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Measuring Cognitive Errors: Initial Development of the Cognitive Distortions Scale (CDS)

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Abstract

The ability to assess and correct biases in thinking is central to cognitive-behavioural therapy. Although measures of cognitive distortions exist, no measure comprehensively assesses the cognitive errors that are typically cited in the literature. This article describes the development and initial validation of the Cognitive Distortions Scale (CDS), a questionnaire that measures the tendency to make 10 cognitive distortions (e.g., mindreading; catastrophizing; all-or-nothing thinking) as they occur in interpersonal and achievement domains. Across two studies, undergraduate students (n = 318) completed the CDS and other clinically relevant measures. The CDS and its two subscales appear to exhibit good psychometric properties; however a factor analysis supported the use of a one factor solution. Additional analyses suggested that some errors occur more frequently in some domains than others and that some errors may have more clinical significance than others. Notwithstanding issues inherent in measuring cognitive errors, and study limitations, the CDS appears to be a promising new measure, with good research and clinical potential.

According to cognitive theories of emotional disorders, the manner in which information is processed plays a causal role in a person's emotional reactions to events (see Alloy & Riskind, 2006; Dozois & Beck, 2008). Moreover, when individuals process information in a negatively biased fashion, the subsequent emotional and behavioural consequences can be quite maladaptive. For example, cognitive theory of depression proposes that the efficient processing of negative information enhances the likelihood that individuals will become sad in response to stressful events, and may even maintain negative emotions across time. Cognitive theorists and clinicians often make distinctions among the various kinds of cognition that can significantly impact a person's emotions. Biases in thought content, attention, and memory, for instance, are significantly associated with a variety of negative emotional states (for a review, see Clark, Beck and Alford, 1999) and have been shown to predict depression (see Dozois & Beck, 2008).

In terms of thought content, there are presumed to be at least two levels of cognition that impact emotion (Beck, 1995). First, there are core beliefs, which are generally presumed to be longstanding attitudes about important aspects of life. For instance, a core belief of the self might be "I am unacceptable the way I am," and a core belief about the world might be "The world is a dangerous place." Obviously, holding such beliefs has implications for subsequent information processing, and even behaviour (e.g., if one believes the world is dangerous place, one is likely to be more attentive to potential threats in the environment, and perhaps demonstrate more avoidant behaviour). The second level of cognition believed to impact emotions is automatic thoughts (ATs). Individuals often have thoughts that precede and are presumed to cause emotional responses. Typically, these ATs occur in response to a particular event. The event itself could be negative, neutral or even positive in valence. Examination of negative ATs oftentimes reveals an underlying error in reasoning. For example, if one were to think "She thinks I am stupid" while simply chatting with a professor, the individual is making an assumption about what another person is thinking, despite a lack of evidence. This type of negative AT ("She thinks I am

stupid") is the product of a distorted cognitive process. Cognitive-behavioural therapists typically refer to this particular type of distortion as *Mindreading*. When ATs are not evidence-based, they are sometimes referred to as errors in thinking or cognitive distortions.

Beck, Rush, Shaw and Emery (1979) outlined seven specific types of cognitive distortions typically found within a depressed population (e.g., overgeneralization; selective abstraction). This list was expanded by Burns (1980) who identified 10 thinking errors commonly seen in depression. Several attempts have been made to measure cognitive errors over time. Krantz and Hammen (1979), for example, developed the Cognitive Bias Questionnaire (CBQ), which requires respondents to read various scenarios, and choose from several response options indicating how they would most likely react. Their responses are classified into one of four categories: (1) depressed and distorted, (2) depressed and nondistorted, (3) nondepressive and nondistorted, and (4) nondepressive and distorted. While useful for assessing the degree to which a person's thinking is negatively biased, this questionnaire does not permit the examination of specific cognitive errors.

Lefebvre (1980, 1981) sought to measure each of the original seven cognitive errors outlined by Beck et al. (1979). However, after finding that some of the errors overlapped significantly, he combined some of them, and developed the Cognitive Errors Questionnaire (CEQ) that assesses the degree to which respondents' make 4 types of cognitive errors (catastrophizing; overgeneralization; personalization; selective abstraction). Similar to the CBQ, the CEQ presents respondents with vignettes, followed by a "dysphoric cognition," and requires them to rate how similar that cognition is to the thought they might have in that scenario. The CEQ is considered to be a valid measure of dysfunctional thinking, and subsequent research has supported the contention that there is a significant (presumably causal) relationship between cognitive errors and dysphoric mood (Henriques & Leitenberg, 2002; Muran & Motta, 1993; Poulakis & Wertheim, 1993). The CEQ was eventually adapted for use with children (Children's Negative Cognitive Error Questionnaire [CNCEQ]; Leitenberg, Yost & Carroll-Wilson,

1986), which has also been used to support the thinking error-negative emotion relationship (Leitenberg et al., 1986; Weems, Berman, Silverman, & Saavedra, 2001).

Other questionnaires that have been developed to measure thinking biases, include the Automatic Thoughts Questionnaire (ATQ; Hollon & Kendall, 1980) and the Dysfunctional Attitude Scale (DAS; Weissman & Beck, 1979). These instruments tend to measure the exact content of thoughts, as opposed to the actual error being made that leads to the automatic thought. The importance of assessing which thinking errors are contributing to negative emotional states is very important, yet relatively few published research studies have examined this issue. One important reason for measuring specific cognitive errors is the very realistic possibility that some errors are more strongly related to negative emotional and behavioural reactions than others. For example, Messer, Kempton, Van Hasselt, Null and Bukstein (1994) found that the Overgeneralization subscale of the CNCEQ significantly differentiated two groups of adolescent, psychiatric inpatients (those with an affective disorder versus those with behaviour problems), whereas the other cognitive errors failed to do so. Similarly, Muran and Motta (1993) found that Selective Abstraction was more prominent among a clinical group (outpatients) than a nonclinical group (college students). However, differences between these groups were not significantly different on the other cognitive errors. It would important for both researchers and clinicians to know whether some thinking errors are more dysfunctional than others. In addition, an idiographic assessment of a client's cognitive errors may facilitate case conceptualization (Kuyken, Padesky, & Dudley, 2009) and treatment planning.

Our intention was to develop a measure of cognitive errors that individually assesses the frequency with which respondents experience 10 cognitive errors. Furthermore, we sought to develop a measure that would allow respondents to estimate the degree to which they experienced errors in interpersonal and achievement domains. This decision was derived from the theoretical and empirical research related to interpersonal and achievement schemas (Beck, 1983; J. Beck, 1995; Clark et al., 1999). J. Beck (1995), for example, noted that an individual's core beliefs typically pertain to unlovability ("I am unworthy"; "I

am undesirable") or helplessness (e.g., "I am inadequate"; "I am incompetent"). Considerable research

has also examined the functioning and impact of both Sociotropy/Dependency and

Autonomy/Achievement schemas (Clark et al., 1999; also see Coyne & Whiffen, 1995). As such, we

hypothesized that the frequency of cognitive errors may vary by domain, such that some errors would be

more common in some contexts (e.g., mindreading in social/ interpersonal domains) than in others (e.g.,

all-or-nothing thinking in achievement domains).

