ratings, and any discrepancies were discussed and resolved by consensus. Interviewers and raters were trained and supervised by an expert with the LEDS system who has over 5 years of experience.

Events were rated for their level of contextual threat (i.e., severity) on a 5-point scale (1 = marked, 2a = high moderate, 2b = low moderate, 3 = some, 4 = little/none; Brown & Harris, 1989). Each event was subsequently reverse-coded into a 5-point scale, from 1 (little/no threat), to 5 (marked threat). One positive event counted in the LEDS system (i.e., starting a new confiding friendship) was removed from the dataset since this is not negative stress and therefore not part of the stress generation phenomenon. In all cases, this event had been rated 4 before reverse-coding (i.e., little/no threat). To create cumulative threat variables for each participant, the values of events were summed. Participants with no events were assigned a score of 0. Cumulative threat variables were

created for each participant for total events, independent events (e.g., grandparent's death

from cancer), and dependent events, the latter of which was further subdivided to create

variables for dependent interpersonal events (e.g., major argument with a roommate) and

dependent non-interpersonal events (e.g., fails a course needed to graduate). Inter-rater

reliability for the threat ratings was $\kappa = .77$. Raters achieved perfect reliability on the

independence and interpersonal ratings ($\kappa = 1.00$). To minimize bias, raters were blind to

participants' level of depressive symptomatology and clinical status, scores on all

Baseline measures, and to participants' subjective reactions to life events.

Diagnostic Interviews. Participants were administered the Major Depressive

Disorder, Dysthymia, and Adjustment Disorder sections of the *Structured Clinical*

Interview for DSM-IV Axis I Disorders (SCID-I/P; First, Spitzer, Gibbon, & Williams,

1994) at Follow-up in order to evaluate current clinical diagnoses. To interpret diagnostic

information according to the DSM-5, the bereavement exclusionary criterion from the

DSM-IV was not applied. The reliability and validity of the SCID-I/P in detecting

psychopathology has been well-documented (e.g., Ambrosini, 2000; Williams et al.,

1992). Interviews were audio-recorded, and an independent graduate-level rater rated

20% ($n = 30$) of the tapes. A perfect match for diagnosis was achieved for 90% of tapes

($\kappa = .85$).

Procedure

Advertisements for the study provided individuals with a link to a secure website

where potential participants completed the Depression Subscale of the DASS-21.

Following screening, all individuals who met inclusion criteria were contacted by phone

or email to schedule their first appointment for the study. Upon arrival at the research lab,

individuals were seated at a computer in one of four separate rooms to maintain anonymity. After providing informed consent, participants completed a demographic form and the BAI, PSWQ, YSQ-SF, DIRI, CBAS, and BDI-II, as well as additional measures for related studies, in a randomized order. Participants were then debriefed, provided with a list of mental health resources on campus and in the community, and compensated. In accordance with the UWO Nonmedical Research Ethics Board, those individuals who reported elevated scores on an item on the BDI-II indicating the presence of suicidal ideation were assessed for imminent risk of self-harm during debriefing.

Beginning three months after the Baseline Assessment, participants who had obtained a BDI-II score ≥ 14 were contacted, in order of when they came in for their first appointment, by phone or email to be scheduled for their second session of the study. Three months was chosen as the minimum length of time between Baseline Assessment and Follow-up because this is the length of time at which life events are at their highest etiologic relevance for the onset of depression (Brown & Harris, 1989), and was therefore considered a meaningful length of time for predicting depression and depression-related phenomena. After providing informed consent, participants completed the BDI-II. They were then administered the SCID-I/P and LEDS interviews. The BDI-II was administered first. Since the BDI-II is a continuous measure, it was selected as the measure of depression most important to protect from mood-priming effects. Furthermore, the LEDS was administered last as it was deemed the measure most resilient to the effects of mood-priming and response bias due to its extensive use of memory aids and its focus on only objective (and not subjective) indicators of stress. Finally, participants were debriefed, provided with a list of mental health resources, and compensated.

Results

Preliminary Analyses

Demographic characteristics and descriptive statistics on Baseline Assessment measures are stratified by Follow-up completion versus non-completion (i.e., lost to Follow-up) and presented in Table 1. Participants who completed Follow-up did not differ significantly from those lost due to attrition in age, ethnicity, or total scores on the DASS-21, BDI-II, DIRI, and CBAS (all ps > .56). Participants who completed the Follow-up had higher BAI scores than those that did not, $t(156) = 2.10$, $p = .04$. Preliminary analyses indicated that .003% of the total number of items was missing and missing data were randomly distributed throughout the sample. When less than 5% of data are missing from a data set and the distribution of missing data is random, most procedures used for handling missing data yield similar results (Tabachnick & Fidell, 2007). The current study used listwise deletion.

The dependent variables of interest were BDI-II scores at Follow-up and three types of life event threat variables (independent, dependent interpersonal, and dependent noninterpersonal). For the remainder of this thesis, dependent interpersonal and dependent noninterpersonal event threat will be referred to as interpersonal and noninterpersonal event threat, respectively. Table 2 presents the descriptive statistics for all variables of interest. In the time interval between each participant's Baseline Assessment and Follow-up, the frequencies and percentages of participants who experienced at least one independent event and dependent event were 76.2% ($n = 115$) and 87.4% ($n = 132$), respectively. Moreover, 69.5% ($n = 105$) experienced at least one dependent interpersonal event, and 57.6% ($n = 87$) experienced at least one dependent

Table 1

Demographic and Clinical Characteristics of Completers and Non-completers

Variable	Completed Follow-up (*n* = 151)	Did not Complete Follow-up (*n* = 19)
Age *M* (*SD*)	19.69 (2.15)	19.63 (2.59)
Ethnicity		
Caucasian *n* (%)	77 (51.0)	12 (63.2)
Asian *n* (%)	53 (35.1)	5 (26.3)
African Canadian *n* (%)	4 (2.6)	0 (0)
Hispanic *n* (%)	4 (2.6)	0 (0)
First Nations *n* (%)	1 (0.7)	0 (0)
Other *n* (%)	12 (7.9)	2 (10.5)
Screening		
DASS-21 *M* (*SD*)	12.07 (3.96)	12.58 (4.30)
Baseline Assessment		
BDI-II *M* (*SD*)	27.36 (8.45)	26.26 (9.64)
BAI *M* (*SD*)	23.03 (10.93)	17.28 (10.82)
PSWQ *M* (*SD*)	65.10 (10.45)	62.00 (9.06)
DIRI *M* (*SD*)	15.26 (6.55)	15.05 (6.77)
CBAS Total Score *M* (*SD*)	84.30 (19.42)	81.44 (18.36)

Note: DASS-21 = Depression Subscale of the Depression Anxiety Stress Scales; BDI-II = Beck Depression Inventory-II; BAI = Beck Anxiety Inventory; PSWQ = Penn State Worry Questionnaire; DIRI = Depressive Interpersonal Relationships Inventory; CBAS = Cognitive-Behavioural Avoidance Scale

Table 2

Descriptive Statistics for EMSs, ERS, Avoidance, Life Events and Depressive Symptoms

Variable	*M* (*SD*)
Emotional Deprivation	15.37 (5.94)
Abandonment	18.62 (7.29)
Mistrust	17.23 (5.73)
Social Isolation	17.06 (6.98)
Shame	14.71 (8.84)
Failure	18.38 (7.38)
Dependence	12.49 (5.62)
Vulnerability to Harm	14.57 (5.95)
Enmeshment	10.72 (5.44)
Subjugation	14.93 (5.71)
Self-Sacrifice	19.13 (5.80)
Emotional Inhibition	15.38 (6.34)
Unrelenting Standards	21.18 (5.82)
Entitlement	13.26 (4.96)
Insufficient Self-Control	18.59 (5.41)
ERS	15.26 (6.55)
Total Avoidance	84.30 (19.42)
BS Avoidance	20.86 (7.64)
BN Avoidance	18.37 (4.37)
CS Avoidance	18.22 (5.67)
CN Avoidance	26.78 (7.84)
Independent Threat	3.72 (4.38)
Interpersonal Threat	3.38 (3.91)
Noninterpersonal Threat	1.54 (1.82)
Follow-up BDI-II	19.88 (10.36)

Note: ERS = Excessive reassurance seeking; BS = Behavioural-social; BN = Behavioural-nonsocial; CS = Cognitive-social; CN = Cognitive Nonsocial; BDI-II = Beck Depression Inventory-II

noninterpersonal event.

Univariate analyses were performed to examine the relation of BDI-II scores at Follow-up to demographic and clinical characteristics of the sample. BDI-II scores were not significantly associated with ethnicity $F(5, 144) = 0.38$, $p = .87$. However, BDI-II scores at Follow-up were related to age ($r = -.20$, $p = .01$), and Baseline scores on the BDI-II ($r = .62$, $p < .001$), BAI ($r = .39$, $p <.001$), and PSWQ ($r = .27$, $p = .001$). A series of univariate tests were conducted to examine the relation of event threat variables with demographic and clinical variables. Independent event threat was not significantly associated with age ($r = .04$, $p = .67$), ethnicity ($F(5, 145) = 0.92$, $p = .47$), or PSWQ ($r =.09$, $p = .30$). Unexpectedly, Independent event threat was related to BDI-II scores at Baseline Assessment ($r = .20$, $p = .01$). It was also related to scores on the BAI ($r = .20$, $p = .02$). Dependent Interpersonal event threat was not associated with age ($r = -.09$, $p = .25$), ethnicity ($F[5, 145] = 1.11$, $p = .36$), or PSWQ scores ($r = .07$, $p = .41$), but was significantly associated with Baseline BDI-II ($r = .22$, $p = .01$) and BAI ($r = .18$, $p = .04$) scores. Noninterpersonal event threat was not associated with age ($r = -.003$, $p = .97$), ethnicity ($F[5, 145] = 0.92$, $p = .47$), BAI ($r = .06$, $p = .49$), PSWQ ($r = -.03$, $p = .75$), or Baseline BDI-II ($r = .04$, $p = .62$).

Associations Among the Study Variables

Pearson correlations between EMSs and depressive symptoms and life event threat are displayed in Table 3. Baseline and Follow-up BDI-II scores were significantly and positively related to all EMSs with the exception of Enmeshment and Entitlement schemas. Independent event threat was significantly and positively correlated with Vulnerability to Harm and Self-Sacrifice schemas, and negatively associated with

Table 3

Pearson Correlations between EMSs, and Independent Variables (Depressive Symptoms and Life Events)

EMS	Baseline BDI-II	Follow-up BDI-II	Independent Threat	Interpersonal Threat	Noninterpersonal Threat
Emotional Deprivation	.22**	.27**	-.001	.08	.14
Abandonment	.32***	.22**	-.01	.26**	.07
Mistrust	.38***	.31**	.14	.08	.06
Social Isolation	.55***	.46***	.16	.02	.01
Shame	.55***	.51***	.10	.11	.09
Failure	.47***	.39***	.02	.03	.04
Dependence	.33***	.22**	.01	.05	.07
Vulnerability to Harm	.42***	.29***	.20*	.16	.04
Enmeshment	.12	.03	.13	-.03	.04
Subjugation	.42***	.34***	.14	.21**	-.06
Self-Sacrifice	.34***	.26**	.23**	.12	.12
Emotional Inhibition	.20*	.18*	.13	.02	.13
Unrelenting Standards	.17*	.18*	.13	.02	.07
Entitlement	-.04	-.10	-.16	-.06	.05
Insufficient Self-Control	.39***	.28**	-.17*	.04	-.04

Note: EMS = Early Maladaptive Schema; BDI-II = Beck Depression Inventory-II
* $p < .05$. ** $p < .01$. *** $p < .001$.

Insufficient Self-Control. Interpersonal event threat was positively related to

Abandonment and Subjugation schemas. Noninterpersonal event threat did not relate

significantly to any EMSs.

Associations between EMSs and maladaptive behaviours (ERS and avoidance)

are displayed in Table 4. ERS was positively correlated with most EMSs with the

exception of Emotional Deprivation, Enmeshment, Unrelenting Standards, and

Insufficient Self-Control. ERS was negatively correlated with Emotional Inhibition.

Furthermore, total avoidance was significantly and positively correlated with all EMSs

except for Abandonment, Self-Sacrifice, Unrelenting Standards and Entitlement.

Associations between EMSs and subtypes of Avoidance are also displayed in Table 4.

Correlations between depressive symptoms, ERS, avoidance, and life events are shown in

Table 5. Depressive symptoms at Baseline and Follow-up were related to ERS, all

avoidance variables, and all life event variables with the exception of noninterpersonal

event threat. Furthermore, independent event threat was positively related to BS

avoidance. Interpersonal event threat was related to ERS, total avoidance, BS avoidance,

BN avoidance, and CS avoidance. Noninterpersonal event threat was not related to any

maladaptive behaviours.

To observe what predicts depression at Follow-up when controlling for

demographic and clinical covariates (i.e., BDI-II at Baseline, BAI, PSWQ and age),

partial correlations for all EMSs and maladaptive behaviours were computed (see Table

6). Similarly, partial correlations were computed to investigate the predictors of

independent and interpersonal event threat controlling for Baseline BDI-II and BAI.

