FROM CATASROPHE TO MASTERY:
THE RELATIONSHIP BETWEEN INTERNAL CONTROL AND DISTRESS DURING
ECONOMIC THREAT

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Abstract

Every year, many young people navigate through a precarious job market, leading to substantial psychological distress. Across two preregistered experiments, the current program of research examines the curvilinear relationship between perceptions of internal control and distress when people find themselves in an uncertain job market, as well as the psychological mechanism (i.e., self-blame) by which this effect may occur. In Study 1, perceived control over one's life more generally and perceived internal control over one's job prospects did not buffer against lower distress when one's job prospects were threatened, nor were the relationships curvilinear in nature. In Study 2, results indicated that perceived internal control over one's job prospects did not cause distress during economic threat. Furthermore, no evidence was found to suggest that those with high levels of perceived internal control were more likely to engage in self-blame. The theoretical and practical implications of the proposed research are discussed.

Keywords: economic threat, youth, internal control, self-blame, distress

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You have brains in your head.
You have feet in your shoes.
You can steer yourself
any direction you choose.

– Dr. Seuss, *Oh, the Places You'll Go!*

From our earliest days, we are flooded with stories that highlight the importance of internal control in accomplishing our goals. In *The Little Engine That Could* (Piper, 1930), a story that has been read to many generations of children (National Education Association, 2007), a tiny train whom chants the now famous mantra, "I think I can, I think I can", defeats the odds and pulls a much longer and bigger train over a soaring mountain. In *Strive and Succeed* (Alger, 1967), Julius – a homeless 15-year-old boy from New York – climbs the social ladder in order to make his own fortune. Credit is due to Julius' tenacious belief that he has control over his character and environment. Beginning in early childhood, we are constantly reminded of the need to take control of events in our lives and that this is essential for our success.

Internal control is defined as the individual's belief that the outcome of a particular event is contingent upon one's own behaviour (Rotter, 1975). The theoretical origin of internal control within the psychological literature stems from Rotter's social learning theory (Rotter, 1966) in which control perceptions were initially conceptualized on a continuum of an internal locus of control, where individuals believed they had the power to influence desired outcomes, to having an external locus of control, where desired outcomes were instead seen to be determined by external forces, such as by chance or powerful others (Rotter, 1966; Kay, Sullivan, & Landau, 2015). Other theoretical perspectives on locus of control have determined the construct to be

multidimensional in structure, where internal and external factors vary independently depending on domain (Lachman, 1986; Levenson, 1981).

Perceptions of control are crucial because construing the world as being composed of orderly, cause-and-effect relations is a "basic, fundamental need that must be met for people to confidently act in goal-directed ways" (Kay et al., 2015, p. 323). Believing otherwise can create substantial psychological distress (see Kay et al., 2015; Ross & Mirowsky, 2013, for a review). Although there has been a wealth of research that has examined the relationship between internal control and psychological distress over the past 50 years (Averill, 1973; Folkman, 1984; Lachman & Weaver, 1988a; Ross & Mirowsky, 2013; Rotter, 1966) past research has neglected the potential role that domain specific perceptions of internal control play within the stress process. The current research aims to examine the relationship between domain specific perceptions of internal control and its relationship to psychological distress within the context of economic threat.

Current Levels of Economic Threat for Youth

Perceptions of economic threat – defined as the appraisal that one's economic resources, such as possessions (e.g., money) and income sources (e.g., employment), are at risk for loss (Folkman & Lazarus, 1988; Fritsche & Jugert, 2017) – is a global dilemma for youth. One national poll conducted in the United Kingdom suggests that 44% of youth feel uncertain of their future job prospects, and one in four believe they will have a worse standard of living than their parents or guardians (The Prince's Trust Macquarie Youth Index, 2018). Past research has suggested that the consequences of this uncertainty can be harmful (Chiacchia, Greenglass, Katter, & Fiksenbaum, 2018), and can include a negative impact on one's identity as a worker (Mortimer, Lan, & Lee, 2015); a delayed transition into adulthood (Taylor et al., 2012),

including 'feeling' like an adult (Aronson, Callahan, & Davis, 2015); as well as a negative

impact on one's mental health (Reeskens & Vandecasteele, 2017), such as reduced self-esteem

(Prause & Dooley, 1997).

Perceptions of economic uncertainty may be driven in part by relatively high youth

unemployment rates, which are double that of the national average (Bernard, 2018), the

increasing prevalence of precarious work (Hennessy & Tranjan, 2018), and to frequent media

messages that reinforce these perceptions, such as by stating that "a post-secondary education is

no longer a guarantee of stable employment" (Purdon & Palleja, 2017, March 12). In fact, one

analysis of 41.7 million working college graduates in the U.S. suggests that only half of college

graduates in 2010 were in occupations that required a bachelor's degree; alarmingly, there were

13 million more working college graduates than jobs demanding a college degree (Fogg &

Harrington, 2011; Vedder, Denhart, & Robe, 2013). Another analysis of over 800 young adults

demonstrates that 49% took a job they did not want just to pay the bills and one in four took up

unpaid labour just to gain work experience (Taylor et al., 2012). High unemployment and

underemployment rates, high levels of student debt (Statistics Canada, 2014), decreased financial

aid (Porter, 2019, January 17), and media reinforcing these messages (Phillips & Russell, 2018,

September 12; Purdon & Palleja, 2017, March 12) create perceptions of increased threat about

one's economic future (Chiacchia et al., 2018; Cooke et al., 2004), leading to considerable

psychological distress (Blustein, 2008). Thus, it is clear that economic threat is an important

issue that must be understood in order to mitigate its negative psychological consequences.