The overall goal of the current project was to develop and assess the psychometric properties of the

Cognitive Distortions Scale (CDS). Cognitive errors play a relatively large role in cognitive theory and

practice of emotional disorders, yet there currently exists no measure that comprehensively assesses the

10 cognitive errors outlined by Burns (1980) and typically referred to in clinical practice.

<div align="center">Study 1</div>

Development of the Cognitive Distortions Scale

Initially, two of the authors (R. Covin & D. Dozois) reviewed the 10 cognitive errors described

by Burns (1980), and other material that provided additional descriptions and examples of each error

(e.g., Edelman, 2006). Based on the extant literature pertaining to these errors, definitions were then

crafted to be used in the questionnaire. Examples of each error were also developed to facilitate

respondents' understanding of them. Given the intention to measure errors made in both social and

achievement domains, an example of each error was provided for each context. Both female and male

characters were used in the examples to avoid bias in the language of the items. In addition, items were

written such that the questionnaire would be applicable to a variety of populations and not just student

samples (e.g., achievement scenarios were not always about failing exams). The items were also written

at a level such that they would be readable by a diverse population.

Another feature of the CDS is that the words "biased," distortions" and errors" are not contained

in the questionnaire. The title of the questionnaire is actually "The Types of Thinking Scale." Our

rationale for constructing the questionnaire this way was to reduce the defensiveness of participants. We

reasoned that if respondents were made to believe that this questionnaire was measuring the extent to which they make mistakes or errors in thinking, they might be less likely to honestly endorse items. While we believe that respondents will learn that these thoughts are not entirely healthy, by using neutral language to describe the measure, it increases the probability that respondents will be less defensive.

In order to ensure that the definitions and examples were clear and accurate, an initial draft of the questionnaire was sent to three other psychologists, who identified their primary theoretical orientation as cognitive behavioural therapy (CBT). We also had several graduate students in clinical psychology review the questionnaire, and provide feedback. After receiving feedback from the reviewers, minor changes were made to questionnaire. Finally, respondents were instructed to estimate how often they tend to make these errors on a scale from 1 ("Never") to 7 ("All the Time"). The following is an example of an item from the CDS:

MIND READING

People will sometimes assume that others are thinking negatively about them. This might occur even though the other person has not said anything negative. This is sometimes called mindreading. To illustrate, please read the following examples and make the appropriate ratings:

Example: Sonya is having coffee with her boyfriend Jim. Jim is quiet, and Sonya asks if anything is wrong. Jim replies that he is 'Okay.' Sonya does not believe Jim. She starts to think he is unhappy with her.

Example: Bob has been working on a project for weeks. He finally gives the final product to his boss, and is curious about his boss' opinion of his work. After a few days pass, Bob starts to worry that his boss thinks he is incompetent.

The final version of the questionnaire can be found in Appendix A.

In addition to assessing the various psychometric properties of the scale, we also sought to address some questions about the functioning of cognitive errors. First, we hypothesized that some cognitive errors would occur more frequently in social (e.g., mindreading) than in achievement (e.g., should

statements) contexts and vice versa. Second, we were interested in examining whether some cognitive errors were better predictors of negative emotional states than others. We had no a priori predictions for these analyses. Concurrent validity was assessed by examining the relationship between the CDS and its subscales, and clinically relevant measures of emotion and thinking.

<div align="center">Method</div>

Participants

One hundred and eighteen undergraduate students enrolled in an introductory psychology class were recruited for this study. This validation study was part of a larger study examining information processing biases in a nonclinical sample. The inclusion criteria consisted of the ability to independently complete all tasks with written English, which was verified using the Shipley Institute for Living Scale-Verbal Subtest (Shipley, 1940). The Shipley also served as a measure of discriminant validity. Participants received course credit for their participation. The average age of the participants was 18.50 ($SD = 1.15$) years. The majority of participants were women (73.1%), in their first-year of undergraduate study (90.8%), and single (99.2%). Most of the sample identified itself as Caucasian (70.2%), although a notable percentage was Asian (16.5%). The sample mean for the Beck Depression Inventory – II (BDI-II) was in the non-clinical range ($M = 12.34$; $SD = 6.64$).

Measures

Automatic Thoughts Questionnaire – Negative (ATQ-N). The ATQ-N (Hollon & Kendall, 1980) is a 30-item self-report scale that assesses the frequency of negative automatic thoughts. For each item, respondents indicate how frequently each thought had occurred during the past week (*1 = not at all, 2 = sometimes, 3 = moderately often, 4 = often, 5 = all the time*). This instrument has excellent psychometric properties and differentiates between depressed and nondepressed groups (Dobson & Breiter, 1983; Hollon, Kendall, & Lumry, 1986).

Automatic Thoughts Questionnaire – Positive (ATQ-P). The ATQ-P (Ingram & Wisnicki, 1988) is similar in format to the ATQ-N and was designed to measure the frequency of positive self-

statements. Respondents rate 30 items on a 5-point scale according to how frequently each thought or a similar thought had occurred to them during the past week (*1 = not at all, 2 = sometimes, 3 = moderately often, 4 = often, 5 = all the time*). This measure has good psychometric properties (Ingram, Kendall, Siegle, Guarino, & McLaughlin, 1995). Internal reliability appears to be excellent, with coefficient alphas reported as high as .95 (Burgess & Haaga, 1994).

Beck Depression Inventory (BDI- II). The BDI-II (Beck, Steer, & Brown, 1996) is a 21-item questionnaire designed to measure the presence and severity of depressive symptoms. Items are rated on a 4-point scale (0 to 3) and total scores range from 0 to 63. Numerous studies have supported the psychometric properties of the BDI-II (see Dozois & Covin, 2004; Dozois, Dobson, & Ahnberg, 1998).

Depression Anxiety Stress Scales-21 (DASS-21.) The DASS-21 (Lovibond & Lovibond, 1995) is a short-form of the original 42-item scale. Twenty-one items assess depression, anxiety, and stress over the previous week. The anxiety subscale tends to measure more physiological effects of anxiety (e.g., autonomical arousal, panic symptoms), whereas the stress subscale measures general nervousness, irritability and difficulty relaxing. The depression subscale measures symptoms that appear to be specific to depression. Both the DASS and the DASS-21 exhibit excellent psychometric properties (Antony, Bieling, Cox, Enns, & Swinson, 1998; Page, Hooke, & Morrison, 2007). Scores were multiplied by 2 in order to make them comparable with the full version, which is consistent with recommendations in the test manual (Lovibond & Lovibond, 1995).

Dysfunctional Attitudes Scale (DAS). The DAS (Weissman & Beck, 1978) is a 40-item questionnaire in which participants rate the degree to which they agree with various statements, considered to be dysfunctional (e.g., "It is difficult to be happy unless one is good-looking, intelligent, rich and creative"). The DAS reliably distinguishes between clinical and non-clinical groups (Dobson & Shaw, 1986; Hamilton & Abramson, 1983). Based on factor analytic work (Cane, Olinger, Gotlib, & Kuiper, 1986), the DAS was also subdivided into two subscales, dependency (approval by others) and perfectionism (performance evaluation).