Partial correlations were not computed for noninterpersonal event threat as it was not

Table 4

Pearson Correlations between EMSs and Maladaptive Behaviours (ERS and Avoidance)

EMS	ERS	Total Avoidance	BS Avoidance	BN Avoidance	CS Avoidance	CN Avoidance
Emotional Deprivation	.04	.25**	.21*	.14	.27**	.09
Abandonment	.58***	.15	.09	.18*	.14	.15
Mistrust	.26**	.28**	.33***	.31***	.18*	.12
Social Isolation	.21*	.54***	.60***	.48***	.38***	.17*
Shame	.26**	.49***	.35***	.43***	.42***	.31***
Failure	.31***	.45***	.25**	.39***	.36***	.42***
Dependence	.36***	.36***	.13	.35***	.36***	.35***
Vulnerability to Harm	.22**	.41***	.40***	.38***	.32***	.21*
Enmeshment	.12	.24**	.27**	.29**	.23**	.06
Subjugation	.37***	.55***	.42***	.44***	.49***	.32***
Self-Sacrifice	.18*	.15	.22**	.10	.07	.16
Emotional Inhibition	-.19*	.36***	.39***	.25**	.31***	.10
Unrelenting Standards	.07	-.04	.09	.13	-.04	-.16
Entitlement	.27**	-.07	-.07	-.04	.13	-.09
Insufficient Self-Control	.12	.54***	.14	.47***	.36***	.66***

Note: EMS = Early Maladaptive Schema; BS = Behavioural-social; BN = Behavioural-nonsocial; CS = Cognitive-social; CN = Cognitive Nonsocial

* $p < .05$. ** $p < .01$. *** $p < .001$.

Table 5

Pearson Correlation Coefficients between Depressive Symptoms, ERS, Avoidance, and Life Events

	1	2	3	4	5	6	7	8	9	10	11
1. Baseline BDI	-										
2. ERS	.28**	-									
3. Total Avoidance	.53***	.23**	-								
4. BS Avoidance	.41***	.15	.71***	-							
5. BN Avoidance	.49***	.26**	.86***	.55***	-						
6. CS Avoidance	.30***	.21*	.76***	.39***	.57***	-					
7. CN Avoidance	.44***	.14	.74***	.19*	.57***	.44***	-				
8. I Threat	.20*	.02	.10	.28**	.09	.05	-.07	-			
9. IN Threat	.22**	.25**	.20*	.17*	.19*	.17*	.10	.31***	-		
10. NI Threat	.04	.01	-.03	.01	-.03	-.04	-.03	.22**	.17*	-	
11. Follow-up BDI	.62***	.29***	.38***	.33***	.38***	.25**	.27**	.20*	.28**	.05	-

Note: BDI = Beck Depression Inventory-II; ERS = Excessive reassurance seeking; BS = Behavioural-social; BN = Behavioural-nonsocial; CS = Cognitive-social; CN = Cognitive Nonsocial; I Threat = Independent event threat; IN Threat = Interpersonal Event Threat; NI threat = Noninterpersonal event threat
* $p < .05$. ** $p < .01$. *** $p < .001$.

Table 6

Partial Correlations Between Predictors and Dependent Variables Controlling for Covariates

Predictor	BDI-II Follow-up[a]	Independent Threat[b]	Interpersonal Threat[b]
Emotional Deprivation	.18[*]	-.04	.02
Abandonment	.01	-.07	.19[*]
Mistrust	.04	.05	-.02
Social Isolation	.15	.10	-.09
Shame	.22[*]	.002	.01
Failure	.11	-.08	-.10
Dependence	-.01	-.06	-.02
Vulnerability to Harm	.02	.13	.03
Enmeshment	-.11	.11	-.09
Subjugation	.08	.04	.13
Self-Sacrifice	.09	.15	.04
Emotional Inhibition	.05	.11	-.02
Unrelenting Standards	.04	.10	-.03
Entitlement	-.14	-.16	-.06
Insufficient Self-Control	.07	-.26[**]	-.05
ERS	.14	-.07	.19[*]
Total Avoidance	.06	-.04	.09
BS Avoidance	.08	.22[*]	.11
BN Avoidance	.08	-.03	.06
CS Avoidance	.03	-.04	.08
CN Avoidance	.03	-.22[*]	-.02

Note: BDI-II = Beck Depression Inventory-II; ERS = Excessive reassurance seeking; BS = Behavioural-social; BN = Behavioural-nonsocial; CS = Cognitive-social; CN = Cognitive Nonsocial
[a]Controlling for Baseline BDI-II, BAI, PSWQ, and age; [b]Controlling for Baseline BDI-II and BAI
[*] $p < .05$. [**] $p < .01$.

related to any demographic or clinical variables. Emotional Deprivation and Shame continued to predict BDI-II scores at Follow-up. Insufficient Self-control and CN avoidance were negatively associated and BS avoidance was positively associated with independent event threat. Finally, Abandonment and ERS were positively correlated with interpersonal event threat.

Maladaptive Behaviours as Mediators between EMSs and Prospective Life Events

Mediation analyses were conducted to test the hypothesis that avoidance and ERS mediate the relationship between early maladaptive schemas and dependent life events. Simple correlations between the predictor variables (schemas), mediator variables (ERS and avoidance) and the criterion variable (independent life events) were first examined (see Tables 3, 4 and 5). A prerequisite for mediation is that all correlations between a predictor and mediator, mediator and criterion, and predictor and criterion for a given analysis be significant (Baron & Kenny, 1986). Mediation analyses were conducted only for the schemas and corresponding mediators that met this requirement. To test for the potential mediating effects of maladaptive behaviours, the bootstrap sampling procedure developed by Preacher and Hayes (2008) was used. This procedure examines and tests the direct effect of the predictor variable on the criterion variable and the indirect (i.e., mediating) effect through the pathway of the mediator variable. The bootstrap procedure uses sampling with replacement to draw a large number of samples (1,000 in the present study) from the data set, and path coefficients are calculated for each sample. Using estimates based on the 1,000 samples, the mean direct and indirect effects and their confidence intervals (CIs) are computed. These CIs are used to determine whether or not an effect is statistically significant. For each effect, the corresponding Bias Corrected

95% or 99% CI was examined; if the range did not cross zero, the effect was considered significant at the .05 or .01 level, respectively. An advantage of the bootstrap-driven approach is that it does not assume a normal distribution of variables, unlike product-of-coefficient approaches such as the Sobel test.

All mediation analyses were conducted using the macro provided by Preacher and Hayes (2008) for conducting the bootstrap procedure. Note that in the figures and tables presented below, path coefficients and corresponding p-values are based on mediation analyses without bootstrapping, since the bootstrapping procedure only provides Bias Corrected CIs in the output. Because the bootstrapping procedure provides a more robust analysis, the evaluations of significance in the analyses below are based on bootstrapping. All variables in the analysis were standardized ($M = 0$, $SD = 1.0$), to allow for a comparison of results across analyses. Path coefficients can therefore be interpreted in a manner similar to correlation coefficients.

Based on the pattern of correlations, analyses were conducted to examine the potential mediating effects of BN avoidance and ERS on the relationship between Abandonment and interpersonal event threat. In the first analysis, a significant mediating effect was found for BN avoidance ($p < .05$), which was contrary to the vulnerability-specificity hypothesis. The results of this analysis are presented in Figure 2. Higher scores on Abandonment were associated with a greater tendency to engage in BN avoidance which, in turn, predicted greater interpersonal event threat. In addition to the indirect effect of Abandonment on interpersonal event threat through BN avoidance, a direct effect was also found ($c' = .23$, $p = .01$), indicating that BN avoidance only partially mediated this relationship. The indirect effect disappeared when the same
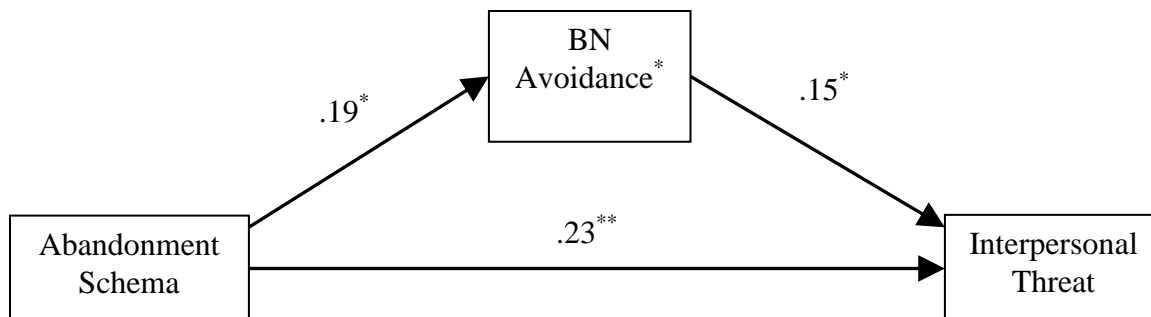
a) No covariates entered
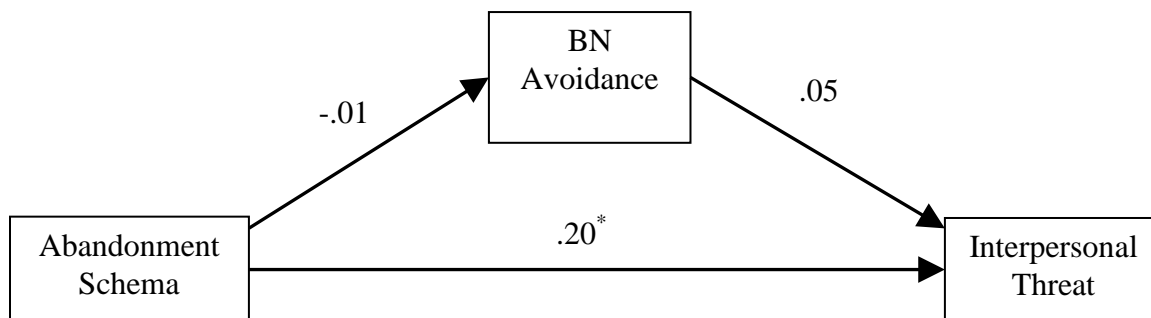
b) Controlling for scores on Beck Depression Inventory-II and Beck Anxiety Inventory at Baseline

Figure 2. Mediating effects of Behavioural-nonsocial avoidance on the relationship between Abandonment and Interpersonal Event threat.
Note: BN = Behavioural-nonsocial
 * p < .05. ** p < .01. *** p < .001.

analysis was conducted controlling for clinical covariates of interpersonal event threat (i.e., BDI-II and BAI scores at Baseline).

A mediation analysis was conducted using Abandonment as the predictor and ERS as a potential mediator. Contrary to hypotheses, there were no significant mediating effects of ERS on the relationship between Abandonment and interpersonal event threat ($p > .05$).

Analyses were also conducted to examine the mediating effects of ERS, BS, BN, and CS avoidance on the relationship between Subjugation and interpersonal event threat. Only the analysis with ERS entered as a potential mediator revealed statistically significant mediating effects (all ps $> .05$ for BS, BN, and CS avoidance). ERS demonstrated mediating effects in the relationship between Subjugation and interpersonal event threat ($p < .01$; see Figure 3). Higher scores on Subjugation were associated with a greater tendency to engage in ERS, which predicted greater interpersonal event threat. The direct effect of Subjugation on interpersonal event threat was not significant ($c' = .14$, $p = .12$), indicating that ERS fully mediated this relationship. This effect remained significant at the .05 level when controlling for BDI-II and BAI at Baseline.

Life Events as Mediators between Vulnerabilities and Subsequent Depressive Symptoms

Mediation analyses were conducted to test the hypothesis that dependent life events mediate the relationship between vulnerabilities to depression (i.e., maladaptive schemas or behaviours) and depression over time. Simple correlations between the predictor variables (schemas/ERS/avoidance), mediator variables (dependent life events) and the criterion variable (depressive symptoms at Follow-up) were first examined (see
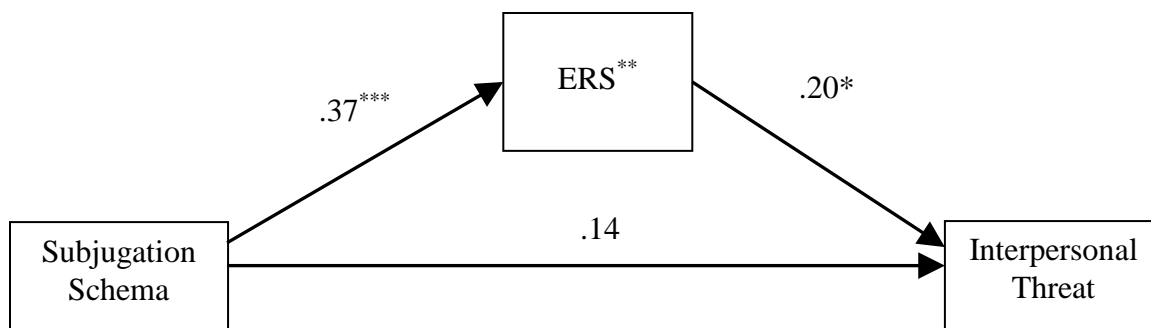
a) No covariates entered
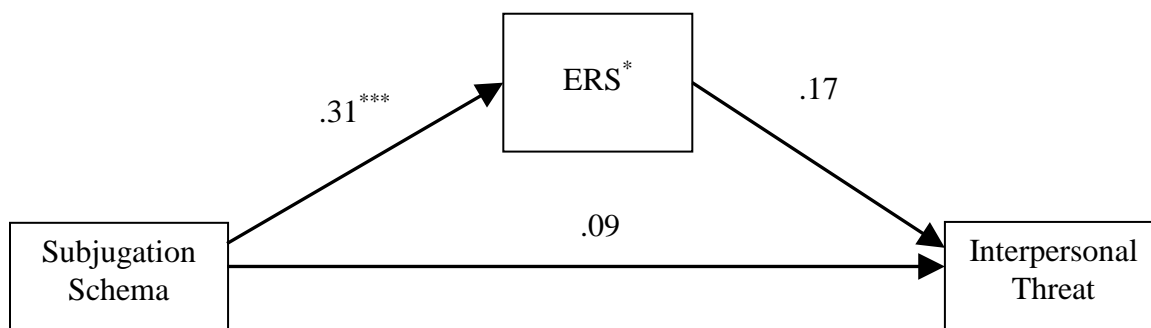
b) Controlling for scores on Beck Depression Inventory-II and Beck Anxiety Inventory at Baseline

Figure 3. Mediating effects of Excessive reassurance seeking on the relationship between Subjugation and Interpersonal Event threat
Note: ERS = Excessive reassurance seeking
[*] $p < .05$. [**] $p < .01$. [***] $p < .001$.