Considering the high levels of economic threat for youth, it is surprising that there is a

paucity of research that examines both the psychological consequences of economic threat as

well as the personal resources that may serve a protective role (Fritsche & Jugert, 2017). In fact,

only a few papers have explored the psychological consequences of inadequate employment for recent graduates (Aronson, 2017a; Aronson, 2017b; Aronson et al., 2015; Chiacchia et al., 2018; Tevington, 2018) in which the focus has been primarily economic in nature (Fogg & Harrington, 2011; Godofsky et al., 2011; Rose, 2017; Taylor et al., 2012; Vedder et al., 2013). This is problematic because social scientists, who have the tools to examine how subjectivity and society interact, have had almost nothing to say about the thinking, feeling, and behavioural nature of economic threat for the youth population. Investigating economic threat for the youth population is important because exploring individual factors, such as internal control, will be essential to understanding who within the youth population are at high risk of suffering from psychological distress related to economic threat. Through two online pre-registered experiments (see https://osf.io/v9yce/), the current program of research aims to empirically investigate a number of gaps and unanswered questions that remain within this field of research:

1) What is the relationship between internal control and psychological distress within the context of economic threat for youth?

2) Does internal control play a causal role in its relationship to distress during economic threat? If so, what are some of the mechanisms by which this relationship occurs?

3) Do domain specific perceptions of internal control (i.e., one's perception of internal control that is focused specifically within the context of economic threat) predict distress better than generalized perceived control (i.e., one's perception of internal control over one's life more generally) during economic threat?

The Transactional Theory of Stress and Coping

One theory that is often used to understand how people experience stress is the transactional theory of stress and coping (Folkman & Lazarus, 1988). The transactional model

posits that the behavioral flow of stress begins with the cognitive appraisal of a stressor (Folkman & Lazarus, 1988). Specifically, when encountering a potential stressor, individuals first appraise whether or not the stressor is a threat – that is, if it constitutes a potential for harm or loss. Threats to one's ability to work are appraised as especially threatening (Chiacchia et al., 2018) because employment serves a number of 'latent functions', such as the provision of a time structure, shared experiences with others, a sense of personal identity and status, enforced activity, and a sense of collective purpose (Jahoda, 1982; Zechmann & Paul, 2019).

According to Folkman (1984), however, the perception that an individual can control outcomes of importance are among one of the beliefs that influence appraisals of threat. This is because those with high levels of internal control may construe a stressful event, such as a threat to one's future employment situation, as something that could be overcome and avoided (Glavin & Schieman, 2014) and thus appraised as less threatening (Folkman, 1984). In contrast, those with low levels of internal control may construe that same stressful event as normative and unavoidable and are thus more likely to imbue such events with greater salience and negative affect (Glavin & Schieman, 2014). Research suggests, however, that this relationship may not be so simple.

The Threshold of Dysfunction

In one of the seminal papers in this area, Lachman and Weaver (1998a; Study 3) examined generalized perceived control (i.e., perceived control over one's life more generally) and health related outcomes in a national American sample of approximately 3500 participants. They discovered that generalized perceived control predicted greater life satisfaction ($\beta = 0.16$) better perceived health ($\beta = 0.13$) and lower levels of depressive symptomology ($\beta = -0.08$), thereby concluding that such control perceptions are "beneficial for all social class groups" (p.

771). The problem, however, is that the researchers did not situate this effect within the context of a stressor. This is important because stress is based upon the relationship between the person *and* the environment (Lazarus & Folkman, 1984); failing to situate perceptions of control (a person characteristic) within a context (the environment) is also a failure to adequately apply stress and coping theory.

For example, utilizing a nationally representative German sample of over 10,000 participants, Heidemeier and Göritz (2013) discovered that high levels of internal control were maladaptive in the context of job loss. Specifically, those who had high levels of internal control reported the greatest decrease in life satisfaction when they experienced unemployment ($\beta = -0.17$), and this held true after controlling for demographic variables and the Big-5 personality traits (McCrae & Costa, 1987). Correlational findings such as these led researchers to propose that there might be a *threshold of dysfunction* (Mirowsky & Ross, 1990; Ross & Mirowsky, 2013; Wheaton, 1985) in which there are diminishing subjective returns to high levels of internal control. In other words, the relationship between internal control and distress within the context of a particular stressor may at first be negative, but at a certain point, or threshold, the relationship between internal control and distress becomes positive (Glavin & Schieman, 2014) or instead flattens (Wheaton, 1985). Although Ross and Mirowsky (2013) originally proposed that this threshold occurs at around the 85th to 95th percentile in perceived internal control, research suggests that this threshold may occur much earlier (i.e., at approximately the 50th percentile) within the context of economic threat (Glavin & Schieman, 2014).