Positive and Negative Affect Schedule (PANAS.) The PANAS (Watson, Clark, & Tellegen, 1988) measures positive and negative affect. This instrument consists of 20 adjectives (10 positive; 10 negative). Respondents rate the degree to which their emotional experience is consistent with a given adjective on a 5-point scale. The PANAS has been found to be a psychometrically sound measure that is often used in research (Crawford & Henry, 2004).

Shipley Institute for Living Scale (Shipley, 1940). The vocabulary subtest of this measure consists of 40 multiple choice items in which participants choose, from four options, the synonym for a target word. Previous research supports the use of this measure in screening for general verbal ability (Bartz & Loy, 1970). In the current sample, scores on this measure varied from 20 to 39 out of 40 ($M = 28.11$, $SD = 3.41$).

State-Trait Anxiety Inventory (STAI). The STAI (Spielberger**,** Gorsuch, & Lushene, 1970) is a 40-item self-report instrument designed to assess both state and trait anxiety. The first 20 items assess *state anxiety* (i.e., transitory emotional states of tension, apprehension, and heightened autonomic arousal) and the second 20 items assess *trait anxiety* (i.e., relatively stable individual differences in proneness to respond with anxiety to perceived environmental threats). Higher scores indicate a greater degree of anxiety on each of the subscales. Participants rate the 20-item state questionnaire based on how they are feeling right now using a 4-point scale, ranging from "not at all" to "very much so". On the 20-item trait questionnaire, participants rate how they generally feel on a 4-point scale, from "almost never" to "almost always". The STAI is one of the most popular measures of anxiety and is known to have good psychometric properties (Rule & Traver, 1983; Spielberger et al., 1970).

Procedure

Participants were run in groups of two to five students, and each was seated in a cubical with a desktop personal computer. They first completed a computer task as part of another study (a self-rating task), but which was unlikely to significantly impact the ratings of this study. Next, they completed the

aforementioned questionnaires in a random order, except for the CDS, which was always completed last.

All participants provided informed consent before starting the study, and were debriefed at its conclusion.

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Results

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The internal consistency of the scale was assessed using Cronbach's alpha. The overall reliability

of the scale was excellent (α = .85). The reliability coefficients for the two subscales were acceptable

(interpersonal subscale, α = .75; achievement subscale, α = .79). A review of the alpha-if-item-deleted

scores failed to reveal an item that would improve overall reliability if removed.

The concurrent validity of the CDS was assessed by performing a series of correlations with

theoretically relevant measures. As can be seen in Table 1, there emerged a consistent pattern of

relationships among the CDS, its subscales, and the other variables. Importantly, the CDS and its

subscales correlated with scores on depression and trait anxiety, as well as state measures of emotion. It

was interesting that only the CDS-Interpersonal scale correlated significantly with the PANAS-Positive

subscale. Based on the correlation pattern with the DASS-21, it appears that the CDS concurrently

predicts both Stress and Depression subscales quite well, but not the Anxiety subscale.

As predicted, the CDS was significantly related to other measures of negatively biased thinking

(i.e., ATQ-N and both subscales of the DAS). However, similar to the PANAS-Positive, only the CDS-

Interpersonal subscale was significantly correlated with scores on the ATQ-Positive. Perhaps not

surprisingly, the CDS-Interpersonal was significantly associated with the DAS-Dependency subscale,

whereas there failed to emerge a similar relationship between the CDS-Achievement subscale and

dependency. Both CDS subscales were significantly correlated with DAS perfectionism, with the

Achievement subscale showing a stronger relationship, as expected. To test whether this difference

between correlations was significant, the statistical approach endorsed by Meng, Rosenthal and Rubin

(1992) was utilized. CDS-Achievement was marginally more strongly related to DAS-Perfectionism than

was CDS-Interpersonal, Z = -1.84, p < .06.

There were no significant gender differences on the CDS or its subscales. In support of its discriminant validity, there emerged no significant relationships between the CDS or its subscales, and scores on the Shipley.

Is There a Difference Between Errors Made in Interpersonal Contexts Versus Achievement Contexts?

The reason for creating two subscales within the CDS was based on the prediction that some individuals are more likely to have biased thinking in one context than in another (e.g., interpersonal vs. achievement). Ten dependent t-tests comparing errors made in social situations and their counterparts in achievement situations were conducted. To control for Type I error, a Bonferroni adjustment was made (.05/ 10 = .005). As can be seen in Table 2, the results show that mindreading, emotional reasoning, personalizing, and minimizing the positive occur more frequently in social situations, whereas catastrophizing, all-or-nothing thinking, and should statements occur more frequently in achievement situations. A dependent t-test revealed no overall significant difference between the tendency to experience errors in interpersonal situations ($M = 39.98$; $SD = 8.02$) and achievement situations ($M = 39.36$; $SD = 8.83$), $t(117) = .92$, *n.s.*

Are Some Errors Better Concurrent Predictors of Negative Emotional States Than Others?

To assess potential, unique relationships between the specific errors and negative emotions, 4 series of bivariate correlations were computed, where the errors from each CDS subscale were run against a measure of depression (BDI-II) and a measure of anxiety (SPAI-Trait). Each series of correlations was considered an experiment-wise family and, in order to help control for Type 1 error, criterion alpha was adjusted within each family using the Bonferroni method (alpha = .005).

As can be seen in Table 3, some cognitive errors appeared to be better concurrent predictors than others. For example, the interpersonal measures of Mental Filter and Minimizing the Positive significantly predicted concurrent BDI-II scores, whereas their achievement counterparts did not. Interestingly, respondents' scores on the interpersonal measures of Minimizing the Positive predicted anxiety scores, but their achievement counterparts did not.

Discussion

The goal of study 1 was to develop a measure that could allow researchers and clinicians to evaluate 10 specific cognitive distortions, as no such measure currently exists. The Cognitive Distortions Scale (CDS) consists of 10 commonly known distortions, with respondents indicating how frequently they experience them across interpersonal and achievement contexts. The results from Study 1 revealed that the CDS' psychometric properties are promising. Additional findings indicate that the context in which a cognitive error occurs is important, and that some cognitive errors may be better concurrent predictors of negative emotions than others.

The CDS and its subscales showed very good concurrent validity as there emerged a very consistent pattern of relationships with theoretically relevant variables. For example, only the CDS-Interpersonal subscale was a significant predictor of DAS-Dependency, and CDS-Achievement was a better predictor of DAS-Perfectionism than CDS-Interpersonal (marginal significance). Although these results need replication, the psychometric properties appear promising.

As hypothesized, some cognitive errors were more likely to occur in social situations than achievement situations (mindreading, emotional reasoning, personalization, and minimizing the positive) and vice versa (catastrophizing, all-or-nothing thinking and should statements). It is not surprising that mindreading and personalization occur more frequently in social situations given their nature. Also, all-or-nothing thinking and should statements both reflect aspects of perfectionism that may be more likely to occur in achievement situations.