Tables 3 - 5). Again, mediation analyses were conducted only for the vulnerabilities and corresponding mediators that were significantly associated with each other and with BDI-II scores at Follow-up. Analyses were conducted for Abandonment, Subjugation, ERS, BS, BN and CS avoidance as predictors and interpersonal event threat as the mediator.

The same patterns of findings were found for the analyses with schemas (i.e., Abandonment, Subjugation) and with maladaptive behaviours (ERS, BS, BN, and CS avoidance) as predictors. The mediating effect of interpersonal event threat was significant for the analysis of Abandonment, Subjugation, ERS, BS avoidance, BN avoidance, and CS avoidance (all $ps < .05$; see Table 7). Path coefficients for the direct effect of each schema on depression (c' values) were significant, indicating that interpersonal event threat only partially mediated these relationships. When controlling for demographic and clinical covariates of Follow-up BDI-II scores (i.e., age, Baseline BDI-II, BAI, PSWQ), mediating effects of interpersonal event threat remained significant only for the analysis of ERS at the .05 level, see Table 8. Indirect effects were no longer significant for the analysis of Abandonment, Subjugation, and BS, BN, and CS avoidance.

ERS and Avoidance as Moderators of EMSs Predicting Interpersonal Event Threat

Five hierarchical multiple regression analyses were conducted to assess the alternative hypothesis that maladaptive behaviours moderate the relation between abandonment and interpersonal event threat over time. Abandonment was selected for these analyses as it was the only schema that was still associated with interpersonal stress after controlling for covariates. Predictor variables involved in the interaction term were centered by subtracting the variable's mean from each participant's score. In the first step

Table 7

The relation of Schemas/ Maladaptive Behaviours and Follow-up Depression, Partially Mediated by Interpersonal Event Threat

Predictor	a Path Coefficient	b Path Coefficient	*c'* Path Coefficient	95% CI[a]	99% CI[a]
Abandonment	.26**	.22*	.17*	[0.01, 0.13]	[0.01, 0.18]
Subjugation	.22**	.21**	.29***	[0.01, 0.12]	[0.01, 0.14]
ERS	.26**	.22**	.23**	[0.01, 0.13]	[0.01, 0.14]
BS Avoidance	.18*	.23**	.29***	[0.00, 0.10]	[-0.01, 0.14]
BN Avoidance	.19*	.21**	.34***	[0.01, 0.10]	[0.00, 0.12]
CS Avoidance	.17*	.24**	.21*	[0.01, 0.12]	[-0.00, 0.15]

Note: BS = Behavioural-social; BN = Behavioural-nonsocial; CS = Cognitive-social
[a]Statistically significant if range does not include 0.
*p < .05. **p < .01. ***p < .001.

Table 8

The relation of Schemas/ Maladaptive Behaviours and Follow-up Depression, Partially Mediated by Interpersonal Event Threat

Predictor	a Path Coefficient	b Path Coefficient	c' Path Coefficient	95% CI[a]	99% CI[a]
Abandonment	.22[*]	.12	-.01	[-0.01, 0.06]	[-0.01, 0.11]
Subjugation	.15	.13	.05	[-0.00, 0.06]	[-0.01, 0.08]
ERS	.21[*]	.12	.09	[0.00, 0.08]	[-0.00, 0.08]
BS Avoidance	.14	.14[*]	.05	[-0.00, 0.08]	[-0.01, 0.11]
BN Avoidance	.07	.12	.07	[-0.01, 0.06]	[-0.02, 0.07]
CS Avoidance	.06	.13	.02	[-0.01, 0.05]	[-0.03, 0.07]

Note: BS = Behavioural-social; BN = Behavioural-nonsocial; CS = Cognitive-social
The following covariates were controlled in the analyses: Age, Beck Depression
Inventory-II, Beck Anxiety Inventory, Penn State Worry Questionnaire at Baseline
[a]Statistically significant if range does not include 0.
[*] $p < .05$. [**] $p < .01$. [***] $p < .001$

of each analysis, covariates of interpersonal event threat were entered (i.e., BAI and BDI-II score at Baseline), followed by main effects in the second step and the interaction term in the third step.

The first hierarchical regression analysis was conducted to examine whether ERS moderated the relation of Abandonment with interpersonal event threat at Follow-up. For the first step depression and anxiety at Baseline accounted for a significant portion of variance in interpersonal event threat, $R^2 = .05$, $F(2, 132) = 3.73$, $p = .03$, indicating that individuals who reported higher depression and anxiety scores at Baseline also reported higher interpersonal event threat. For the second step the main effects of Abandonment and ERS accounted for a significant portion of the variance in interpersonal event threat after controlling for depression and anxiety, R^2 change $= .05$, $F(2, 130) = 3.22$, $p = .04$. This finding indicates that a greater tendency to engage in ERS and the greater level of Abandonment schema are each associated with increased interpersonal event threat. For the third step the interaction between ERS and Abandonment significantly added to the prediction of interpersonal event threat after controlling for the main effects and Baseline depression and anxiety, R^2 change $= .04$, $F(1, 129) = 5.68$, $p = .02$. To examine the significant interaction, regression slopes were computed as outlined by Aiken and West (1991) for changes in interpersonal event threat as a function of Abandonment. Slopes were computed separately for two values of ERS: one standard deviation above the mean and one standard deviation below the mean (see Figure 4). The slope of changes in interpersonal event threat regressed on Abandonment was positive and significant when ERS was one standard deviation above the mean (ß = .17, $p = .01$) but not when it was one standard deviation below the mean (ß = -.05, $p = .45$). That is, the greater an
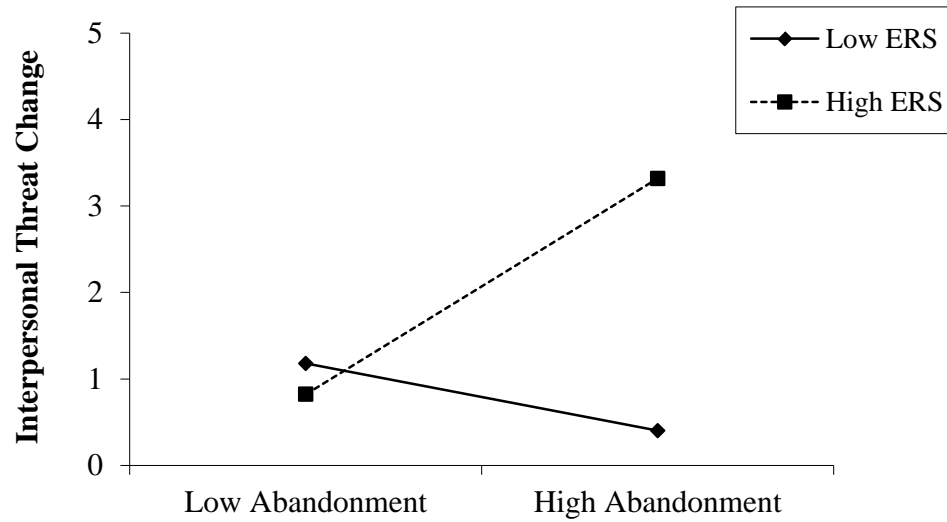
Figure 4. Moderating effects of Excessive Reassurance Seeking on the relationship between Abandonment and Interpersonal Event threat over time.
Note: ERS = Excessive reassurance seeking

individual's level of ERS, the stronger the positive association between Abandonment and changes in interpersonal event threat. The regression coefficients and their associated tests of significance are found in Table 9.

A second hierarchical multiple regression analysis was conducted to determine whether BS avoidance moderated the relationship between Abandonment and interpersonal event threat. Unlike the first hierarchical multiple regression, depression and anxiety did not account for a significant portion of variance in interpersonal event threat $R^2 = .04$, $F(2, 126) = 2.74$, $p = .07$. For the second step, the main effects of Abandonment and BS avoidance did not account for a significant portion of variance in interpersonal event threat after controlling for Baseline depression and anxiety, R^2 change $= .04$, $F(2, 124) = 2.47$, $p = .09$. For the third step the interaction between Abandonment and BS avoidance added to the prediction of interpersonal event threat controlling for the main effects and Baseline depression and anxiety, R^2 change $= .05$, $F(1, 123) = 6.68$, $p = .01$. To examine the significant interaction, regression slopes were computed for changes in interpersonal event threat as a function of Abandonment. The slopes were computed separately for two values of BS avoidance: one standard deviation above the mean and one standard deviation below the mean (see Figure 5). The slope of changes in interpersonal event threat regressed on Abandonment was positive and significant when BS avoidance was one standard deviation above the mean (ß $= .21$, $p = .001$) but not when it was one standard deviation below the mean (ß $= -.01$, $p = .89$). That is, the higher an individual's level of BS avoidance, the stronger the positive association between level of Abandonment and changes in interpersonal event threat. The regression coefficients and their associated tests of significance are found in Table 10.

Table 9

ERS as a moderator of the Relationship between Abandonment and Interpersonal Event Threat

Predictors	ß	*p*
Step 1		
Baseline BDI-II	.16	.13
BAI	.10	.32
Step 2		
Baseline BDI-II	.10	.36
BAI	.07	.53
Abandonment	.12	.25
ERS	.14	.19
Step 3		
Baseline BDI-II	.05	.62
BAI	.11	.31
Abandonment	.10	.33
ERS	.15	.14
Abandonment * ERS	.20	.02

Note: BDI-II = Beck Depression Inventory-II; BAI = Beck Anxiety Inventory; ERS = Excessive reassurance seeking

Figure 5. Moderating effects of Behavioural-social avoidance on the relationship between Abandonment and Interpersonal event threat over time.
Note: BS = Behavioural-social

Table 10

Behavioural-social avoidance as a moderator of the Relationship between Abandonment and Interpersonal Event Threat

Predictors	ß	*p*
Step 1		
Baseline BDI-II	.13	.20
BAI	.10	.35
Step 2		
Baseline BDI-II	.05	.64
BAI	.07	.53
Abandonment	.17	.06
BS	.11	.24
Step 3		
Baseline BDI-II	.03	.78
BAI	.10	.35
Abandonment	.17	.07
BS	.12	.19
Abandonment * BS	.22	.01

Note: BDI-II = Beck Depression Inventory-II; BAI = Beck Anxiety Inventory; BS = Behavioural-social

A third hierarchical multiple regression analysis was conducted to determine whether BN avoidance moderated the relationship between Abandonment and interpersonal event threat. For the first step, Baseline depression and anxiety accounted for a significant portion of variance in interpersonal event threat, $R^2 = .04$, $F(2, 129) = 3.57$, $p = .03$. For the second step the main effects of Abandonment and BN avoidance did not account for a significant portion of variance in interpersonal event threat after controlling for Baseline depression and anxiety, R^2 change $= .03$, $F(2, 127) = 2.32$, $p = .10$. For the third step the interaction between Abandonment and BN avoidance added to the prediction of interpersonal event threat controlling for the main effects and Baseline depression and anxiety, R^2 change $= .03$, $F(1, 126) = 3.94$, $p = .05$. To examine the significant interaction, regression slopes were computed for changes in interpersonal event threat as a function of Abandonment. The slopes were computed separately for two values of participant's level of BN avoidance: one standard deviation above the mean and one standard deviation below the mean (see Figure 6). Similar to the previous two hierarchical regression analyses, the slope of changes in interpersonal event threat regressed on Abandonment was positive and significant when BN avoidance was one standard deviation above the mean (ß = .20, $p < .001$) but not when it was one standard deviation below the mean (ß = .01, $p = .83$). That is, the higher an individual's level of BN avoidance, the stronger the positive association between level of Abandonment and changes in interpersonal event threat. The regression coefficients and their associated tests of significance are found in Table 11.