In one study, Glavin and Schieman (2014) examined the relationship between job insecurity, internal control, and psychological distress among a national sample of working adults. They found that, for those who believed that it was very likely they would lose their job

in the near future, the relationship between internal control and distress was quadratic, in which progressively higher levels of internal control above the mean were associated with increases in distress. Therefore, in the context of economic threat, it might be the case that those who have moderate levels of internal control (i.e., those who score at the 50th percentile in internal control) may be at the most optimum for coping with economic related distress. However, previous research has only examined the psychological consequences of either low or high levels of internal control (Greenaway et al., 2013; Greenaway et al., 2015; Fritsche et al., 2015), and thus, strong evidence attesting to the benefits of moderate internal control are lacking.

Self-blame may be one of the psychological mechanisms by which this effect occurs (Glavin & Schieman, 2014). According to Ross and Mirowsky (2013), although a greater sense of internal control implies a greater sense of motivation to achieve one's goals, an excessive amount of perceived internal control assumes an almost perfect correspondence between one's actions and intended outcomes. Therefore, individuals with a very high level of internal control may be more likely to blame themselves for their misfortunes, thereby causing more distress (Glavin & Schieman, 2014). Currently, no research has examined this threshold of dysfunction in an experimental manner and thus, it is still unclear if internal control plays a causal role during economic threat. Furthermore, no research has empirically examined if self-blame mediates the effect of high internal control on greater psychological distress.

Generalized vs. Domain-Specific Internal Control

Another limitation of previous research concerns the operationalization of internal control. Almost all of the previous research has examined generalized perceived control (Bukowski, de Lemus, Rodriguez-Bailòn, & Willis, 2017; Glavin & Schieman, 2014; Greenaway et al., 2015; Heidemeier & Göritz, 2013; Lachman & Weaver, 1998a; Preuss & Hennecke, 2018)

even though the construct was originally developed to assess situation-specific tendencies (Lefcourt, 1981) and that domain specific measures of internal control predict domain specific outcomes better than generalized perceived control (Brandtstädter & Rohermund, 1994; Krause & Shaw, 2000; Lachman, 1986; Lachman & Weaver, 1998b). In a review of internal control measures, Lefcourt (1991) provided a conceptual overview of 18 different domains of internal control, none of which contained internal control measures related to one's employment situation, and none of which seem to be used in recent examinations of control perceptions (Dupuis & Newby-Clark, 2016; Fritsche et al., 2013; Fritsche et al., 2017; Greenaway, Louis, & Hornsey, 2013; Stollberg, Fritsche, & Bäcker, 2015). Although Furnham (1986) developed an *Economic Locus of Control Scale*, the measure is based primarily on wealth and does not address employment related factors. Further, the measures that do capture employment related perceptions of control are based on perceptions of control over one's current job (e.g., Karasek, 1979), which are not applicable to youth who are experiencing threats to their *future* job prospects.

Failing to capture domain specific levels of internal control is problematic because, according to the transactional theory of stress and coping (Lazarus & Folkman, 1984), every stressful encounter is unique and contextually dependent – for instance, an economic stressor will be appraised differently, and different coping resources will be employed than a health related stressor – and thus, one's appraisal that the event is controllable is also context dependent (Folkman, 1984; Folkman & Lazarus, 1988). Therefore, during economic threat, individuals should draw on their perception of internal control that is directly tied to the economic stressor (e.g., internal control over getting a good job), rather than a generalized perception of control over their life (Folkman, 1984). In this way, failing to capture domain specific levels of internal

control is also a failure to capture these particular nuances. Currently, however, no research has examined domain specific levels of internal control within an economic threat context for the youth population.

Overview of Proposed Research

Two experiments are presented (see Appendix A for Study 1 and 2 materials) that investigate the causal relationship between domain specific perceptions of internal control and psychological distress within the context of economic threat (i.e., a threat to one's job prospects) for youth. The current program of research extends previous research by examining if the relationship between internal control (both generalized and internal control over one's job prospects) and distress is quadratic during economic threat for the youth population; if internal control over one's job prospects is a better predictor of distress than generalized perceived control during economic threat; by examining the causal relationship between internal control over one's job prospects and distress; and by examining self-blame as a mediator of economic threat on greater distress for those with high levels of internal control. All methods, hypotheses, and proposed statistical analyses for both studies were preregistered on aspredicted.org, prior to the data being collected and have been posted at https://osf.io/v9yce/.

Study 1

Study 1 utilized a between-subjects design with one factor (*economic threat*) with two levels (*threat* and *no threat),* to test if the relationship between perceived control (both generalized and internal control over one's job prospects) and distress was quadratic when one's job prospects were threatened. Based on research from Glavin and Schieman (2014), who examined the curvilinear relationship between economic threat, internal control, and distress for the adult population, I hypothesized that the relationship between perceived control (both generalized and

internal control over one's job prospects) and psychological distress would be quadratic in the *threat* condition. In the *no threat* condition, however, I hypothesized that these variables would be negatively related. Additionally, I examined if internal control over one's job prospects was a better predictor of distress than generalized perceived control when one's job prospects were threatened. Based on the transactional theory of stress and coping, whereby one's appraisal that an event is controllable is context dependent (Folkman, 1984; Folkman & Lazarus, 1988), I hypothesized that perceived internal control over one's job prospects would predict distress better than generalized perceived control, but only during economic threat. Finally, I also explored if economic threat reduced perceptions of control (both generalized and internal control over one's job prospects), and if it did, whether reduced perceived control mediated the effect of economic threat on greater distress. Considering that the mediation model was exploratory (see https://osf.io/b7uyc/) no hypotheses were made in this regard.