Finally, preliminary analyses revealed that not all cognitive errors predict negative emotions equally, and that considering the context in which cognitions occur may be important. One of the reasons for developing the CDS was to be able to assess whether some cognitive errors have greater impact on emotions than others. This study helps support this hypothesis, although additional work is needed to support and clarify this finding.

This study should be considered preliminary given its limitations. First, a number of analyses were conducted which increases the likelihood of chance findings. However, we often controlled for Type I error, using Bonferroni adjustments. Second, the findings cannot be generalized to a clinical sample. Third, the sample size did not allow for a robust factor analysis to be completed. Finally, this study was included in a larger study, and so it is possible that the other study somehow affected the respondents' scores on the measures, including the CDS. As such, we conducted a second study which would help to rectify some of these limitations, as well as assess the reliability of the current findings across samples.

Study 2

There were several goals of study 2. First, we sought to further evaluate the convergent and divergent validity of the CDS by using some of the same measures used in Study 1, but also several new measures. Second, we recruited a larger sample in order to evaluate the CDS' factor structure. Third, we intended to examine the psychometric properties of the CDS among dysphoric individuals with elevated levels of depression symptomatology, in order to gather preliminary evidence about its potential utility among a clinical sample. Finally, we sought to assess and replicate the analyses from Study 1 (e.g., that some errors may be more likely to occur in social versus achievement contexts).

Study 2 represents a replication and extension of Study 1 and differs in some important ways. First, the current study was not part of a larger study, and so the potential confounding effects of such a methodology are removed. Second, all measures used in this study were randomized in their distribution, including the CDS. Third, a minor change was made to the CDS questionnaire. The original version only asked participants to estimate the frequency of occurrence of cognitive errors. It is possible that frequency of cognitive errors does not necessarily equate with impact on mood. Although the initial study found that the CDS and measures of mood correlated significantly, we wanted to assess whether participants believed that these errors directly affected their emotions. Therefore, in addition to asking questions about frequency, participants were also instructed to estimate the impact that particular cognitive errors had on their mood, from 1 (Not at All) to 7 (Totally).

Method

Participants

The sample was comprised of 200 undergraduate students enrolled in an introductory psychology course at the University of Western Ontario. As with Study 1, participants were mostly female (77%), between the ages of 16 and 53 years (*M* = 19.16, *SD* = 4.81), and primarily Caucasian (60.5%) and Asian (23%). Students received course credit for their participation. As with Study 1, average score on the BDI-II (*M* = 11.16; *SD* = 8.25) confirmed that this sample is best characterized as a non-clinical sample. Twenty-five percent of participants indicated that they had received counseling or therapy for an emotional or psychological problem, 9.5% indicated that they had received medication for an emotional or psychological problem, and 2% indicated that they had received both counseling and medication.

Measures

The measures that were described in Study 1 and used in Study 2 include the BDI-II, ATQ-N, ATQ-P and the DASS-21. We also included the DAS but, in this instance, used a recent short-form version which has good psychometric properties (Beevers, Strong, Meyer, Pilkonis, & Miller, 2007). As mentioned, the only change made to the CDS was the addition of a rating for each item. Participants were now being asked to rate the frequency of cognitive errors and their impact on mood. The following new variables were also included in Study 2 to further evaluate the convergent and divergent validity of the CDS:

Demographic and background information. Participants provided information about their age, gender, annual household income, ethnicity, and indicated past history of therapy or counseling and use of medication for an emotional or psychological problem.

Young Schema Questionnaire, Short Form (YSQ-SF). The YSQ-SF (Young & Brown, 1998) examines early maladaptive core beliefs that are related to the development of depression and other psychological disorders. Each of 75 statements are rated on a scale from 1 (*completely untrue of me*), to 6 (*describes me perfectly*). The YSQ-SF was created under the assumption that these core beliefs develop

over time as a result of ongoing adverse childhood experiences and that maladaptive information processing styles serve to maintain and solidify them (Oei & Baranoff, 2007). The scale has strong internal consistency (α= 0.92 to 0.94; Baranoff, Oei, Kwon, & Cho, 2006). Four schema domains, identified in a previous confirmatory factor analysis (Hoffart et al., 2005) were used in the analyses.

Cognitive Triad Inventory (CTI). The CTI (Beckham et al., 1986) is based on the cognitive triad theory (Beck et al., 1979). The scale investigates the degree to which individuals hold negative attitudes about themselves, the world, and their future, under the assumption that depressed individuals hold more negative views about things that relate to these three meaningful themes (Jacobs & Joseph, 1997; McIntosh & Fischer, 2000). The CTI lists 36 ideas, each relating to one element of the cognitive triad, and participants indicated their current level of agreement with each idea, on a scale from 1 (*totally agree*) to 7 (*totally disagree).* The scale shows high internal reliability and good convergent validity (Beckham et al., 1986).

Rumination on Sadness Scale (RSS). The RSS (Conway, Csank, Holm, & Blake, 2000) was administered to assess depressive rumination, and how individuals think when they are feeling sad or down (Papageorgiou & Wells, 2004). Depressive rumination is identified as the repetition of thoughts about the cause, meaning and feelings of one's sadness; however it is the uncontrollability of these thoughts that has been most strongly linked to depressive symptomatology (Raes, Hermans, Williams, Bijtebbier, & Eelen, 2007). The RSS includes 13 examples of ruminating, and respondents indicate how frequently they engage in the thought process described, on a scale from 1 (*not at all*) to 5 (*very much*). The instrument demonstrates good internal consistency and moderate test-retest reliability over a six month period (Roelofs, Muris, Huibers, Peeters, & Arntz, 2006).

Thought Control Questionnaire (TCQ). The TCQ (Wells & Davies, 1994) was included in the study to assess how often individuals use specified techniques in order to control intrusive and unpleasant thoughts and memories. The scale provides 30 examples of cognitive and behavioural strategies people may employ to control unwanted thoughts, and participants indicated how often they use each strategy on

a scale from 1 (*never*) to 4 (*almost always*). The items relate to five themes including distraction, social control, worry, punishment, and re-appraisal techniques, with 6 items representing each theme. The TCQ subscales show adequate psychometric properties (Reynolds &Wells, 1999**)**.

Marlowe-Crowne Social Desirability Scale (MC-10). The MC-10 (Crowne & Marlowe, 1960; Strahan & Gerbasi, 1972) was included in the study to examine the divergent validity of the CDS. The MC-10 includes 10 items with a true/false response style for each, and was developed with the purpose of detecting whether or not an individual's responses on other self-report scales are influenced by what he or she perceives to be a culturally acceptable and appropriate response, in order to obtain social approval and acceptance (Crowne & Marlowe, 1960). The instrument demonstrates sound internal consistency (Loo & Loewen, 2004; Reynolds, 2006).

Procedure

Participants were self-selected through a web-based research participation pool. After obtaining informed consent, participants completed each of the aforementioned measures (including the Cognitive Distortions Scale), which were collated in one of 4 randomized orders and distributed randomly to the participants. After completing the booklets, the participants were debriefed and a list of psychological services (including contact information) was provided for participants were experiencing depressive symptoms.