Two hierarchical multiple regressions were also conducted to examine whether CS or CN avoidance moderate the relation of Abandonment and interpersonal event
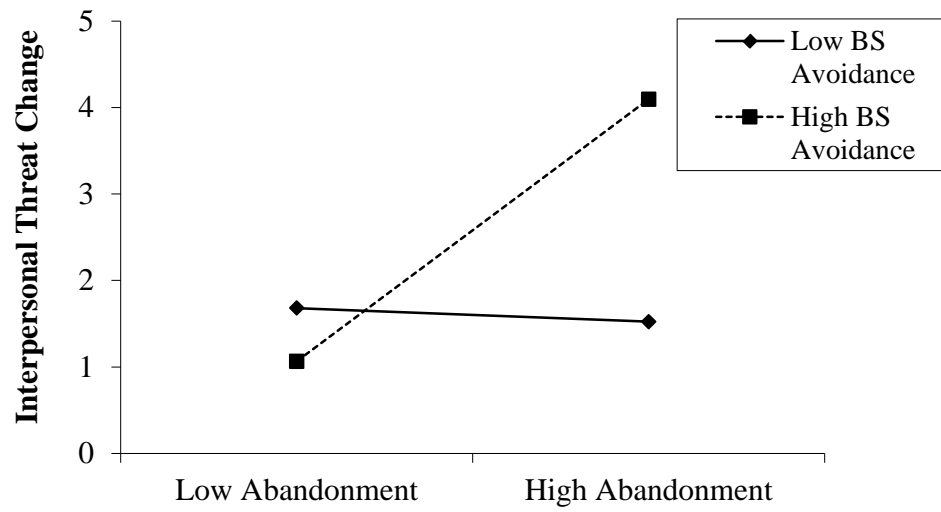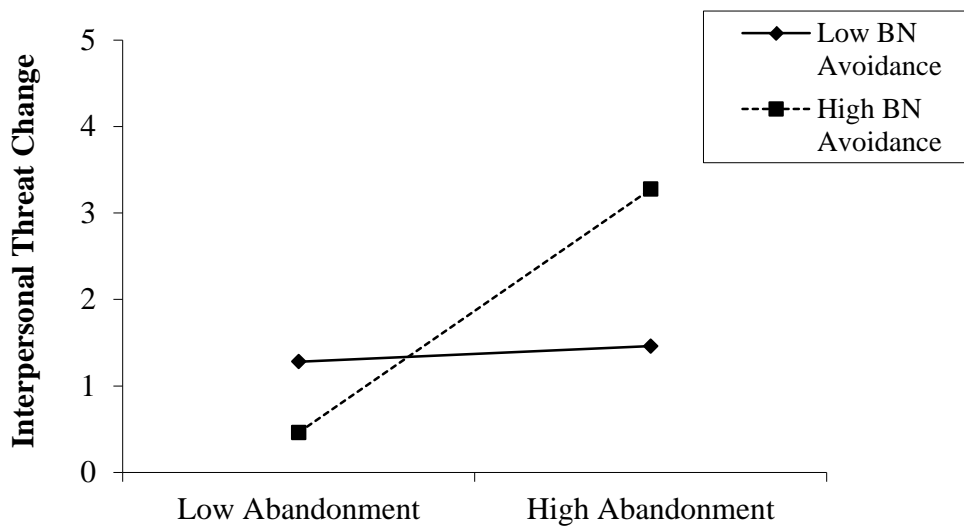
Figure 6. Moderating Effects of Behavioural-nonsocial avoidance on the relationship between Abandonment and Interpersonal event threat over time.
Note: BN = Behavioural-nonsocial

Table 11

Behavioural-nonsocial avoidance as a moderator of the Relationship between Abandonment and Interpersonal Event Threat

Predictors	ß	*p*
Step 1		
Baseline BDI-II	.16	.12
BAI	.10	.35
Step 2		
Baseline BDI-II	.09	.43
BAI	.07	.52
Abandonment	.19	.04
BN	.05	.60
Step 3		
Baseline BDI-II	.06	.57
BAI	.11	.32
Abandonment	.18	.05
BN	.06	.58
Abandonment * BN	.17	.05

Note: BDI-II = Beck Depression Inventory-II; BAI = Beck Anxiety Inventory; BN = Behavioural-nonsocial

threat. The same pattern of findings was found in both analyses. For the first step Baseline depression and anxiety accounted for a significant portion of the variance in interpersonal event threat ($ps < .05$). For the second step, the main effects (Abandonment and CS avoidance in the first analysis, and abandonment and CN avoidance in the second analysis) were not significant ($ps > .05$). For the third step the interaction between Abandonment and CS avoidance or Abandonment and CN avoidance did not add to the prediction of interpersonal event threat ($ps > .05$).

Discussion

The current study examined the mechanisms underlying the process of stress generation in depressed women over a follow-up of approximately three months. Early maladaptive schemas were hypothesized to predict negative dependent interpersonal and dependent noninterpersonal life events (referred to in this thesis as interpersonal and noninterpersonal life events, respectively). Both the number and severity of life events were taken into account by using cumulative event threat scores. A vulnerability-specificity model of stress generation was explored, such that negative interpersonally relevant schemas (i.e., Abandonment, Mistrust, Shame, Social isolation, Subjugation, Self-sacrifice, Dependence, and Enmeshment) were hypothesized to predict interpersonal events (and not noninterpersonal events), and schemas relevant to noninterpersonal domains of life (i.e., Failure, Insufficient Self-Control, Unrelenting standards) were hypothesized to predict nonintepersonal events (and not interpersonal events). One hypothesis was that individuals with EMSs would engage in avoidance and ERS to manage the overwhelming emotions that these schemas produce, and that these maladaptive coping behaviours would therefore mediate the prospective relation of EMSs

and dependent stress. In accordance with the vulnerability-specific hypothesis, ERS and social avoidance were expected to mediate interpersonally-relevant schemas, and nonsocial avoidance was hypothesized to mediate schemas relevant to nonsocial domains of life. Moderation was also explored as an alternative mechanism whereby some schemas may interact with EMSs to generate stress. Moderation was only tested for the Abandonment schema, as this was the only schema related to interpersonal stress after controlling for covariates (i.e., Baseline depression and anxiety). Due to empirical evidence that suggests that stress generation is predominantly an interpersonal process (e.g., Rudolph et al., 2000; see Hammen, 2006 for review), effects of interpersonally-relevant schemas, behaviours and events were expected to have a more significant impact on depressive symptoms than noninterpersonal events and related processes.

Consistent with past research, EMSs from all of Young's domains were positively related to depressive symptoms at Follow-up. Furthermore, Abandonment and Subjugation schemas were related to interpersonal event threat. However, after controlling for Baseline depression and anxiety, only the association of interpersonal stress with Abandonment remained significant. The relation of these interpersonally-relevant schemas with interpersonal stress was consistent with the vulnerability-specificity hypothesis. However, contrary to hypotheses, and to past research (Eberhart et al., 2011), several interpersonally-relevant schemas (i.e., Mistrust, Shame, Social isolation, Self-sacrifice, Dependence, Enmeshment) were not associated with interpersonal stress. Differences between the current results and those of Eberhart and colleagues, that found a broad array of schemas to be predictive of stress, may be due to methodological differences. Eberhart et al.'s study used a checklist measure of stress,

such that the authors acknowledged that negative affect was likely a third variable associated with both higher endorsement of stress and with elevated depression scores. Furthermore, their study investigated hassles, which differ from life events in that the former tend to be more common and less severe. Moreover, the finding that Abandonment was related to interpersonal stress, whereas Enmeshment and Dependence were not, was consistent with Calvete et al.'s (2013) findings examining Disconnection and Rejection and Impaired Autonomy schemas using a checklist measure of stress.

The findings of the current study suggest that rather than a broad array of interpersonal schemas being implicated in the stress generation process, only a specific subset increase risk for generating negative dependent life events. That is, believing that one's relationships are unstable and that others are unavailable or unreliable sources of support (i.e., having an Abandonment schema) and believing that one must surrender control to others due to a desire to avoid their anger and retaliation or to avoid being abandoned (i.e., having a Subjugation schema) increase the interpersonal stress that one generates. While Abandonment is related to a fear of losing others, Subjugation represents a belief that giving in to others will prevent one from losing them. The notion that these schemas are overlapping is supported by their high correlation in the present study ($r = .45$, $p < .001$). Since Abandonment was more robustly related to interpersonal stress, it is likely that it is this underlying fear of losing close relationships that drives the relation of Subjugation with interpersonal stress.

In contrast to the findings for interpersonal stress, noninterpersonal stress was not related to any EMSs. Furthermore, and contrary to hypotheses, noninterpersonal stress was not related to depression at Baseline or Follow-up. Although it was anticipated that

noninterpersonal stress generation would not be as predictive of depression as

interpersonal stress, it was nonetheless expected to play a role. Several studies have

found dependent noninterpersonal stress to be associated with depression (e.g., Auerbach

et al., 2011; Cox, Funasaki, Smith, & Mezulis, 2012), but some have not (e.g., Rudolph et

al., 2000). There are several possible reasons for the present finding. First, relatively few

individuals reported noninterpersonal events (57.6% of the sample), and the range for

noninterpersonal cumulative event threat (i.e., the sum of the event ratings), was fairly

restricted (range = 0-8, as opposed to 0-22 for interpersonal event threat), which may

have sufficiently reduced power to prevent any statistically significant findings from

emerging. The threshold for including events in the LEDS is relatively high, and

dependent noninterpersonal events do not occur frequently (e.g., failing a final exam for a

course needed for one's program, being fired from a job due to negligence). Moreover,

many stressful life events have an interpersonal element that gives the event its meaning

and significance, thereby reducing the number of life events that can be considered to be

noninterpersonal from the perspective of the LEDS system and by many operational

definitions of interpersonal and noninterpersonal stress (e.g., Eberhart et al., 2011;

Rudolph & Hammen, 1999). For example, a heated argument with a supervisor at work

may have implications for the occupational domain of one's life, but the event is focused

around conflict and is therefore an interpersonal one. As such, it is possible that

noninterpersonal events are less influential on depression not because they are less

depressogenic, but because they occur less frequently. When only including individuals

who experienced at least one noninterpersonal dependent event ($n = 87$), the correlation

of noninterpersonal event threat and depression approached significance at Baseline, $r =$

.19, $p = .07$, but not Follow-up ($r = .05$, $p = .64$). Another possibility is that noninterpersonal stress is less relevant to depression and more closely associated with other forms of psychopathology. Empirical research has found that an internalizing dimension of psychopathology predicts interpersonal stress (with depression predicting interpersonal stress above and beyond the effect of an internalizing dimension), whereas an externalizing dimension predicts noninterpersonal stress (Conway, Hammen, & Brennan, 2012). Not only does depression appear to predict interpersonal (and not noninterpersonal) stress, but interpersonal stressors are more predictive of depression than are noninterpersonal stressors (see Joiner & Coyne, 1999; Rudolph et al., 2000). Therefore, noninterpersonal stress may be more relevant to stress generation processes in externalizing disorders. Due to the lack of association of noninterpersonal event threat with depression or EMSs, no further analyses were conducted for this type of stress.

Unexpectedly, independent event threat was related to depression at Baseline. This result, which has been found previously (Harkness & Stewart, 2009), runs counter to the stress generation hypothesis, which posits that depressed individuals experience greater dependent, but not independent, stress over time. The relation of independent stress and depression may have occurred due to the clinical nature of the sample, whereby all participants were selected for their elevated DASS-21 scores during screening and elevated BDI-II scores at Baseline. Moreover, the majority of participants had a diagnosis of a depressive disorder when assessed at Follow-up. Therefore, the association of depression with independent event threat may represent an artifact of individuals with greater depression living in a more stressful environment. This result may have been different if the study had not screened for depression and therefore

examined the full continuum of depression by including individuals with little or no depressive symptomatology. Moreover, including a nondepressed control group would have allowed for a comparison of the number and severity of independent life events between those with and without a diagnosis of depression. Nonetheless, it is reasonable to assume that individuals who have depression or who are prone to it may tend to experience more independent stress, such that living in an increasingly stressful environment may be associated with increasingly elevated depressive symptoms. Many types of independent events are recurring or are related to one another, and may be responsible for the association of independent stress and depression over time. For example, a participant with a diagnosis of cancer will often experience several independent life events surrounding his or her disease as he or she is diagnosed, receives various treatments, returns for ongoing tests, and possibly suffers a recurrence. A participant with a low socioeconomic status may experience a series of life events relating to having utilities shut off when he or she is unable to pay bills, having to take out loans, and having to go without things he/she needs, for example. Such individuals are not generating stress, but the stress they experience is recurrent. Controlling for Baseline independent stress may have partialled out the influence of these types of independent stressors. Unfortunately, due to the already labour-intensive nature of the LEDS system, including a LEDS interview during the Baseline Assessment was not possible.