Participants

Preregistered Power Analysis

Across two rounds of data collection, separated by eight days, I recruited 501 undergraduate students who participated in the study for course credit. Data were collected in November of 2019. I collected 390 participants in Round 1 and an additional 111 participants in Round 2 because the first round of data collection resulted in insufficient power (i.e., 63% power) to detect the hypothesized effect ($\Delta f^2 = 0.05$) after data deletion (see below for data deletion criteria). The smallest meaningful effect of $\Delta f^2 = 0.05$ refers to the hypothesized change in f^2 due to the interaction between condition and the quadratic internal control over one's job prospects term, above and beyond the main effect of condition, generalized perceived control, internal control over one's job prospects, control by chance, control by powerful others,

subjective SES, squared generalized perceived control, and squared internal control over one's job prospects; as well as the interactions between condition and internal control over one's job prospects, condition and generalized perceived control, and condition and squared generalized perceived control.

I first collected 390 participants because a preregistered power analysis conducted using G*Power (Faul, Erdfelder, Lang, & Buchner, 2007) indicated that, in order to detect a small effect ($\Delta f^2 = 0.05$) with $\alpha = .05$ and 80% power, a sample size of $N = 335$ would be sufficient, and I over sampled by approximately 20% due to anticipated attrition rates (e.g., indiscriminate responders; see Marjanovic, Struthers, Cribbie, & Greenglass, 2014). A traditional *a priori* power analysis, rather than a precision-based power analysis, was conducted because perceived internal control over one's job prospects had never been examined before, and thus, evaluating the presence or absence of the effect, rather than the width of the effect, was deemed necessary as a first step for further research.

Preregistered Data Deletion

As shown in Figure 1, participants were removed if they were identified as random responders (4.39%, $n = 22$), guessed the true purpose of the experiment (1.60%, $n = 8$), failed the attention check (11.34%, $n = 57$), completed the experiment on a cellphone (1.80%, $n = 9$), completed the experiment either too quickly (less than 10 minutes), too slowly (more than 60 minutes), or not at all (23.35%, $n = 117$), and/or did not provide informed or post-debriefing consent (5.99%, $n = 30$). In total, the data from 38.64% ($n = 199$) of the participants was removed. Although the proportion of deleted data is substantial, the data that was retained and deleted were statistically equivalent on theoretically meaningful variables (see Appendix B) and thus, participation attrition was not considered a confounding variable in the current study.

It is also important to note that the estimated sample size of 335 slightly differs from my preregistered estimation ($N = 322$; see https://osf.io/b7uyc/). The reason for the deviation is due to the neglect of the squared internal control over one's job prospects and the squared generalized perceived control main effect terms. Only their interactions with condition were inaccurately considered.

Demographic Statistics

The final sample consisted of 303 predominately female (74.26%, $n = 225$), young adult undergraduate students ($M_{age} = 19.73$, $SD_{age} = 3.95$, range = 17 to 64 years), randomly assigned to a *threat* ($n = 167$) or a *no threat* ($n = 136$) condition (see Table 1). Approximately one-third of the sample (32.01%, $n = 97$) were international students, most of whom were born in Asia (69.49%, $n = 67$), and had been living in Canada, on average, for 9.77 years ($SD = 7.72$, range = 0 to 44 years). Additionally, more than half of the participants were first-year students (56.44%, $n = 171$) who were employed part-time (53.47%, $n = 162$).

Equivalence tests using the *TOSTER* package in R (Lakens, 2017) demonstrated that the percentage of participants born in Canada and time (in years) spent in Canada were not statistically equivalent across conditions (see Appendix B). However, equivalence tests also demonstrated that whether or not an individual was born in Canada was not meaningfully linked to the study variables. Only time spent in Canada was meaningfully linked to the study variables and thus, the analyses were re-run controlling for time spent in Canada. Notably, the results did not substantially differ when controlling for time spent in Canada and thus, the analyses that follow do not control for this variable but are reported in Appendix B.

Materials

   Economic Threat Manipulation. The economic threat manipulation was adopted from Wohl, Branscombe, and Lister (2014) in which the participants in the *threat* condition read a fabricated news article that documented an "unstable economic climate" (i.e., higher unemployment rates, higher tuition costs, and lower financial aid), whereby getting a good job upon graduation was "uncertain". Participants in the *no threat* condition read a fabricated news article that documented a tour of the Royal Canadian Mint, a corporation that produces Canadian and foreign coins. To encourage participants to reflect on the manipulation, they were also asked to write how they think they would feel if they were to experience the situation described in the article. No word or time limit was enforced. Participants were randomly assigned to condition. Previous research indicates that this manipulation is effective in generating perceptions of threat compared to a *no threat* condition (Chiacchia et al., 2018; Wohl et al., 2014).

   Manipulation Check. Participants completed the *Threat* subscale of the *Stress Appraisal Measure* (SAM; Peacock & Wong, 1990) as a manipulation check for the economic threat manipulation. The 4-item *Threat* subscale measures the extent to which one views a particular event as being capable of causing harm or loss. The instructions were modified to refer to one's perceptions of threat if they were to experience the situation described in the article. An example item is, "How threatening would this situation be?". Participants indicated their responses on a scale from 1 (*Not at all*) to 5 (*Extremely*). The SAM has acceptable construct validity, convergent validity, internal consistency, and test-retest reliability (Peacock & Wong, 1990). The scale had acceptable internal consistency in the current experiment, $\omega = .96$, 95% CI [.95, .97].