Results

Internal consistency

The internal reliability coefficients for the CDS frequency and impact subscales were excellent (coefficient alpha for both = .91), and the total impact subscale scores strongly and significantly correlated with the frequency subscale scores ($r = .89, p < .01$). As such, it appears as though the information provided by the 20 impact items does not provide incremental utility to the original 20 items and could potentially be dropped from the questionnaire without jeopardizing information that the CDS

provides. The following analyses, therefore, focus primarily on the scale's social and achievement

frequency items.

Convergent validity

The correlations between total frequency scores on the CDS and total scale or subscale scores on

clinically relevant measures are presented in Table 4. In support of the scale's convergent validity, the

CDS correlated in expected directions with the majority of ancillary measures. Higher scores on the CDS

total frequency, social frequency, and achievement frequency scales were associated with symptoms

related to depression, anxiety and stress. As well, increased frequency of social- and achievement-related

cognitive distortions was significantly associated with early maladaptive schemas, dysfunctional attitudes,

automatic thoughts, and rumination. The CDS also concurrently predicted each of the subscales on the

Cognitive Triad Inventory, and two of the subscales and the total score on the Thought Control

Questionnaire. Overall, these validity coefficients are highly consistent with findings from Study 1.

Divergent validity

There was no significant correlation between the CDS and social desirability (see Table 4).

Furthermore, there was no significant relationship between the CDS and demographic variables that were

not expected to relate to depression or related maladaptive thoughts, including age, ethnicity and income.

These findings are consistent with Study 1, and add to the overall validity of the CDS.

Factorial structure

 Data from the frequency items on the CDS were factor analyzed using the principal

components extraction method. The analysis revealed five factors with eigenvalues greater than one (7.24,

1.39, 1.34, 1.16, 1.09). The variance accounted for by each factor was further examined using Cattell's

(1966) scree analysis. The scree plot, in addition to the high internal consistency of the measure's

frequency items ($r = .91$, $p < .001$), indicated that these data can be most parsimoniously understood using

a unitary scale. All loadings on this factor were greater than .50 except All-or-Nothing Thinking

(Interpersonal), which had a factor loading of .31. This global factor could be conceptualized as the general tendency to experience cognitive errors.

Although there is a lack of statistical support for a two factor structure, this should not preclude researchers or clinicians from ever making comparisons of errors across contexts. For example, there may be good conceptual reasons for comparing errors in social versus achievement contexts. In Study 1 for instance, we observed how some cognitive errors (e.g., mindreading) occurred more frequently in social contexts than achievement ones.

Replication of Study 1

As with Study 1, we assessed whether some cognitive errors occur more frequently in one context than another (e.g., interpersonal vs. achievement). We again ran 10 dependent t-tests comparing errors made in social situations and their counterparts in achievement situations. To control for Type I error, a Bonferroni adjustment was made (.05/ 10 = .005). The results were virtually identical to Study 1, with mindreading, emotional reasoning, personalizing, and minimizing the positive occuring more frequently in social situations, and catastrophizing, all-or-nothing thinking, and should statements occurring more frequently in achievement situations. The only difference was that mental filtering was more common in social situations, which was not found in Study 1.

Are Some Errors Better Concurrent Predictors of Negative Emotional States Than Others?

As with Study 1, we assessed whether some errors are better concurrent predictors of negative emotions than others. Again, 4 series of bivariate correlations were conducted, where the errors from each CDS subscale were run against a measure of depression and a measure of anxiety. The index of anxiety used in Study 2 focused on state anxiety. Each series of correlations was considered an experiment-wise family and, in order to control for Type 1 error, alpha was adjusted within each family using the Bonferroni method (alpha = .005).

As demonstrated in Table 5, there appears to be less variability in correlation coefficients relative to Study 1. However, there does remain some variability, again suggesting there may be differential

ability to predict emotional states among the errors. For example, it would seem that across both studies, mindreading in achievement contexts does not predict depression symptoms as well other variables (e.g., Labeling; Overgeneralizing; Minimizing the Positive). It is interesting to note that there were more significant correlations and stronger correlations involving the DASS-Anxiety subscale and the CDS subscales, relative to Study 1.

Psychometric Properties in a Sub-Clinical Sample

In order to garner a preliminary perspective on the psychometric properties of the CDS among a clinical sample, we collapsed data from studies 1 and 2, and selected only those individuals scoring a 14 or higher in the BDI-II. According to the BDI-II manual, a score of 14 is the threshold of mild depression (or, in the case of analogue samples, dysphoria; see Kendall, Hollon, Beck, Hammen, & Ingram, 1987). In our sample, 58 respondents had a score between 14 and 19 (mild depression), 31 had a score between 20 and 28 (moderate depression) and 11 had a score of 29 or higher (severe depression). As can be seen in Table 6, the CDS correlates significantly with each of the measures available for comparison across studies. Similar to previous analyses using a complete sample, the CDS does not appear to be a good predictor of positive automatic thoughts, but is associated with negative thoughts, depressed mood, anxiety and stress.

We also examined whether a past history of treatment for a psychological problem could be predicted by current CDS score. As expected, individuals with a history of therapy or counselling experienced significantly more cognitive errors ($M = 87.58$; $SD = 18.80$) than did those without such a history ($M = 80.62$; $SD = 18.26$), $t(199) = -2.32$, $p < .05$. Similarly, individuals with a history of medication use for psychological problems tended to experience more errors ($M = 96. 95$; $SD = 14.24$) than those without such a history ($M = 80.82$; $SD = 18.36$), $t(199) = -3.71$, p <.05.

Discussion

Study 2 was designed to replicate and expand the findings from Study 1. Additional validity measures were used to assess both convergent and divergent validity and a larger sample was used to

assess the factor structure of the CDS. We were able to replicate most of the findings from Study 1, and also found evidence to support the use of the CDS among a sub-clinical sample of participants. Although additional empirical studies are needed to evaluate the clinical utility of the CDS, the current findings add to those of Study 1 in supporting the potential clinical and experimental use of this measure.

The validity findings from Study 2 both replicate and extend those from Study 1. Coupled with the findings from the sub-clinical sample, and the excellent reliability coefficients across studies, the CDS' overall psychometrics appear to be sound and promising. Unlike Study 1, there was less variability in the correlation coefficients between the CDS items and measures of depression and anxiety. This finding may partly reflect the fact that a different measure of anxiety was used. Indeed, the correlations between CDS items and the DASS-Anxiety subscale were generally higher than those found with the trait measure of anxiety used in Study 1. It is possible that the cognitive errors assessed by the CDS are best able to predict state than trait indices of emotion. In any case, the findings from Study 2 warrant further investigations into whether some errors are better predictors of depression and anxiety than others.