To examine the hypothesis that maladaptive behaviours are driven by schemas, and in turn predict greater dependent stress, a series of mediation analyses were conducted. These analyses were only conducted for interpersonal life events due to the

lack of significant associations of noninterpersonal life events with depression and EMSs. Based on the pattern of correlations, analyses were conducted for Abandonment and Subjugation schemas as predictors. In the first analysis, BN avoidance partially mediated the relationship of Abandonment and interpersonal stress. This finding was somewhat surprising, as it was anticipated that only social forms of avoidance would mediate interpersonally-relevant schemas. Rather, this finding suggests that individuals with an Abandonment schema respond to their fear of losing others by avoiding novel or challenging tasks at work and school, which partially accounts for their experiencing more interpersonal stress. It is possible that these individuals are so overwhelmed by their fear of close others pulling away or leaving them that they focus their efforts on maintaining relationships, thereby avoiding nonsocial tasks. Mediating effects of BN avoidance disappeared when controlling for covariates of interpersonal event threat (i.e., Baseline anxiety and depression). However, when moderation was tested as an alternative hypothesis, Abandonment interacted with BN avoidance, such that the combination of BN avoidance and an Abandonment schema predicted greater interpersonal stress. This finding controlled for covariates and was therefore robust. Consequently, having a belief that one is going to be abandoned while also tending to avoid challenging and novel activities appears to be particularly toxic for social relationships. Individuals with this combination of risk factors may appear to be overly focused and dependent on relationships since they are both desperate not to lose those close to them and they are passive and avoidant in other areas of life. This constellation of risk factors may be particularly unappealing to others, thereby leading to greater conflict with, and rejection of, the depressed individual.

A mediation analysis was also conducted to assess the potential effects of ERS on the relation of Abandonment and interpersonal stress over time. No evidence for mediation was found. Although this was surprising, a test of the alternative moderation hypothesis found that ERS interacts with Abandonment, such that a tendency to engage in ERS was associated with greater interpersonal stress for individuals with an Abandonment schema. These findings suggest that individuals do not engage in ERS in response to having an Abandonment schema. Rather, those who have an Abandonment schema and who tend to engage in ERS are especially interpersonally aversive. In response to their fear of being discarded by those close to them, individuals with an Abandonment schema might engage in ERS more frequently or intensively, thereby appearing to be more clingy and needy, which in turn may lead to conflict and rejection. Similarly, a recent study that investigated what about depressed individuals makes their pattern of reassurance seeking particularly aversive found an interaction of ERS with the Abandonment schema such that the combination of both predicted greater depression (Evraire & Dozois, 2014). Findings from the present study suggest that the generation of interpersonal stress may serve as the causal mechanism linking the interaction of ERS and Abandonment with greater depression over time.

Potential mediating effects of ERS, BS, BN and CS avoidance on the relationship between Subjugation and interpersonal stress were also investigated. Only ERS demonstrated mediating effects. This finding suggests that individuals engage in ERS in response to a belief that they must surrender control to others in order to please them, thereby leading to greater interpersonal stress. Given that these individuals allow close others to make choices for them, and do not demand that their rights or feelings be

respected, they may engage in ERS rather than avoidance to ensure that their strategy of giving in is working and that they will not be rejected. ERS fully accounted for this relationship, and this finding was robust as it remained significant when controlling for covariates of interpersonal stress.

Mediation analyses were also conducted to examine potential mediating effects of interpersonal stress on the relationships between selected vulnerabilities (based on the pattern of associations among variables) and depression at Follow-up. These analyses demonstrated that interpersonal stress serves as a causal mechanism that partially accounts for the prospective relation of these vulnerabilities with depression. Interpersonal stress partially mediated the relation of Abandonment and Subjugation schemas with Follow-up depression. That is, there appears to be a causal pathway whereby having an Abandonment or Subjugation schema causes one to generate life stress which, in turn, leads to greater depression over time. Interpersonal life events also partially mediated the relation of all maladaptive behaviours that met the prerequisite for mediation (ERS, BS, BN and CS avoidance) with depression at Follow-up. Findings were most robust for ERS, as this was the only analysis that remained significant when controlling for covariates of depression at Follow-up (i.e., Baseline anxiety, worry, depression and age). The stress generation process at least partially accounts for how these schemas and behaviours may lead to depression over time, which further underscores the importance of interpersonal stress generation for understanding the course of depression.

As mentioned above, moderation analyses were conducted only for Abandonment, as this was the only schema related to interpersonal stress after controlling

for covariates. Abandonment interacted with ERS and BN avoidance (as discussed above), and with BS avoidance. The latter result demonstrates that for those individuals with an Abandonment schema, a tendency to engage in BS avoidance is associated with greater interpersonal stress. Individuals with an Abandonment schema assume that they will be deserted and, in combination with a tendency to use avoidance as a coping strategy, may take on an attitude of passivity and exert little effort in their relationships. This may cause these individuals to engage less frequently with close others, possibly leading to the dissolution of relationships or to relaying the message that they do not care about working on and preserving the relationship with close others.

Overall, evidence for vulnerability-specificity was found, with the exception of the findings for BN avoidance. BN avoidance mediated and moderated the relation of Abandonment and interpersonal stress. Since only the interaction remained significant after controlling for covariates, it appears that the combination of BN avoidance and Abandonment increases risk for generating interpersonal stress. Interpersonal stress also mediated the relation of BN avoidance and depression. Engaging in BN avoidance might cause greater conflicts and interpersonal problems to occur since close others may be annoyed by the depressed individual's passivity and lack of engagement with occupational and educational tasks. Altogether, the results indicate that individuals use interpersonal coping strategies to manage the feelings produced by interpersonal schemas, noninterpersonal behaviours may be just as aversive interpersonally, and the latter also contribute to the generation of negative interpersonal life events.

This study has several methodological strengths. A prospective design and a contextual interview and rating system (the LEDS - acknowledged as the gold standard

measure of stress; Harkness, 2008) was used, and all interviews were conducted by graduate-level clinical psychology students. In contrast, much of the existing literature is limited by the use of checklist measures of stress. Checklists are unreliable and are largely to blame for inconsistent findings in the stress literature (e.g., failure to detect gene-environment correlations; see Uher & McGuffin 2010, for review). Checklists often use an additive model of stress; only taking into account the number of events that occurred and not their severity (Monroe, 2008). Some measures assign a predetermined weight to each type of event, but do not take idiographic contextual details into consideration. Although various checklists have attempted to circumvent this problem by asking participants to rate how stressful they consider each event to be, this results in a measure of perceived stress that is inherently subjective and likely contaminated by the person's current level of negative affect and their personality, schemas, and other depressogenic characteristics. In contrast, the current study used cumulative event threat scores, which have previously been used in various other stress generation studies (e.g., Harkness et al., 2006; 2008; Rudolph & Hammen, 1999), and have the advantage of taking both the number and severity (as determined by objective criteria) of events into account. Furthermore, the sample was relatively large for a study using such a rigorous and labour-intensive methodology. By comparison, many past studies using the LEDS had sample sizes below 100 (e.g., Bulmash, Harkness, Stewart, & Bagby, 2009; Duggal et al., 2000; Harkness & Stewart, 2009). Furthermore, participants were screened for depressive symptoms, and a diagnostic interview confirmed that the majority (86.8%) had a diagnosable depressive disorder according to the DSM-5, providing confidence in the clinical nature of this sample. Finally, this study controlled for symptoms of anxiety

and worry while examining stress generation in depressed individuals. This methodological decision is important because depression and anxiety are highly comorbid and share many vulnerabilities (e.g., Dozois, Collins, & Seeds, 2009). Moreover, ERS and avoidance are both associated with anxious symptomatology, and stress generation has been found in individuals with anxiety (e.g., Conway et al., 2012; Judah et al., 2013). Therefore, it was necessary to ensure that anxiety was not driving associations among the variables.

The current study should be interpreted in the context of its limitations. While the LEDS system is often considered to be the gold standard measure of stress, it has several weaknesses. Since it was developed in the late 1980's, the manual does not include examples of events related to several contemporary issues, most notably modern technology (e.g., texting, Skype, Facebook and other social media). For example, having a romantic partner or close other move to a different city may be relatively less stressful in today's culture due to the widespread availability of texting and video chat. However, with the advent of social media, there is also more opportunity for 'cyber-bullying.' Despite the LEDS manual not having examples of events with these contextual factors, raters exercise their judgment and discretion and weigh these contextual factors accordingly when assigning ratings. Without vignettes to anchor ratings for these types of events, the use of the LEDS is no different from other life stress interview systems such as the UCLA Life Stress Interview (Hammen, 1991) or Life Events Interview (Safford et al., 2007). In addition, rules for rating certain events are out-of-date given recent societal changes. For example, disclosing that one is homosexual is a life event that is rated very severely according to the LEDS manual, although homosexuality has come to be more

accepted in recent decades. As such, the LEDS manual would benefit from an update in its rules for certain events, and by the inclusion of more contemporary vignettes.

The design of the current study had several limitations. First, the length of follow-up varied quite substantially across participants. This was problematic as some participants had more time to accrue life events than did others, such that follow-up was confounded with stress. Ideally, participants would have come in to the lab for their Baseline Assessment and already have a day set aside three months (or some other predetermined length of time) in advance for their Follow-up assessment. Due to difficulties with scheduling, however, many participants came in to the lab after their desired follow-up date. Importantly, length of follow-up was not related to any outcome variables, so its influence on findings was likely minimal. Second, individuals completed assessments of both schemas and maladaptive behaviours at Baseline. Consequently, in analyses of mediating effects, the predictor and mediator were measured cross-sectionally, and only the outcome variable was measured longitudinally. Future research should collect data on maladaptive behaviours at an interim follow-up, since the findings of the current study cannot conclusively determine whether schemas predicted maladaptive behaviours over time.

Results of the current study suggest several promising avenues for future research to explore. Use of a nonlinear dynamical systems approach may allow for a more precise examination of transactional models of stress over time (Monroe, 2008, see Levy et al., 2012, for example). Ideally, such a model would include parameters for both dependent and independent stress. Since stress generation and diathesis-stress models are not mutually exclusive, nonlinear dynamical models may be invaluable for better

understanding how schemas, behaviours, stress, and depression interact over time.

Furthermore, future studies should measure stress at baseline, which could serve as an

index of the degree to which schemas are activated. A stress generation formulation

suggests that schemas may not need to be activated to exert their effects on depressive

symptomatology. Given that all individuals in this study had elevated BDI-II scores at

Baseline, their schemas were likely activated to varying extents. The question of whether

or not schemas need to be activated to influence stress generation processes is

nonetheless an important question for future research to examine. After measuring life

events that occurred over the past three months at Baseline (three months being the length

of time at which life events have their greatest etiological significance for depression),

latent class analyses could potentially differentiate between individuals who had recently

experienced high levels of stress versus those who had not to examine whether there are

differences in the stress generation process across groups. Greater dependent stress in the

group with high amounts of stress at baseline would suggest that schema activation is

important for setting the stress generation process in motion. Future research should also

examine difficulties (i.e., chronic stressors) in addition to life events. These ongoing and

severe stressors may be predictive for the onset and maintenance of more chronic forms

of depression such as dysthymia. Finally, to determine the generalizability of the current

findings, research should examine these processes in a community sample with a wider

range of ages and occupations, and in males. Many depressive behaviours, such as

rumination and ERS, are more common in females and may even account for the gender

difference in the prevalence of depression (Nolen-Hoeksema, 2002). However, Ottenbriet

and Dobson (2004) found that males are more likely than females to use avoidance, so

the role of avoidance in men in the context of stress generation is a promising line of inquiry. Furthermore, because men do not have as high a need for affiliation as do women (Cyranowski et al., 2000), examining whether interpersonal and noninterpersonal dependent stress are differentially predictive of depression in men as compared to women would also be interesting. Due to the fact that men experience fewer life events (Harkness et al., 2010), a study such as this would need a large sample in order to have enough statistical power. Such a sample would also be difficult to obtain due to the lower prevalence of depression in men than in women.

This study expands on the stress generation hypothesis and elucidates some of the mechanisms underlying this phenomenon. An understanding of what particular risk factors lead to which specific domains of negative life events, and through what behavioural pathways, furthers our understanding of the etiology and recurrence of depression. The majority of past research has examined cognitive vulnerabilities to depression from a diathesis-stress perspective, thereby focusing on the activation of schemas following the occurrence of stress rather than on stress occurring as a result of schemas and related behaviours. Findings of the current study suggest that interpersonal stress generation is an important mechanism through which particular schemas (Abandonment and Subjugation) and maladaptive behaviours (ERS and avoidance) exert their effects on depressed mood. A better understanding of what schemas and behaviours are most toxic for interpersonal relationships and subsequent depression has practical implications for therapists, who may be better able to help patients identify and alter maladaptive schemas and behaviours in a targeted manner. Furthermore, helping a patient to understand how his or her particular cognitive and behavioural vulnerabilities shape

the experienced stressors may be a powerful therapeutic intervention. Furthermore, Abandonment, Subjugation, avoidance, and ERS may be practical targets not only for intervention, but for prevention and early intervention efforts as well. Whether targeting these schemas and behaviours implicated in the stress generation phenomenon improves outcomes remains an empirical question.

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Appendix A

Definitions of Early Maladaptive Schemas

Domain: Disconnection and Rejection

Abandonment/Instability

The perceived instability or unreliability of those available for support and connection.