   Perceived Control Over One's Job Prospects. In order to measure one's perceived control that was specific to the context of economic threat, participants completed a modified

version of the 18-item *Multidimensional Health Locus of Control Scale* (Wallston, Wallston, &

Peabody, 1978). This measure examines one's perception of control over one's physical health;

however, for the purposes of the current study, the instructions were modified to refer to one's

perception of control over their job prospects (see Appendix C for scale items and a confirmatory

factor analysis). This measure was chosen because the items translated most cogently to an

occupational context compared to other domain specific perceived control measures (e.g.,

Campis, Lyman, & Prentice-Dunn, 1986; Hill & Bale, 1980; Saltzer, 1982). The measure

consisted of four subscales, whereby participants indicated their responses on a scale from 1

(*Strongly Disagree*) to 7 (*Strongly Agree*): *internal control* (5 items; e.g., "I will be in control of

getting a good job"), ω = .68, 95% CI [.61, .74]; *control by chance* (6 items; e.g., "Luck will

play a big part in determining if I get a good job"), ω = .61, 95% CI [.45, .70]; *control by*

connections (2 items; e.g., "Having the right connections will be the best way for me to get a

good job"), ω = .85, 95% CI [.79, .89]; and *control by others* (4 items; e.g., "Other people will

play a big part in whether or not I get a good job"), ω = .72, 95% CI [.65, .77].

   Generalized Perceived Control. Generalized perceived control was measured via

Lachman and Weaver's (1998a) 12-item *Sense of Control Scale* (SCS), operationalized as having

two dimensions: *personal mastery*, or one's sense of efficacy in carrying out goals (example

item, "I can do just about anything I set my mind to") and *perceived constraints* – the extent to

which one believes there are obstacles or factors beyond one's control that interfere with

reaching goals (example item, "What happens in my life is often beyond my control").

Participants indicated their responses on a scale from 1 (*Strongly Disagree*) to 7 (*Strongly*

Agree). A total scale score was computed by calculating the mean of all the items after reverse

scoring the *perceived constraints* subscale. Research suggests that this scale is a valid and

reliable measurement of one's generalized perceived control (α = .85; Prenda & Lachman,

2001). This scale was counterbalanced with the measurement of perceived control over one's job

prospects. Results indicated that the SCS had acceptable reliability in the current study, ω = .82,

95% CI [.79, .85].

Psychological Distress. Psychological distress was a composite variable measured via the

Anxiety (6 items), *Depression* (8 items), and *Anger* (8 items) subscales of the *Profile of Mood*

States – Short Form (POMS-SF-ADA; Shacham, 1983). The *Anxiety*, *Depression*, and *Anger*

subscales all correlated very highly with each other (see Table 2) and were therefore averaged to

create a composite of distress. Instructions were modified so that participants indicated how they

thought they would feel if they were to experience the situation described in the article. Example

items included "anxious", "discouraged", and "angry." Participants indicated their responses on a

scale from 1 (*Not at all*) to 7 (*Extremely*). Previous research indicates that the subscales are

reliable (coefficient alphas range from .74 to .91) and highly correlated with the original scale (*rs*

range from .95 to .97). The scale was reliable in the current experiment, ω = .99, 95% CI [.98,

.99].

Socioeconomic Status and Demographics. The *MacArthur Scale of Subjective Social*

Status (SSS; Goodman et al., 2001) was used as a subjective measure of socioeconomic status

(SES). This scale provides participants with a picture of a ladder in which each rung represents a

point on a 10-point scale of SES. The top of the ladder represents those who are "best-off" (i.e.,

have the most respected jobs) and those at the bottom represent those that are "worst-off" (i.e.,

have no job or jobs that have no respect), whereby participants indicate where they think their

family would be on the ladder. Research has indicated that this measure of SES is reliable (α =

.83; Goodman et al., 2001) and, although it is moderately correlated with objective indicators of

SES, such as income and education (r = .25; Zell, Strickhouser, Krizan, 2018), it is a better predictor of health-related outcomes than objective measures of SES (Adler, Epel, Castellazzo, & Ickoovics, 2000; Cohen, 1999; Ostrove, Adler, Kuppermann, & Washington, 2000). Participants were also asked to indicate their gender, age, citizenship, year of study, and employment status.

   Data Quality. Marjanovic et al.'s (2014) *Conscientious Responders Scale* (CRS) was used to detect participants who had responded randomly to the measures. The scale consists of 5 items that instruct responders how to answer a particular question (e.g., please answer this question by choosing number 1, "Strongly disagree"). Responding incorrectly to more than 2 of the 5 items indicates a random response pattern and as such these participants were excluded from further analyses.

   In order to ensure that participants did not predict the true nature of the study, they were also asked at the end of the experiment what they believed to be the purpose of the study. Those who correctly identified the purpose of the experiment were excluded. Also, in order to ensure that participants read the manipulation at the beginning of the study, they were asked to specify the content of the article via a multiple-choice question at the end of the experiment. Participants who incorrectly specified the content of the article were excluded from all analyses. Finally, considering that the economic threat manipulation is difficult to read on mobile devices, participants who indicated that they did not complete the study on a laptop or desktop computer were removed (see Figure 1).