Unexpectedly, the factor analysis did not support a two factor solution. The fact that a one factor solution was observed supports the idea that the CDS generally measures respondents' estimated tendency to make cognitive errors. A similar finding was observed with by Messer et al. (1994), who analyzed the Children's Negative Cognitive Error. It is important to remember that the factor analytic results do not necessarily mean that additional information cannot be derived from the social vs. achievement *items*. For example, across both studies there was a consistent discrepancy found among some items, which indicated that errors occur more frequently in some situations than in others. For example, it seems that mindreading is more likely to occur in social situations. As such, it makes sense to focus more on the CDS total score or individual items, depending on the users' objectives. For the most part, using the CDS subscale scores may offer little additional predictive value over and above the total score. However, at the individual item level, users may be justified in examining the social and achievement scores separately.

Although the current study did not use a clinical sample, we were able to gather some preliminary data on the CDS in an undiagnosed sample of individuals with dysphoria. The CDS concurrently predicted most of the ancillary measures, as well as history of treatment for a psychological problem.

General Discussion

The goal of the current research project was to develop and evaluate a measure of cognitive errors. Although other measures of biased cognition exist, the CDS is the only questionnaire that measures the full range of cognitive errors typically discussed and used in CBT. Previous measures either assessed cognitive bias generally speaking (e.g., Cognitive Bias Questionnaire [CBQ]), or several cognitive errors specifically (Cognitive Errors Questionnaire [CEQ]). The CDS also allows researchers to measure individual cognitive errors across contexts. To date, if a clinician or researcher wanted to quantify the presence of an error such as mindreading, no existing measure was available to accomplish such a goal. Therefore, we believe that the CDS helps to fill a void in the measurement literature. However, there are several issues with our research and the measurement of cognitive errors, which must be discussed at this time.

First, although the CDS would be useful in more basic research (e.g., studying how various errors predict the behaviour of average college students), it was clearly designed to be used with clinical samples. An obvious limitation of the present research is that we did not evaluate the CDS using a clinical sample. As such, these results should be considered preliminary. It is not uncommon for researchers to first test a clinically useful measure with nonclinical samples. Such findings can offer useful information which can then be used to justify proceeding to the next stage of validation (i.e., testing in clinical samples).

Second, the CDS is not a direct measure of cognitive errors. Participants were asked to estimate the frequency with which a particular error occurs. As such, the accuracy of the CDS is contingent upon respondents' ability to make such estimations. There are obvious pitfalls to using such a measurement approach. Obviously, the ability to self-monitor is an important requirement. Also, the presence of

psychological defences could impair one's ability to make judgements of the self. This would be particularly relevant among individuals with severe psychopathology. Problems with concentration and memory and the presence of defences are just some of the issues that could compromise the validity of the CDS. However, there are at least a few reasons to suspect that these issues would not seriously compromise the use of the CDS in clinical samples. First, the CDS seems to function quite well with a subclinical sample, which included individuals experiencing symptoms that could impair one's ability to make decisions about the frequency of cognitive errors. Second, there exist many other clinical measures that require some ability to self-monitor and make estimations of cognitive events. For example, the Automatic Thoughts Questionnaires requires respondents to estimate the degree to which they experience various thoughts and self-statements. While making such estimations, it is obviously not the case that respondents' are able to produce an accurate and absolute estimate of the number of times they have these thoughts. Instead, their responses are probably determined by a combination of factors including intuition, affect, heuristic biases (e.g., the ease with which an example of a self-statement comes to mind), and actual memories. The confluence of these and other factors allows the respondent to give an approximate estimation as to the frequency of these cognitive events. Thus, their responses, as with other measures, reflect the presence of "true" variance and error. We believe that while there certainly exist factors that make the estimation of cognitive error frequency difficult, the CDS is probably able to provide an approximate measurement of each cognitive error. In other words, as with many clinical measures, the fact that client's ability to estimate cognitive events is negatively affected by various factors, does not mean that such measurement is futile or completely inaccurate.

An additional issue with the measurement of cognitive errors pertains to the questionnaire format. Definitions of each error and social and achievement examples were provided. It is possible that some respondents based their responses on the specific examples provided rather than using them as illustrative. Thus, participants may have rated the degree to which the examples (as opposed to the cognitive error per se) were true for them. It is not likely, however, that such occurrences seriously impact the CDS' validity.

If someone reads an example and estimates that this frequently occurs to them, then it is probably safe to assume that this particular cognitive error occurs at other times as well. Using the mindreading item as an example, if a respondent has experienced mindreading with their romantic partner, there is a good chance that he or she also experiences such errors in other contexts as well. Future research could conduct post hoc inquires regarding how respondents made their estimates. It would be useful to assess the ability of both the individual items and the total score to predict actual cognitions in real life scenarios.

Notwithstanding the limitations and issues inherent in the measurement of cognitive errors generally, and with the CDS specifically, there are several strengths of this research project and its target measure. The CDS does appear to have excellent psychometric properties. In addition, many of the findings were replicated across studies, supporting the reliability of the results. For example, across two studies we were able to show that some cognitive errors are more likely to occur in social contexts, while others occur more frequently in achievement contexts. Also, appropriate statistical adjustments were made to the analyses to ensure that the results were not due to chance.

Finally, the ability to examine specific errors and their relationship to other variables is a key strength of the CDS. We know of no other measure that allows researchers or clinicians to measure these cognitive constructs. There are many potential uses for the CDS in both basic and applied research; however, additional empirical work is required before this instrument can use recommended for clinical practice. Although some evidence was obtained to support the notion that some cognitive errors are better predictors than others, these results were not entirely robust. For instance, Should Statements and Personalization seemed to be fairly poor predictors of depression symptoms and trait anxiety in Study 1, but these findings did not completely hold true in Study 2. This may have been partly due to the use of a new measure of anxiety (state as opposed to trait). Also, emotional reasoning was a significant predictor of depression symptoms in Study 2, but not Study 1. Otherwise, the correlations across studies tended to fairly similar. Nevertheless, there may be issues with using individual items as predictors that is

problematic. Overall, the stability and reliability of findings with the individual CDS items was good,

however, more research is certainly required to support this possibility.

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Table 1.

	CDS-Interpersonal	CDS-Achievement	CDS-Total
BDI-II	.35*	.35*	.39*
DAS	.33*	.39*	.40*
DAS-Dependency	.27*	.18	.24*
DAS-Perfectionism	.30*	.44*	.41*
ATQ-Negative	.32*	.39*	.40*
ATQ-Positive	-.25*	-.04	-.16
STAI-Trait	.47*	.35*	.45*

Correlations between the CDS and theoretically relevant variables.

STAI-State	.32*	.24*	.31*
PANAS-Positive	-.20*	-.07	-.15
PANAS-Negative	.30*	.34*	.35*
DASS-Stress	.35*	.37*	.40*
DASS-Anxiety	.16	.06	.12
DASS-Depression	.27*	.17	.24*

* Correlation is significant at the .01 level
Note: BDI-II = Beck Depressions Inventory – II; DAS = Dysfunctional Attitude Scale; ATQ = Automatic Thoughts Questionnaire; STAI = State-Trait Anxiety Inventory; PANAS = Positive and Negative Affect Schedule; DASS = Depression Anxiety Stress Scales

Table 2.