Mistrust/Abuse

The expectation that others will hurt, abuse, humiliate, cheat, lie, manipulate, or take advantage.

Emotional Deprivation

The expectation that one's desires for a normal degree of emotional support will not be adequately met by others.

Defectiveness/Shame

The feeling that one is defective, bad, unwanted, inferior, or invalid in important respects or that one would be unlovable to significant others if exposed.

Social Isolation/Alienation

The feeling that one is isolated from the rest of the world, different from other people, and/or not part of any group or community.

Domain: Impaired Autonomy

Dependence/Incompetence

Belief that one is unable to handle one's everyday responsibilities in a competent manner, without considerable help from others.

Vulnerability to Harm or Illness

Exaggerated fear that imminent catastrophe will strike at any time and that one will be unable to prevent it.

Enmeshment

Excessive emotional involvement and closeness with one or more significant others (often parents) at the expense of full individuation or normal social development.

Failure

The belief that one has failed, will inevitably fail, or is fundamentally inadequate relative to one's peers in areas of achievement.

Domain: Impaired Limits

Entitlement

The belief that one is superior to other people; entitled to special rights or privileges; or not bound by the rules of reciprocity that guide normal social interaction.

Insufficient Self- Control /Self-Discipline

Pervasive difficulty or refusal to exercise sufficient self-control and frustration tolerance to achieve one's personal goals or to restrain excessive expression of one's emotions and impulses.

Domain: Other-Directedness

Subjugation

Excessive surrendering of control to others because one feels coerced; submitting in order to avoid anger, retaliation, or abandonment.

Self-Sacrifice

Excessive focus on voluntarily meeting the needs of others in daily situations at the expense of one's own gratification.

Domain: Overvigilance and Inhibition

Unrelenting Standards

The underlying belief that one must strive to meet very high internalized standards of behaviour and performance, usually to avoid criticism.

Emotional Inhibition

The excessive inhibition of spontaneous action, feeling, or communication, usually to avoid disapproval by others, feelings of shame, or losing control of one's impulses.

Appendix B

Letter of Information and Consent Form for Screening

Dr. David Dozois and Katerina Rnic

Department of Psychology,

University of Western Ontario

You are invited to participate in a research study conducted by Katerina Rnic and supervised by Dr. David Dozois. This survey is for females only and should only take 5 minutes to complete. It will contain some short questions about you and your experiences. This survey is intended to let us know whether you would be a good fit for our study. At the end of this survey you will receive feedback on your eligibility. There are no known physical or psychological risks or benefits to this survey; however, some of the questions may ask you about personal information about your thoughts or feelings.

The data collected through this online questionnaire will be used for research purposes only. All your data will be kept completely confidential and we will not release your information to any third party.

If you have questions about your rights as a research subject, you should contact the Office of Research Ethics at _____.

By clicking "ENTER", you are indicating that you have read the above information and that you consent to participate in this survey. If you have any questions about this research study please feel free to contact Katerina Rnic (email: _____) or Dr. David Dozois (email: _____).

Appendix C

Screening Debriefing Form for Eligible Participants

Congratulations, your scores on the survey qualify you to participate in our larger study. This study involves coming to the Mood Lab at Western University where you will be asked to complete a demographic form and a series of questionnaires on a computer. It is anticipated that the entire task will take 1 hour. In the winter term you may be asked to come in to the lab again and complete another questionnaire and an interview about stressful life events you have experienced over the past four months and about any symptoms of depression you may be experiencing. It is anticipated that this session will take 1 hour, for a total time commitment of 2 hours. Compensation for completion of this study is $20 for each lab session, and you are free to withdraw at any time. We will contact you by email or phone to schedule an appointment. If you have any questions please feel free to contact us at _____.

Please click the 'Confirm' button below to confirm that you would like to participate in this study.

Thank you again,

Katerina Rnic, M.Sc. Candidate
Western University
Westminster Hall, Rm. 357
London, Ontario, Canada

Appendix D

Screening Debriefing Form for Ineligible Participants

We appreciate your participation in this survey. Unfortunately you **do not meet the criteria for this study** at this time. If you are interested in participating in other studies in the Mood lab, we periodically post studies on our website dozoislab.com. If you have any questions please feel free to contact us at _____.

Participants dealing with problematic mood (e.g., persistent sad mood) and/or suicidal thinking are strongly encouraged to speak with a mental health professional. For example, students at UWO are offered free psychological counseling at the Student Development Centre (_____). You may also speak directly with Dr. David Dozois (_____).

Thank you again,

Katerina Rnic, M.Sc Candidate
Western University
Westminster Hall, Rm. 357
London, Ontario, Canada

Appendix E

Baseline Assessment Letter of Information

Project Title: Stress and Thinking

Principal Investigator:
David Dozois, PhD, Western University
Co-Investigator:
Katerina, MSc Candidate, Western University

1. **Invitation to Participate**

   You are being invited to participate in this research study about thoughts, personality traits and behaviour and their relation to stress because you met eligibility criteria for this study (i.e., you are feeling somewhat down, low or blue as indicated by your score on the screening survey).

2. **Purpose of the Letter**

   The purpose of this letter is to provide you with information required for you to make an informed decision regarding participation in this research.

3. **Purpose of this Study**

   The purpose of this study is to learn about the association of cognitions, behaviours and personality traits with stress and depressive symptoms and to better understand the factors involved in the onset, recurrence and maintenance of depression, which is an area in need of further research.

4. **Inclusion Criteria**

   Women who are students at Western University, attained a score indicating the presence of at least mild depressive symptoms at screening, and are age 18 and over are eligible to participate in this study.

5. **Exclusion Criteria**

   Individuals who are not students at Western University, attained a score that indicated the absence of depressive symptoms at screening, or are below the age of 18 are not eligible to participate in this study. Further, the second part of this study involves interviews which will be audio-recorded. If you do not wish to be audio-recorded you are not eligible to participate in this study.

6. **Study Procedures**

   If you agree to participate, you will be asked to complete a demographic form and a series of questionnaires on a computer. It is anticipated that the

entire task will take 1 hour. In the winter term you will complete another questionnaire and will be interviewed about stressful life events you have experienced over the past four months and about any symptoms of depression you may be experiencing. It is anticipated that this session will take 1 hour, for a total time commitment of 2 hours. Some participants will not be invited to take part in the second half of the study because we are interested in examining stress in individuals with particular psychological characteristics. The study will be conducted in the Mood Lab at Western University.

7. Possible Risks and Harms

Although you may experience some mild discomfort when completing the questionnaires and/or interview, this should be transient. We recognize that you may be experiencing symptoms of depression, however the tasks in this study have been previously used with individuals with varying levels of depression and have not been found to result in ill effects. Further, you will be provided with a debriefing form at the end of the session today that provides resources on campus and in the community that you can use if you are distressed.

8. Possible Benefits

You may not directly benefit from participating in this study but information

gathered may provide benefits to society as a whole which include learning more about the course of depression and associated risk factors.

9. Compensation

You will be compensated $20 for your participation for each wave of the study ($20 today and $20 for the second session in the winter term). As well, you will be entered in a draw to win one of two iPads in the winter term.

10. Voluntary Participation

Participation in this study is voluntary. You may refuse to participate, refuse to answer any questions or withdraw from the study at any time with no effect on your academic status or relationship to the university. If you refuse to participate part-way through the study, any data collected up to that point (such as partial audio-recordings) will not be used.

11. Confidentiality

All data collected will remain confidential and accessible only to the investigators of this study. Data is stored by Western University Psychology Department's secure server and all forms are stored in locked

filing cabinets. If the results are published, your name will not be used. If you choose to withdraw from this study, your data will be removed and destroyed from our database. All data will be destroyed 5 years after final publication of results.

12. Contacts for Further Information

If you require any further information regarding this research project or your participation in the study you may contact the Principal Investigators: Dr. David Dozois _____, or Katerina Rnic _____.

If you have any questions about your rights as a research participant or the conduct of this study, you may contact The Office of Research Ethics _____.

13. Publication

If the results of the study are published, your name will not be used. If you would like to receive a copy of any potential study results, please contact Katerina Rnic _____.

This letter is yours to keep for future reference

Appendix F

Baseline Assessment and Follow-up Consent Form

Project Title: Stress and Thinking
Study Investigators' Names:
Katerina Rnic, MSc Candidate, Western University
David Dozois, PhD, Western University

I have read the Letter of Information, have had the nature of the study explained to me and I agree to participate. All questions have been answered to my satisfaction.

Participant's Name (please print):

_____

Participant's Signature:

_____

Date:

_____

Person Obtaining Informed Consent (please print):

_____

Signature:

_____

Date:

_____

Appendix G

Baseline Assessment Debriefing Form

Project Title: Stress and Thinking

Thank you for your participation in the first half of this study. The purpose of this study is to better understand the cognitive and personality factors involved in the onset, recurrence and maintenance of depression, as well as how these relate to intervening behaviours. This study examines the role of early schemas, which are one's core beliefs about one's self, environment and the world, and the structure of these schemas, as well as rumination, which is the a repetitive pattern of thinking about one's symptoms and experiences of depression (Nolen-Hoeksema, 1998) and negative urgency, or the tendency to act rashly when experiencing negative emotions (Deckman & DeWall, 2011). This study is also investigating how the behaviours of avoidance and excessively seeking reassurance from close others relate to cognitive and personality factors and subsequent depression. For more information or to obtain study results when they are available, you may contact the Principal Investigators: Dr. David Dozois _____, or Katerina Rnic _____.
Thanks again!

Katerina Rnic, B.A. (Hons), M.Sc. Candidate
Should you have any questions or concerns about this study, please contact:

Katerina Rnic or Dr. David Dozois. If you have any questions about your rights as a research participant, you should contact the Director of the Office of Research Ethics at _____.

Below are a variety of resources if you are interested in learning more about depression, how you can help yourself, or how you can arrange for professional help.

*Websites for information***:**
www.cognitivetherapy.com

Self-Help References:
If you would like to look up some good self-help books on changing negative thinking, please see:
❖ Burns, D. D. (1980). *Feeling good.* New York: Penguin.
❖ Burns, D. D. (1989). *The feeling good handbook.* New York: Penguin.
❖ Greenberger, D., & Padesky, C. A. (1995). *Mind over mood: Change the way you feel by changing the way you think.* Guilford Press.
❖ Wright, J. H., & McCray, L. W. (2011). *Breaking free from depression: Pathways to wellness.* Guilford Press

Available Services

There are several ways in which individuals can access psychological or psychiatric help both on campus and within the City of London, Ontario. If you are feeling depressed or anxious or feel that you could benefit from some individual assistance, the following information may be of use to you.

The Student Development Centre at the University of Western Ontario
- Individual appointments are available for students. To make an appointment you can call **661-3031**, or you can make an appointment in person at the Reception Desk, Room 4100 of the Western Student Services Building.
- Psychological Services Staff will make every effort to respond as quickly as possible when an individual student requires an emergency appointment.
- Psychological Services Staff can help you deal with a variety of issues including those related to Traumatic Events, Sexual or Physical Assault, Date rape, Interpersonal Violence, and Gay, Lesbian, Bisexual, or Transgendered situations.
- More information about the services offered at SDC can be found on the World Wide Web at **http://www.sdc.uwo.ca/**

London Crisis Centres
Psychological Services Staff will make every effort to respond as quickly as possible when an individual requires an emergency appointment. If you are in crisis when the office is closed please call one of the numbers listed below.
- **Mental Health Crisis Centre**: 519-433-2023
- **Sexual Assault Centre London Crisis Line**: 519-438-2272
  - Also 24 hour support line for sex trade workers: 519-438-2272
- **Women's Community House Help Line**: 519-642-3000
  - Out-of-Town calls: 1-800-265-1576
- **Zhaawanong (Atenlos) Shelter**: 519-432-2270
  - Outside of the London area code: 1-800-605-7477
  - 24 hour crisis line: 519-432-0122
- **St. Joseph's Sexual Assault and Domestic Violence Centre**: 519-646-6100 ext 64224

Student Health Services Counselling Centre
- SHS is located in **Room 11, (Lower Level) University Community Centre**, U.W.O. Main telephone line: (519) 661-3030.
- The Student Health Services Counselling Centre provides individual counselling for students. The Counselling Centre can be reached at (519) **661-3771**.
- The Counselling Centre's Hours of Operation are as follows: Monday to Friday 8:30 a.m.- 4:30 p.m. (Please note the Counselling Centre will be closed when the university is closed.)

London & District Distress Centre
- This is a 24-hour Distress Line: **(519) 667-6711**.
- Crisis Response Line: **(519) 433-2023**
- Access by e-mail at: **londondistresscentre@odyssey.on.ca**
- Each problem is handled in an atmosphere of confidentiality, anonymity & impartiality. You do not have to give your name nor does the service use call display; they will not try to identify the caller.