Procedure

   The experiment was conducted online through *Qualtrics*. Participants were given a URL linking to the study material. They provided their consent by clicking "I agree to participate" on

the online informed consent form. In the informed consent form, participants were told that the experiment was about "Imagining the Future." The purpose of the cover story was to ascertain that the experimental manipulation did not seem arbitrary, thereby preventing participants from guessing the true nature of the study (see Aronson, Carlsmith, & Ellsworth, 1990, Ch. 6). At the end of the experiment, participants were fully debriefed online. Considering that deception was used in the experiment, post-debriefing consent was obtained by asking participants if their data could be retained after they learned about the nature of the study's deception.

Data Analysis Plan

In order to analyze the data, a series of ordinary least squares regression models were conducted using the R Programming language (R Core Team, 2019). In each model, the assumptions of the test were evaluated by plotting the residuals of the model by its predicted values to check for linearity and homoscedasticity; creating a histogram of the residuals to check for normality; validating the histogram with a Shapiro-Wilk normality test (Razali & Wah, 2011); and validating the visualization of homoscedasticity by conducting a Breusch-Pagan test (Breusch & Pagan, 1979). Multicollinearity was examined by calculating variance inflation factors (VIF) for each model using the *car* package in R (Fox & Weisberg, 2019), whereby a VIF > 3 was further investigated to determine if the variable should be kept in the model. Lastly, participants were removed if they were identified as an outlier via both Cook's Distance (cut-off of $[4/(N\text{-}k]$) and Leverage values (cut-off $[2(k+1)/N]$), where k represents the total number of predictors. In cases where there were a substantial number of outliers, the matched leverage and distance values that were most extreme were removed first. Once removed, a statistical examination of outliers was again conducted, and data were removed until there were no more outliers identified. Missing data were removed via pairwise deletion. Following

recommendations by Simmons, Nelson, and Simonsohn (2011), all measures, conditions, and data exclusions are reported.

Results

Descriptive Statistics

Descriptive statistics of the study variables, as well as their interrelations – which were mostly small in magnitude – are presented in Table 2. As expected, perceived internal control over one's job prospects was positively and moderately associated with perceived control over one's life more generally. Although internal control over one's job prospects was not significantly negatively correlated with believing that one's job prospects were controlled by others, generalized perceived control was. Both internal control and generalized perceived control were not significantly negatively correlated with believing that one's job prospects were controlled by chance or through connections. Supporting the empirical data linking socioeconomic status with perceived control (Lachman & Weaver 1998a; Ross & Mirowsky, 2013), those who reported greater levels of subjective SES were also more likely to have greater levels of perceived internal control over one's job prospects as well as greater generalized perceived control. However, the relationship between subjective SES and generalized perceived control was stronger in magnitude. Subjective SES was not significantly correlated with believing that one's job prospects were controlled by chance, through connections, or by others.

Preregistered Confirmatory Analyses 1: Manipulation Checks

In order to confirm that the economic threat manipulation increased perceptions of threat and distress, I ran two Welch independent samples *t*-tests comparing levels of threat and distress across condition. I ran Welch's *t*-test instead of Student's *t*-test because the former provides a better control of Type I error rates when the assumption of homogeneity of variance is not met,

and it loses little robustness compared to Student's *t*-test when the assumptions are met (Delacre,

Lakens, & Leys, 2017).

Validating the economic threat manipulation, results (see Table 3) indicated that those in

the *threat* condition reported that they would experience greater levels of threat ($M = 4.26$, $SD =$

0.76) than those in the *no threat* condition ($M = 1.48$, $SD = 0.58$), $t(300.20) = 36.01$, $p < .001$, d

$= 4.06$, 95% CI of *d* [3.66, 4.45]. This means that participants in the *threat* condition felt that the

potential for future harm or loss would be much greater than those in the *no threat* condition.

Converting the effect size *d* to *r* using the *compute.es* package in R (Del Re, 2013) indicated that

81% of the variance in threat ($r = .90$) could be explained by the economic threat manipulation,

95% CI [76%, 85%], thereby demonstrating a very large effect.

As shown in Figure 2, those in the *threat* condition also reported that they would

experience more distress ($M = 5.11$, $SD = 1.31$) – that is, more anxiety, depression, and anger –

than those in the *no threat* condition ($M = 1.70$, $SD = 0.86$), $t(285.73) = 27.03$, $p < .001$, $d = 3.01$,

95% CI of *d* [2.67, 3.34]. In this way, the economic threat manipulation was also effective in

generating large differences in distress across condition, accounting for 69% of the variance in

distress ($r = .83$), 95% CI [62%, 74%].

Responses to the open-ended question, whereby participants were asked to imagine and

report on how they would feel if they were to experience the situation described in the article,

were also telling. As indicated by one participant in the *threat* condition:

I feel that there is no hope in going to school and feel a wave of depression and anxiety

when thinking about this. One wants to feel secure with the school and program they are

spending years and thousands of dollars on. To be informed that one may end up in a

minimum wage job in harsh conditions makes one feel that this life is not one worth

living.

As exemplified above, an uncertain and unstable economic future was a salient stressor for

participants, which may explain why it generated great levels of threat and distress.