Means (and standard deviations) for cognitive error frequency in social versus achievement based situations

	Social Situations	Achievement Situations
1. Mindreading	5.12 (1.04)	4.30 (1.35)*
2. Catastrophizing	4.17 (1.54)	4.93 (1.43)*
3. All-or-Nothing Thinking	2.88 (1.33)	3.92 (1.69)*
4. Emotional Reasoning	4.25 (1.30)	3.60 (1.45)*
5. Labeling	3.72 (1.54)	3.77 (1.43)
6. Mental Filter	4.49 (1.54)	4.16 (1.59)
7. Overgeneralization	3.73 (1.57)	3.55 (1.62)
8. Personalization	3.74 (1.38)	3.28 (1.36)*
9. Should Statements	4.12 (1.52)	4.69 (1.54)*
10. Minimizing the Positive	3.76 (1.64)	3.17 (1.50)*

* Indicates that the means were significantly different using a dependent t-test with Bonferroni adjustment ($p < .005$)

Table 3.

Correlations between individual cognitive errors and primary affect measures (depression and anxiety).

	CDS-Achievement Content		CDS-Interpersonal Content	
	BDI-II	STAI-Trait	BDI-II	STAI-II
1. Mindreading	.19*	-.04	.19*	.22*
2. Catastrophizing	.28**	.21*	.26*	.27**
3. All-or-Nothing Thinking	.24*	.25*	.14	.17
4. Emotional Reasoning	.21*	.25*	.16	.29**
5. Labeling	.23*	.23*	.21*	.30**
6. Mental Filter	.30**	.42**	.29**	.37**
7. Overgeneralization	.22*	.18	.26*	.25*
8. Personalization	.16	.19*	.05	.15
9. Should Statements	.00	.12	.06	.19*
10. Minimizing the Positive	.21*	.25*	.28**	.37**

* Correlation is significant at the .05 level
** Correlation is significant at the .005 level

Table 4.

Correlations between the CDS and theoretically relevant variables (Study 2).

	CDS-Interpersonal	CDS-Achievement	CDS-Total
BDI-II	.47**	.38**	.45**
DASS Depression	.40**	.35**	.40**
DASS Anxiety	.47**	.44**	.48**
DASS Stress	.45**	.40**	.45**
YSQ Disconnection	.41**	.34**	.40**
YSQ Impaired Autonomy	.49**	.43**	.49**
YSQ Exaggerated Standards	.26**	.33**	.32**
YSQ Impaired Limits	.40**	.30**	.37**
YSQ Total	.53**	.47**	.53**
DAS	.46**	.40**	.45**
CTI Self	.42**	.33**	.40**
CTI Future	.36**	.27**	.33**
CTI World	.35**	.29**	.34**
CTI Total	.42**	.34**	.40**
ATQ-N	.44**	.43**	.37**
ATQ-P	-.17*	-.15*	-.17*
RSS	.42**	.34**	.40**
TCQ Cognitive Distraction	-.04	-.01	-.02
TCQ Social Control	-.09	-.10	-.10
TCQ Worry	.37**	.41**	.42**
TCQ Punishment	.32**	.37**	.35**

TCQ Reappraisal	.10	.02	.06
TCQ Total	.20**	.20**	.21**
MC	-.00	-.04	-.02
Age	-.10	-.04	-.07
Ethnicity	.03	-.00	.06
Income	-.07	-.13	-.11

* p < .05. ** p < .01
Note: BDI-II = Beck Depressions Inventory – II; DASS = Depression Anxiety Stress Scales; YSQ =
Young Schema Questionnaire; DAS = Dysfunctional Attitude Scale (short form);CTI = Cognitive Triad
Inventory; ATQ = Automatic Thoughts Questionnaire; RSS = Rumination on Sadness Scale; TCQ =
Thought Control Questionnaire; MC = Marlowe-Crown Social Desirability Scale

Table 5.

Correlations between individual cognitive errors and primary affect measures (depression and anxiety) in Study 2.

	CDS-Achievement Content		CDS-Interpersonal Content	
	BDI-II	DASS-Anx	BDI-II	DASS-Anx
1. Mindreading	.16*	.25**	.26**	.32**
2. Catastrophizing	.25**	.28**	.32**	.32**
3. All-or-Nothing Thinking	.17*	.20*	.16*	.16*
4. Emotional Reasoning	.26**	.31**	.36**	.34**
5. Labeling	.39**	.38**	.25**	.28**
6. Mental Filter	.23*	.28**	.33**	.25**
7. Overgeneralization	.36**	.31**	.37**	.33**
8. Personalization	.15*	.33**	.25**	.37**
9. Should Statements	.12	.22*	.24**	.21*
10. Minimizing the Positive	.34**	.37**	.31**	.27**

Table 6.
Validity coefficients among a sub-clinical sample of respondents.

	CDS-Total
BDI-II	.29*
ATQ-Negative	.27*
ATQ-Positive	-.06
DASS-Stress	.41*
DASS-Anxiety	.45*
DASS-Depression	.25*

* p < .05

Appendix A

THE TYPES OF THINKING SCALE

Instructions: We would like to find out about the different types of thinking you use. In this questionnaire, you will read about 10 types of thinking. You will be given a description of each thinking type. You will also read two case examples that help explain the thinking type. There will always be two case examples: one dealing with social relationships (such as friends, partners and family) and one that deals with personal achievements (such as passing a test or failing a task at work). These case examples are used to help you understand how each type of thinking might look in a real life scenario.

Your task is to try and understand the thinking type that is described. Then, you are asked to estimate how often you use that type of thinking. You will be asked to think about how often you use that type of thinking in the two domains previously described (social and achievement scenarios). Please take time to think about your answers.

1. MIND READING
People will sometimes assume that others are thinking negatively about them. This might occur even though the other person has not said anything negative. This is sometimes called *mindreading.* To illustrate this, please read the following passages:
A. Sonya is having coffee with her boyfriend Jim. Jim is quiet, and Sonya asks if anything is wrong. Jim replies that he is 'Okay.' Sonya does not believe Jim. She starts to think that he is unhappy with her.
B. Bob has been working on a project for weeks. He finally gives the final product to his boss, and is curious about his boss' opinion of his work. After a few days pass, Bob starts to worry that his boss thinks he is incompetent.
Please estimate how often you engage in Mindreading when in social situations (like when you're with friends, partners or family):

1	2	3	4	5	6	7
Never			Sometimes			All The Time

Please estimate how often you engage in Mindreading when in achievement situations (such as school or work).

1	2	3	4	5	6	7
Never			Sometimes			All The Time

2. CATASTROPHIZING
People can make negative predictions about the future. When there isn't much evidence for these predictions, it is called Catastrophizing. To illustrate, please read the following passage:

A. John is in his first year of university. He just received a 70 on his Biology exam. He immediately starts to worry that he will end up with a low grade in the course, and that he'll have a tough time getting into medical school.

B. Tina's boyfriend just gave her some feedback about their relationship. He told her that he would like to spend a little more time with his friends. Based on his feedback, Tina starts to predict that they will start to become distant, and eventually break-up.