Addiction Services of Thames Valley
- Alcohol & Drug Services of Thames Valley is located at **200 Queens Ave., Suite 260, London, Ontario N6A 1J3**
- A community service, funded by the Provincial Ministry of Health, Ontario Substance Abuse Bureau. There are currently no charges for clinical services, although fees may be charged for training or seminars.
- Service is available to any resident of Middlesex, Elgin or Oxford County. There are no admission restrictions.
- Provide early intervention to persons who are concerned about substance use and/or problem gambling.
- ADSTV is a gay, lesbian, bisexual, transsexual, and transgender positive environment
- Services include assessment of individuals who have an alcohol and/or drug related problem. Assessments are also available for problem gambling. Based on these assessments the ADS will develop treatment plans for clients and assist with referrals to provide outpatient counselling and aftercare.
- Hours of operation in London are as follows: Monday to Friday - 8:30 a.m. to 4:30 p.m.; Tuesdays- 8:30 a.m. to 9:00 p.m. (closed 12 until 1 p.m. each day and 4:30 to 5:30 p.m. on Tuesdays).
- Self-referrals are welcome, call **519-673-3242** (extension 222 for substance abuse services, extension 234 for problem gambling services).

Emergencies After Hours
- If you are in distress during an after-hours time, please go to the **nearest hospital emergency room**.
- **On Campus:** University Hospital: 519-663-3197, 339 Windermere Rd.
- **South London:** Victoria Hospital: 519-685-8141, 800 Commissioners Rd. East
- **North London:** St. Joseph's Hospital: 519-646-6100, 268 Grosvenor Rd.

Referrals to Other Resources
- Family physicians can provide you with counselling services, and can make referrals to other community resources as needed.
- Specialized services for emotional and interpersonal problems are available, however, a referral from a physician is often necessary.

We hope that this information is helpful to those who need it.
If you are suffering from distress, we encourage you to seek help from an appropriately qualified individual or service centre. Please contact a University or Community Agency that can help you, or to speak with a physician who can refer you to the appropriate resource.

Appendix H

Follow-up Letter of Information

Project Title: Stress and Thinking

Principal Investigators:
David Dozois, PhD, Western University
Co-Investigator:
Katerina, MSc Candidate, Western University

<u>Letter of Information</u>

1. **Invitation to Participate**

   You are being invited to participate in this research study about thoughts, personality traits and behaviour and their relation to stress because you met eligibility criteria for this study (indicating that you are feeling somewhat down, low or blue) in screening and in the first part of the study.

2. **Purpose of the Letter**

   The purpose of this letter is to provide you with information required for you to make an informed decision regarding participation in this research.

3. **Purpose of this Study**

   The purpose of this study is to learn about the association of cognitions, behaviours and personality traits with stress and depressive symptoms and to better understand the factors involved in the onset, recurrence and maintenance of depression, which is an area in need of further research.

4. **Inclusion Criteria**

   Women who are students at Western University, attained a score indicating the presence of at least mild depressive symptoms at screening and in the first part of the study, and are age 18 and over are eligible to participate in this study.

5. **Exclusion Criteria**

   Individuals who are not students at Western University, attained a score that indicated the absence of depressive symptoms at screening

or at the first part of the study, or are below the age of 18 are not eligible to participate in this study. Further, the second part of this study involves interviews which will be audio-recorded. If you do not wish to be audio-recorded you are not eligible to participate in this study.

6. **Study Procedures**

If you agree to participate, you will be asked to complete a questionnaire and will be interviewed about stressful life events you have experienced since your last lab visit (approximately 3-4 months ago) and about any symptoms of depression you may be experiencing. It is anticipated that this session will take 1 hour. The study will be conducted in the Mood Lab at Western University.

7. **Possible Risks and Harms**

Although you may experience some mild discomfort when completing the questionnaires and/or interviews, this should be transient. We recognize that you may be experiencing symptoms of depression, however the tasks in this study have been previously used with individuals with varying levels of depression and have not been found to result in ill effects. Further, you will be provided with a debriefing form at the end of the session today that provides resources on campus and in the community that you can use if you are distressed.

8. **Possible Benefits**

You may not directly benefit from participating in this study but information

gathered may provide benefits to society as a whole which include learning more about the course of depression and associated risk factors.

9. **Compensation**

You will be compensated $20 for your participation for this wave of the study. As well, your name will be entered a second time in a draw to win one of two iPads in the winter term.

10. **Voluntary Participation**

Participation in this study is voluntary. You may refuse to participate, refuse to answer any questions or withdraw from the study at any time with no effect on your academic status or relationship to the university. If you refuse to participate part-way through the study, any

data collected up to that point (such as partial audio-recordings) will not be used.

11. Confidentiality

All data collected, including audio-recordings, will remain confidential and accessible only to the investigators of this study. Data is stored by Western University Psychology Department's secure server and all forms are stored in locked filing cabinets. If the results are published, your name will not be used. If you choose to withdraw from this study, your data will be removed and destroyed from our database. All data will be destroyed 5 years after final publication of results.

However, if you disclose that you are at risk of harming yourself or another person, that a health professional has sexually abused you or someone else, or you disclose that a child under the age of 16 is being abused, we are required to break confidentiality and in some cases, make a mandatory report.

12. Contacts for Further Information

If you require any further information regarding this research project or your participation in the study you may contact the Principal Investigators: Dr. David Dozois _____, or Katerina Rnic _____.

If you have any questions about your rights as a research participant or the conduct of this study, you may contact The Office of Research Ethics _____.

13. Publication

If the results of the study are published, your name will not be used. If you would like to receive a copy of any potential study results, please contact Katerina Rnic _____.

This letter is yours to keep for future reference.

Appendix I

Follow-up Debriefing Form

Project Title: Stress and Thinking

Thank you for your participation in this study. Stress generation is a phenomenon whereby individuals who are depressed or are prone to becoming depressed tend to generate stressful events in their lives (Hammen, 1991), thereby increasing their risk of experiencing even more depressive symptoms. Stress generation is an important process to study because it can help to explain how people become depressed or how episodes of depression are maintained. However, an important gap in the stress generation literature is what specific types of thoughts and personality traits predict stress generation, and how maladaptive behaviours may explain this association.

One hypothesis is that early schemas, which are one's core beliefs about one's self, environment and the world, and the structure of these schemas may contribute to individuals behaving in such a way as to generates more stress. Rumination, which is a repetitive pattern of thinking about one's symptoms and experiences of depression (Nolen-Hoeksema, 1998) and negative urgency, or the tendency to act rashly when experiencing negative emotions (Deckman & DeWall, 2011) are also expected to predict greater stressful life events and subsequent symptoms of depression. However, for these cognitions and traits to lead to stressful events, there must be intervening behaviours. One purpose of this study was to examine how behaving in an avoidant manner and excessively seeking reassurance from close others may explain the relation of cognitive and personality factors to stress. Furthermore, this study examined whether interpersonal and achievement-related schemas predict stress in the same domain of functioning, and whether a match in domains predicts more depressive symptoms than a mismatch. The results of these questions will help us to better understand the mechanisms involved in the onset, maintenance and recurrence of depression.

Thanks again!

Katerina Rnic, B.A. (Hons), M.Sc. Candidate

Below is a list of some readings if you would like to learn more about research on excessive reassurance seeking, stress generation, early maladaptive schemas and depression.

Coyne, J. C. (1976). Toward an interactional description of depression. *Psychiatry, 39*, 28-40.

Liu, R. T., & Alloy, L. B. (2010). Stress generation in depression: A systematic review of the empirical literature and recommendations for future study. *Clinical Psychology Review, 30*, 582-593.

Young, J. E. (1994). *Cognitive therapy for personality disorders: A schema-focused approach.* Sarasota, FL: Professional Resource Press/ Professional Resource Exchange.

Should you have any questions or concerns about this study, please contact:

Katerina Rnic or Dr. David Dozois. If you have any questions about your rights as a research participant, you should contact the Director of the Office of Research Ethics at _____.

Below are a variety of resources if you are interested in learning more about depression, how you can help yourself, or how you can arrange for professional help.

Self-Help References:
If you would like to look up some good self-help books on changing negative thinking, please see:

- ❖ Burns, D. D. (1980). *Feeling good.* New York: Penguin.
- ❖ Burns, D. D. (1989). *The feeling good handbook*. New York: Penguin.
- ❖ Greenberger, D., & Padesky, C. A. (1995). *Mind over mood: Change the way you feel by changing the way you think.* Guilford Press.
- ❖ Wright, J. H., & McCray, L. W. (2011). *Breaking free from depression: Pathways to wellness.* Guilford Press

Available Services

There are several ways in which individuals can access psychological or psychiatric help both on campus and within the City of London, Ontario. If you are feeling depressed or anxious or feel that you could benefit from some individual assistance, the following information may be of use to you.

The Student Development Centre at the University of Western Ontario
- Individual appointments are available for students. To make an appointment you can call **661-3031**, or you can make an appointment in person at the Reception Desk, Room 4100 of the Western Student Services Building.
- Psychological Services Staff will make every effort to respond as quickly as possible when an individual student requires an emergency appointment.
- Psychological Services Staff can help you deal with a variety of issues including those related to Traumatic Events, Sexual or Physical Assault, Date rape, Interpersonal

Violence, and Gay, Lesbian, Bisexual, or Transgendered situations.
- More information about the services offered at SDC can be found on the World Wide Web at **http://www.sdc.uwo.ca/**

London Crisis Centres

Psychological Services Staff will make every effort to respond as quickly as possible when an individual requires an emergency appointment. If you are in crisis when the office is closed please call one of the numbers listed below.

· **Mental Health Crisis Centre**: 519-433-2023
· **Sexual Assault Centre London Crisis Line**: 519-438-2272
  - Also 24 hour support line for sex trade workers: 519-438-2272
· **Women's Community House Help Line**: 519-642-3000
  - Out-of-Town calls: 1-800-265-1576
· **Zhaawanong (Atenlos) Shelter**: 519-432-2270
  - Outside of the London area code: 1-800-605-7477
  - 24 hour crisis line: 519-432-0122
· **St. Joseph's Sexual Assault and Domestic Violence Centre**: 519-646-6100 ext 64224

Student Health Services Counselling Centre
- SHS is located in **Room 11, (Lower Level) University Community Centre**, U.W.O. Main telephone line: (519) 661-3030.
- The Student Health Services Counselling Centre provides individual counselling for students. The Counselling Centre can be reached at (519) **661-3771**.
- The Counselling Centre's Hours of Operation are as follows: Monday to Friday 8:30 a.m.- 4:30 p.m. (Please note the Counselling Centre will be closed when the university is closed.)

London & District Distress Centre
- This is a 24-hour Distress Line: **(519) 667-6711**.
- Crisis Response Line: **(519) 433-2023**
- Access by e-mail at: **londondistresscentre@odyssey.on.ca**
- Each problem is handled in an atmosphere of confidentiality, anonymity & impartiality. You do not have to give your name nor does the service use call display; they will not try to identify the caller.

Addiction Services of Thames Valley
- Alcohol & Drug Services of Thames Valley is located at **200 Queens Ave., Suite 260, London, Ontario N6A 1J3**
- A community service, funded by the Provincial Ministry of Health, Ontario Substance Abuse Bureau. There are currently no charges for clinical services, although fees may be charged for training or seminars.
- Service is available to any resident of Middlesex, Elgin or Oxford County. There are no admission restrictions.

- Provide early intervention to persons who are concerned about substance use and/or problem gambling.
- ADSTV is a gay, lesbian, bisexual, transsexual, and transgender positive environment
- Services include assessment of individuals who have an alcohol and/or drug related problem. Assessments are also available for problem gambling. Based on these assessments the ADS will develop treatment plans for clients and assist with referrals to provide outpatient counselling and aftercare.
- Hours of operation in London are as follows: Monday to Friday - 8:30 a.m. to 4:30 p.m.; Tuesdays- 8:30 a.m. to 9:00 p.m. (closed 12 until 1 p.m. each day and 4:30 to 5:30 p.m. on Tuesdays).
- Self-referrals are welcome, call **519-673-3242** (extension 222 for substance abuse services, extension 234 for problem gambling services).

Emergencies After Hours
- If you are in distress during an after-hours time, please go to the **nearest hospital emergency room**.
- **On Campus:** University Hospital: 519-663-3197, 339 Windermere Rd.
- **South London:** Victoria Hospital:519-685-8141, 800 Commissioners Rd. East
- **North London:** St. Joseph's Hospital: 519-646-6100, 268 Grosvenor Rd.

Referrals to Other Resources
- Family physicians can provide you with counselling services, and can make referrals to other community resources as needed.
- Specialized services for emotional and interpersonal problems are available, however, a referral from a physician is often necessary.

We hope that this information is helpful to those who need it.
If you are suffering from distress, we encourage you to seek help from an appropriately qualified individual or service centre. Please contact a University or Community Agency that can help you, or to speak with a physician who can refer you to the appropriate resource.