Preregistered Confirmatory Analyses 2: Regression Models

Next, I ran three regression models with distress as the criterion variable. In model 1, the

predictor was internal control over one's job prospects, model 2 added generalized perceived

control, and model 3 added the covariates: subjective SES, control over one's job prospects by

chance, control over one's job prospects through connections, and control over one's job

prospects by others. In model 3, I statistically controlled for subjective SES because previous

research suggests that those from a lower SES tend to report greater psychological ill-health than

those from a higher SES (Lachman & Weaver, 1998a). I also controlled for perceptions of

control by chance, connections, and others in order to get a 'pure' estimate of internal control;

that is, I partialled out other important aspects of control appraisals in order to evaluate the

unique relationship that internal control had with distress.

Assumption diagnostics indicated that the residuals were moderately non-normal in

model 1, and the data were heteroscedastic in all three models, but only in the *no threat*

condition (see Appendix D). Furthermore, data transformations only made the data slightly less

heteroscedastic. Thus, I evaluated the regression models without the transformed data and

acknowledge heteroscedasticity in the *no threat* condition as a limitation in the current study.

Model 1: Is there evidence supporting a quadratic relationship?

To test the first hypothesis that the relationship between internal control over one's job

prospects and distress would be quadratic in the *threat* condition, but negative in the *no threat*

condition, I ran a regression model predicting distress by condition (dummy coded 0 = *no threat* and 1 = *threat*), perceived internal control over one's job prospects (and its quadratic term), as well as their interactions (see Table 4).

Model diagnostics indicated that there were seventeen outliers based on influence and leverage values, and they were removed (remaining $N = 286$). Results suggested that the relationship between perceived internal control over one's job prospects and distress was not statistically significantly more quadratic during economic threat, $b = 0.01$, 95% CI [-0.39, 0.41], $SE = 0.20$, $p = .962$, $sr^2 < .001$ (see Figure 3). I also found no significant linear interaction between condition and perceived internal control over one's job prospects, $b = -0.04$, 95% CI [-4.39, 4.30], $SE = 2.21$, $p = .985$, $sr^2 < .001$. Thus, contrary to the first hypothesis, I found no evidence to suggest that the relationship between perceived internal control over one's job prospects and psychological distress is significantly more quadratic during economic threat. I also found no evidence to suggest that the relationship is significantly more negative when economic threat is absent.

Model 2: What variable is the better predictor?

The purpose of model 2 was to examine if the relationship between generalized perceived control and distress was quadratic during economic threat, and if perceived internal control over one's job prospects predicted distress better than generalized perceived control during economic threat.

After removing twenty-six outliers based on influence and leverage values (remaining $N = 277$), results illustrated that, similar to the relationship between internal control over one's job prospects and distress, the quadratic interaction between condition and generalized perceived control was not statistically significant, $b = 0.06$, 95% CI [-0.26, 0.38], $SE = 0.16$, $p = .713$, $sr^2 <$

.001 (see Figure 4). Thus, contrary to the first hypothesis, I also found no evidence to suggest that the relationship between generalized perceived control and distress is significantly more quadratic during economic threat.

Secondly, although there was no significant interaction between condition and generalized perceived control, $b = -0.16$, 95% CI [-0.51, 0.19], $SE = 0.18$, $p = .360$, $sr^2 = .001$, whereby generalized perceived control predicted lower levels of distress regardless of condition, $b = -0.39$, 95% CI [-0.65, -0.12], $SE = 0.04$, $p = .004$, $sr^2 = .031$, I found a marginally significant interaction between condition and perceived internal control over one's job prospects, $b = 0.36$, 95% CI [-0.02, 0.75], $SE = 0.20$, $p = .065$, $sr^2 = .003$ (see Figure 5 and Table 4). Interaction contrasts indicated that the slope in the *threat* condition was marginally significantly different than the slope in the *no threat* condition, $b = 0.35$, $SE = 0.20$, $t(263) = 1.78$, $p = .076$, but the effect size was small, $r = .09$, 95% CI [-0.03, 0.20]. Descriptively, the slope in the *threat* condition was positive, $b = 0.26$, $SE = 0.12$, 95% CI [0.02, 0.50], but the slope in the *no threat* condition was weaker and slightly negative, $b = -0.08$, $SE = 0.15$, 95% CI [-0.39, 0.22].

Although the relationship between perceived internal control over one's job prospects and distress was slightly positive during economic threat, and that the relationship between generalized perceived control and distress was negative regardless of condition, a comparison of the effect sizes showed that generalized perceived control was the stronger predictor. Specifically, when controlling for internal control over one's job prospects, generalized perceived control predicted lower distress much more strongly both during economic threat, partial $r_{generalized\ perceived\ control} = -0.35$ versus partial $r_{internal\ control\ over\ job\ prospects} = 0.15$, $z = 4.50$, $p < .001$, and when economic threat was absent, partial $r_{generalized\ perceived\ control} = -0.36$ versus partial $r_{internal\ control\ over\ job\ prospects} = 0.08$, $z = 3.57$, $p < .001$. Thus, contrary to the second hypothesis,

perceived internal control over one's job prospects did not predict distress more strongly than generalized perceived control during economic threat; instead, generalized perceived control predicted distress better than internal control over one's job prospects, regardless of condition.

Model 3: Controlling for covariates

The purpose of model 3 was to examine the unique relationship that perceived internal control over one's job prospects had with distress after controlling for other theoretically important variables. Model 3 regressed the main effect of condition; perceived internal control over one's job prospects; perceived control by chance, connections, and others; subjective SES; as well as the linear and quadratic interactions between condition and internal control, and condition and generalized perceived control, on distress.