Please estimate how often you engage in Catastrophizing when in social situations (like when you're with friends, partners or family):

1	2	3	4	5	6	7
Never			Sometimes			All The Time

Please estimate how often you engage in Catastrophizing when in achievement situations (such as school or work).

1	2	3	4	5	6	7
Never			Sometimes			All The Time

3. ALL-OR-NOTHING THINKING
When people make evaluations, they can view things as being "either-or." For example, a concert can be considered to be *either good or bad*. On the other hand, people can also see shades of gray when making evaluations. For example, a concert can have some negative aspects, but be considered fairly good overall. When a person considers something as being either good or bad, we call that all-or-nothing thinking. To illustrate this point further, please read the following passages:

A. Brian gets a B+ on an exam. He is disappointed because it was not an A. He tends to view success on exams as follows: 'I either do great, or my performance is a failure.'

B. Erin is the type of person who either likes a person, or dislikes them. You're either in her "good book" or you're not.

Please estimate how often you use All-or-Nothing Thinking when in social situations (like when you're with friends, partners or family):

1	2	3	4	5	6	7
Never			Sometimes			All The Time

Please estimate how often you use All-or-Nothing Thinking when in achievement situations (such as school or work).

1	2	3	4	5	6	7
Never			Sometimes			All The Time

4. EMOTIONAL REASONING

People can believe something to be true because it "feels" that way. To illustrate, please read the following passages:

A. Kim's friends told her that she could not come to the concert with them because they were unable to get enough tickets for everyone. Kim knows they probably didn't exclude her on purpose, but she *feels rejected*. Therefore, part of her believes she was rejected.

B. Ted's boss told him that his performance at the company has been good. Yet, Ted wonders if he could have done better. In fact, he *feels like a failure*. Consequently, he starts to believe he is a failure.

Please estimate how often you engage in Emotional Reasoning when in social situations (like when you're with friends, partners or family):

1	2	3	4	5	6	7
Never			Sometimes			All The Time

Please estimate how often you engage in Emotional Reasoning when in achievement situations (such as school or work).

1	2	3	4	5	6	7
Never			Sometimes			All The Time

5. LABELING

People can label themselves as being a certain *kind of person*. If this occurs after something bad happens, it is called labeling. To illustrate, please read the following passages:

A. While at a social event, John asks a woman if she would like to dance. She turns him down. As a result, John considers himself to be *a loser*.

B. During class, Allison's teacher asks if anyone knows the answer to a question. Allison raises her hand and gives an answer. Her teacher says 'Unfortunately, that is incorrect. Does anyone else know the answer?' Allison tells herself that she is *a moron*.

Please estimate how often you engage in Labeling when in social situations (like when you're with friends, partners or family):

1	2	3	4	5	6	7
Never			Sometimes			All The Time

Please estimate how often you engage in Labeling when in achievement situations (such as school or work).

1	2	3	4	5	6	7
Never			Sometimes			All The Time

6. MENTAL FILTER

People sometimes have a filter for information. When there is positive and negative information, they only focus on the negative information. This is called Mental Filtering. To illustrate, please read the following passages:

A. Lauren overhears her new boyfriend , Tom, telling his friends about her. He says 'Yeah, things are going great so far. She's really smart and fun to be with, and we have a lot in common. She can be a bit demanding at times, but that's OK.' Although Tom had mostly positive things to say, Lauren dwelled on the one negative comment, and felt bad.

B. Ed is a high school student. He is reading comments from his teacher regarding his recent essay. His teacher wrote 'Ed, you have an excellent way of expressing ideas. I really enjoy the way you write. However, you should try and make better transitions from one idea to another.' Despite the fact that Ed clearly performed well, he could only think about the one piece of criticism, and felt poorly about himself.

Please estimate how often you engage in Mental Filtering when in social situations (like when you're with friends, partners or family):

1	2	3	4	5	6	7
Never			Sometimes			All The Time

Please estimate how often you engage in Mental Filtering when in achievement situations (such as school or work).

1	2	3	4	5	6	7
Never			Sometimes			All The Time

7. OVERGENERALIZATION

When a negative event occurs, people might assume more bad things are going to happen. They see the negative event as the start of a pattern. To illustrate, please read the following passages:

A. Janet's boyfriend just broke up with her. She thinks to herself: 'I am never going to get into a stable relationship.'

B. William recently failed his math exam. He thinks to himself: 'I'll probably fail the exams in my other courses as well.'

Please estimate how often you engage in Overgeneralization when in social situations (like when you're with friends, partners or family):

1	2	3	4	5	6	7
Never			Sometimes			All The Time

Please estimate how often you engage in Overgeneralization when in achievement situations (such as school or work).

1	2	3	4	5	6	7
Never			Sometimes			All The Time

8. PERSONALIZATION

People can believe they are responsible for negative things, even though they're not. In other words, they take a negative event, and assume they are the cause of it. This is called Personalization. To illustrate, please read the following passages:

A. Sally's company did not get an important contract. Although many people worked hard on this project, she assumes that it is her fault.

B. Chris' best friend has been in a bad mood lately, and it has been hard to get in contact with him. Chris assumes that he must have personally done something wrong to make his friend act this way.

Please estimate how often you engage in Personalization when in social situations (like when you're with friends, partners or family):

1	2	3	4	5	6	7
Never			Sometimes			All The Time

Please estimate how often you engage in Personalization when in achievement situations (such as school or work).

1	2	3	4	5	6	7
Never			Sometimes			All The Time

9. SHOULD STATEMENTS

People sometimes think that things should or must be a certain way. To illustrate, please read the following passages:

A. "Billy is upset with getting an 85 on his exam because he thinks he *should* get at least a 90. He often has these thoughts for many things (e.g., he feels he *should* never drop a pass when playing football; his room *should* be organized a certain way)."

B. "Anne believes that she *must* be funny and interesting when socializing."

Please estimate how often you tend to make Should Statements when in social situations (like when you're with friends, partners or family):

1	2	3	4	5	6	7
Never			Sometimes			All The Time

Please estimate how often you tend to make Should Statements when in achievement situations (such as school or work).

1	2	3	4	5	6	7
Never			Sometimes			All The Time

10. MINIMIZING OR DISQUALIFYING THE POSITIVE

People can sometimes ignore the positive things that happen to them. This is called Minimizing or Disqualifying the Positive. To illustrate, please read the following passages:

A. "Brenda works as a real estate agent. Her boss recently told her that she did a wonderful job on a recent sale. In her head, she dismisses her achievement because she probably 'just got lucky.'

B. "Cory is getting ready for a big first date. His friends tell him he looks good. He dismisses their complement because he thinks they're just trying to be nice."

Please estimate how often you tend to Minimize or Disqualify the Positive when in social situations (like when you're with friends, partners or family):

1	2	3	4	5	6	7
Never			Sometimes			All The Time

Please estimate how often you tend to Minimize or Disqualify the Positive when in achievement situations (such as school or work).

1	2	3	4	5	6	7
Never			Sometimes			All The Time