Appendix D
Ethics Approval

Western
Research

Research Ethics

Use of Human Participants - Ethics Approval Notice

Principal Investigator: Dr. David Dozois
File Number: 104181
Review Level: Full Board
Protocol Title: Stress and Thinking
Department & Institution: Schulich School of Medicine and Dentistry\Psychiatry, Western University
Sponsor: Social Sciences and Humanities Research Council

Ethics Approval Date: October 23, 2013 **Expiry Date:** August 31, 2014

Documents Reviewed & Approved & Documents Received for Information:

Document Name	Comments	Version Date
Other	Email sent to participants the day before their appointment as a reminder of their appointment.	2013/08/13
Recruitment Items	Email sent to book participants when we are unable to reach them by phone (after 3 tries on 3 separate days or if their number is not in service).	2013/08/13
Other	Confirmation email sent to participants as soon as their appointment is booked.	2013/08/13
Western University Protocol		2013/08/14
Instruments	This is the screen participants see on the screening website when they complete the screening but are found to be ineligible.	
Other	References	
Response to Board Recommendations	Coverletter providing clarification to some changes	
Letter of Information	Letter of Information - Fall	
Letter of Information	Letter of Information - Winter	
Other	Debriefing - Winter	
Other	This is the screen participants see when they complete the screening questionnaire on the website and are found to be eligible.	
Letter of Information	This is the LOI and consent for the screening website.	
Letter of Information	Consent Form	
Other	Consent to be contacted	
Other	Debrief - Fall	
Recruitment Items	Email	
Recruitment Items	Telephone Script for Booking	
Recruitment Items	Telephone Script for recruiting participants from previous studies in the Mood Lab.	
Advertisement	Poster Advertisement	
Instruments		
Advertisement	Advertisement for facebook.	

This is to notify you that The University of Western Ontario Research Ethics Board for Non-Medical Research Involving Human Subjects (NMREB) which is organized and operates according to the Tri-Council Policy Statement: Ethical Conduct of Research Involving Humans and the applicable laws and regulations of Ontario has granted approval to the above named research study on the approval date noted above.

This approval shall remain valid until the expiry date noted above assuming timely and acceptable responses to the NMREB's periodic requests for surveillance and monitoring information.

Members of the NMREB who are named as investigators in research studies, or declare a conflict of interest, do not participate in discussions related to, nor vote on, such studies when they are presented to the NMREB.

The Chair of the NMREB is Dr. Riley Hinson. The NMREB is registered with the U.S. Department of Health & Human Services under the IRB registration number IRB 00000941.

Ethics Officer to Contact for Further Information

Grace Kelly (grace.kelly@uwo.ca)	Vikki Tran (vikki.tran@uwo.ca)	Erika Basile (ebasile@uwo.ca)

Western University, Research, Support Services Bldg., Rm. 5150
London, ON, Canada N6A 3K7 t. 519.661.3036 f. 519.850.2466 www.uwo.ca/research/services/ethics

Curriculum Vitae

KATERINA RNIC

The Mood Lab
Department of Psychology, The University of Western Ontario
357 Windermere Road
London, ON, N6A 3K7

Education

September 2012 – August 2014 (anticipated): Master of Science
Area: Clinical Psychology
The University of Western Ontario, London, Ontario
Supervisor: David Dozois, Ph.D., C. Psych.

September 2007 – April 2011: Bachelor of Arts Honours with Distinction
Major: Psychology
Queen's University, Kingston, Ontario
Supervisor: Kate Harkness, Ph.D., C. Psych.

March 2010 – June 2010: Undergraduate Exchange, Department of Psychology, The University of Sydney, Sydney, Australia

Awards and Honours

- *September 2014 –*Social Sciences and Humanities Research Council Vanier Canada Graduate Scholarship: $150,000

- *September 2014 –* Research Western Grant: $10,000

- *September 2014 –* Social Sciences and Humanities Research Council Canada Graduate Scholarship: $105,000 - Declined

- *September 2014 –* Ontario Graduate Scholarship: $15,000 – Declined

- *September 2013 –* Ontario Graduate Scholarship: $15,000

- *September 2013 –* Western Graduate Research Scholarship: $1,900

- *September 2012 –* Canadian Institute of Health Research Frederick Banting and Charles Best Master's Award: $17,500

- *September 2012 –* Western Graduate Research Scholarship: $1,500

- *May 2011* - Queen's University Medal in Psychology (Highest Academic Standing in graduating class)

- *May 2011* – Dean's Honour List with Distinction

- *May 2010* - The University of Sydney, School of Psychology, Best Student in PSYC3011: Learning and Behaviour

- *September 2010* - Ann Adamson Scholarship in Psychology: $1960

- *September 2009* - Kathleen Ryan International Exchange Bursary: $500

- *September 2009* - Ann Adamson Scholarship in Psychology: $2060

- *September 2009* - Gordon and Myrtle Adams Scholarship: $1310

- *July 2009* - Dean's Honour List with Distinction

- *September 2008* - Carl Reinhardt Scholarship: $450

- *September 2008* - William Mitchell Silliman Scholarship: $1735

- *July 2008* - Dean's Honour List with Distinction

- *September 2007* - Queen's University Excellence Scholarship: $2500

- *September 2007* - Vancouver Foundation Scholarship: $500

Publications

Rehman, U. S., Dozois, D. J. A., **Rnic, K.** (In Press). Classification and Diagnosis. In D. J. A. Dozois & P. Firestone (Eds.). Abnormal psychology: Perspectives. Toronto, Ontario: Prentice Hall.

Pullmer, R., Linden, W., **Rnic, K.,** Vodermaier, A (2014). Symptom Assessment in Patients with Gastrointestinal Cancers: A Systematic Review. *Supportive Care in Cancer,* 1-15.

Vodermaier, A., Linden, W., **Rnic, K.,** Ng, A., Wang, C., Ditsch, N., Olson, R. (2014). Prospective associations of depression with survival: A population-based cohort study in patients with newly diagnosed breast cancer. *Breast Cancer Research and Treatment, 143*, 373-384.

Rnic, K., Linden, W., Tudor, I., Pullmer, R., & Vodermaier, A. (2013). Measuring symptoms in prostate cancer: A systematic review of assessment instruments. *Prostate Cancer and Prostatic Diseases, 16*, 111-122.

Linden, W., & **Rnic, K.** (2013). Psycho-Oncology. In L. Grossman & S. Walfish (Eds.), *Translating Research into Practice.* Springer Publishing, NY.

Manuscripts Under Review

Vodermaier, A., **Rnic, K.,** & Linden, W. (In Revision). Anxiety and social support at the time of diagnosis predict survival. A prospective cohort study in patients with prostate cancer. *Psychosomatic Medicine.*

Vodermaier, A., **Rnic, K.,** Linden, W. & Olson, R. A (In Revision). Low social support adversely affects survival in men, but not in women, with stage III lung cancer: A prospective cohort study. *Annals of Behavioural Medicine.*

Linden, W., MacKenzie, R., **Rnic, K.,** & Vodermaier, A. (Submitted). Emotional adjustment over one year post-diagnosis in patients with cancer: Individual differences in adjustment trajectories. *Journal of Cancer Survivorship.*

Washburn, D., Wilson, G., Roes, M., **Rnic, K.,** & Harkness, K. L. (Submitted). Theory of mind decoding and reasoning abilities in depression, social phobia, and comorbid conditions. *Psychiatry Research.*

Works in Preparation

Rnic, K., Harkness, K. L., & Washburn, D. (In Prep). Theory of Mind Decoding Abilities in Depressed Young Adults with a History of Childhood Maltreatment.

Conference Presentations

Rnic, K., Harkness, K. L., Washburn, D., & Roes, M. (Accepted). *Theory of Mind Decoding Abilities in Depressed Young Adults with a History of Childhood Maltreatment.* Talk to be presented at the 2014 meeting of the International Congress of Applied Psychology, Paris, France.

Rnic, K., Dozois, D. J. A., & Szota, L. (Accepted). *Avoidance, Excessive Reassurance Seeking and Rumination Mediate the Relation between Cognitive Organization of Social Schemas and Depression*. Talk to be presented at the 2014 meeting of the International Congress of Applied Psychology, Paris, France.

Rnic, K., & Dozois, D. J. A. (June, 2014). *The Relation of Negative Urgency and Depression.* Poster presented at the 2014 meeting of the Canadian Psychological Association, Vancouver, Canada.

Rnic, K., Dozois, D. J. A. & Szota, L. (June, 2014). *Avoidance and Rumination Mediate the Relation between Early Maladaptive Schemas and Depression.* Poster presented at the 2014 meeting of the Canadian Psychological Association, Vancouver, Canada.

Szota, L., **Rnic, K.,** & Dozois, D. J. A. (June, 2014). *Early Maladaptive Schemas and Depression: The Mediating Role of Rumination and Reassurance Seeking.* Poster to be presented at the 2014 meeting of the Canadian Psychological Association, Vancouver, Canada.

Vodermaier, A., Linden, W., **Rnic, K.,** Ng, A., Wang, C., Ditsch, N., & Olson, R. (June, 2013). *Prospective associations of depression with survival: Population-based cohort study in patients with newly diagnosed breast cancer.* Poster presented at the 2012 meeting of Senologie, München, Germany.

Rnic, K., McDermott, R. Dozois, D. (June, 2013). *The Relationship Between Excessive Reassurance Seeking and Cognitive Organization.* Poster presented at the 2013 meeting of the Canadian Psychological Association, Quebec City, Canada.

Pullmer, R., Linden, W., **Rnic, K.,** Vodermaier, A. (June, 2013). *Symptom Assessment in Patients with Gastrointestinal Cancers: A Systematic Review.* Poster presented at the 2013 meeting of the Canadian Psychological Association, Quebec City, Canada.

Tudor, I., Linden, W., & **Rnic, K**. *Symptom Assessment in Breast Cancer Patients: A Systematic Review*. (June, 2013). Poster presented at the 2013 meeting of the Canadian Psychological Association, Quebec City, Canada.

Linden, W., Vodermaier, A., Mackenzie, G., & **Rnic, K.** (April, 2012). *A comparison of four paths of emotional adjustment in cancer patients: From diagnosis to 6-month follow-up.* Talk presented at the 2012 meeting of the Canadian Association of Psychosocial Oncology, Vancouver, Canada.

Roes, M., Washburn, D. S., **Rnic, K.,** & Harkness, K. L. (September, 2011). *Role of Theory of Mind Decoding Abilities in the Generation of Interpersonal Life Events*. Poster presented at the 2011 meeting of the Society for Research in Psychopathology, Boston, MA.

Invited Talks and Workshops

Rnic, K. (February, 2014). *Emotion Regulation: Keeping Emotions in Check.* Community lecture presented at the London Public Library as a member of

Advocacy through Action, London, ON.

Rnic, K. (March, 2014). *Emotion Regulation: Keeping Emotions in Check.* Lecture presented at London Life Insurance Company, London, ON.

Rnic, K., Maiolino, N., and Otchet, F. (May-June 2013). *What can I do when people come to me for help?* Workshops presented at Western University for undergraduate orientation leaders, London, ON.

Rnic, K. (February, 2013). *Emotion Regulation: Keeping Emotions in Check.* Community lecture presented at the London Public Library as a member of Advocacy through Action, London, ON.

Clinical Experience

May 2013 – August 2013: Intervention Practicum
- Under the supervision of Dana Ménard and Beverley Ulak, Ph.D., C. Psych. at the Student Development Center at Western University.

January 2013 – August 2013: Community Mental Health Practicum
- Under the supervision of Felicia Otchet, Ph.D., C. Psych. at the Waitlist Clinic at the Canadian Mental Health Association, London, ON.

-

Research Experience

September 2011 – August 2012: Research Coordinator/Lab Manager (Full-time, Paid)
- Employed by Dr. Wolfgang Linden
- The Behavioural Cardiology Lab, Department of Psychology, University of British Columbia

September 2010 – April 2011: Honours Thesis – "Theory of Mind Decoding and Reasoning Abilities in Depressed Young Adults with a History of Childhood Maltreatment"
- Supervised by Dr. Kate Harkness
- Queen's Mood Research Lab

January 2011 – April 2011: Directed Lab – "Attitude Alignment and Attachment Anxiety in Romantic Relationships"
- Supervised by Dr. Tara MacDonald
- Queen's Mac Lab

September 2010 – April 2011: <u>Directed Lab and Volunteer Research Assistant</u> – "Exploring Self-Esteem Maintenance Strategies in Introverts and Extroverts"

- Supervised by Dr. Leandre Fabrigar
- Queen's Fab Lab – Attitude and Persuasion Research

September 2008 – December 2009: <u>Volunteer Research Assistant</u>

- Dr. Mark Sabbaghs' Early Experience Lab at Queen's University

Teaching Experience

- *Teaching Assistant for PSYCH 3320 Child Psychopathology (September 2013 – April 2014)*

- *Teaching Assistant for PSYCH 3314 Forensic Psychology (January 2014 – April 2014)*

- *Teaching Assistant for PSYCH 2990 Applications of Psychology (Fall 2013)*

- *Teaching Assistant for PSYHC 2800 Research Methods (September 2012 - April 2013)*

  - Teaching lab component of 2nd year undergraduate level course

Service Activities and Volunteer Work

September 2013 – Present: Executive Secretary for London Regional Psychology Association (LRPA)

September 2013 – Present: Co-president of Advocacy Through Action (a program where students present a series of talks relevant to psychology to the community)

September 2012 – February 2013: Member of the Marketing Committee for Advocacy Through Action

Professional Affiliations

- Canadian Psychological Association (CPA; student member)

- London Regional Psychological Association (LRPA; student member)