After controlling for the covariates and removing eighteen outliers based on both influence and leverage values (remaining $N = 285$), the quadratic interaction between condition and internal control over one's job prospects, $b = -0.15$, 95% CI [-0.54, 0.25], $SE = 0.20$, $p = .463$, $sr^2 = .001$, and the quadratic interaction between condition and generalized perceived control, $b = 0.21$, 95% CI [-0.08, 0.50], $SE = 0.15$, $p = .150$, $sr^2 = .002$, were not statistically significant. Additionally, the linear interactions between condition and internal control over one's job prospects, $b = 0.23$, 95% CI [-0.16, 0.63], $SE = 0.20$, $p = .238$, $sr^2 = .001$, and between condition and generalized perceived control, $b = -0.08$, 95% CI [-0.39, 0.24], $SE = 0.16$, $p = .629$, $sr^2 < .001$, were also not statistically significant (see Table 4 and Figure 6). As in model 2, only generalized perceived control predicted lower levels of distress regardless of condition, $b = -0.30$, 95% CI [-0.54, -0.06], $SE = 0.12$, $p = .015$, but the effect was again very small, accounting for only 2% of the variance in distress, $sr^2 = .023$. Interestingly, not even subjective SES significantly predicted distress, $b = -0.03$, 95% CI [-0.11, 0.06], $SE = 0.04$, $p = .530$, $sr^2 < .001$.

Instead, condition accounted for most of the total variance in distress, $b = 3.26$, 95% CI [2.89, 3.62], $SE = 0.14$, $p < .001$, $sr^2 = .543$. Therefore, after controlling for other facets of control appraisals (i.e., control by chance, connections, and others) as well as subjective SES, perceived internal control over one's job prospects did not predict distress better than generalized perceived control during economic threat, nor were the relationships significantly more quadratic during economic threat.

Preregistered Exploratory Analyses

Previous research indicates that perceptions of control may also be a mediator of an economically stressful event on psychological outcomes (Elst, De Cuyper, & De Witte, 2010). In this sense, economic threat may be indirectly related to higher or lower levels of distress through lower levels of perceived control. In line with this theorizing, results (see Table 5 and Figure 7) indicated that those in the *threat* condition reported lower levels of perceived internal control over one's job prospects ($M = 5.13$, $SD = 0.98$) than those in the *no threat* condition ($M = 5.54$, $SD = 0.75$), $t(300.02) = -4.07$, $p < .001$, $d = -0.46$, 95% CI of d [-0.69, -0.23]. Specifically, 4.84% of the variance ($r = .22$) in perceived internal control over one's job prospects can be explained by the economic threat manipulation, 95% CI [1%, 11%]. Additionally, those who experienced *economic threat* were slightly more likely to believe that getting a good job in the future depended on having the right connections, $t(281.99) = 1.98$, $p = .049$, $d = 0.23$, 95% CI of d [0.00, 0.46]. However, the effect was very small in magnitude ($r = .11$), whereby the manipulation accounted for only 1.21% of the variance in control through connections, 95% CI [0%, 5%]. There were no statistically significant group differences in believing that one's job prospects were controlled by others, $t(285.46) = 0.35$, $p = .723$, $d = 0.04$, 95% CI of d [-0.27, 0.19], or by chance, $t(279.05) = 1.12$, $p = .262$, $d = 0.13$, 95% CI of d [-0.36, 0.10]. Contrary to

previous research (e.g., Fritsche et al., 2015), I found no evidence to suggest that generalized perceived control is significantly reduced during economic threat, $t(281.85) = -1.09$, $p = .278$, $d = -0.13$, 95% CI of d [-0.10, 0.36].

Next, I conducted a mediation analysis with 5000 bootstrap samples to examine if perceived internal control over one's job prospects mediated the effect of economic threat on psychological distress (see Figure 8). Results indicated that, when controlling for generalized perceived control; control by chance, connections, and others; as well as subjective SES, the indirect effect of economic threat on lower levels of distress through lower levels of perceived internal control over one's job prospects was statistically significant, $b = -0.06$, 95% CI [-0.13, -0.002]. This effect indicates that those in the *threat* condition were estimated to score 0.06 units *lower* in distress than those in the *no threat* condition as a result of the effect of condition on lower perceived internal control over one's job prospects, which in turn, predicted greater distress. However, the completely standardized indirect effect was very small ($\beta = -0.02$). As an additional measure of effect size, the proportion of the total effect that was mediated was calculated by dividing the product of the indirect effect (i.e., a*b) by the total effect (i.e., c) (Kenny, Korchmaros, & Bolger, 2003). The data suggested that only 1.24% of the effect of economic threat on distress could be accounted for by perceived internal control over one's job prospects, thereby representing a very small effect.

Study 1 Discussion

The results of Study 1 demonstrated that, contrary to the hypotheses, the relationship between perceived internal control over one's job prospects and distress was not quadratic during economic threat, nor was the relationship negative when economic threat was absent. One reason I did not observe a quadratic relationship between internal control over one's job prospects and

distress may be due to the negative skew of both the distress and internal control distributions, which resulted in a statistical restriction of range (see Figures 2 and 7). Considering that the internal control scale ranged from 1 to 7, its mean of 5.31 indicates that participants, on average, agreed with all of the internal control items. In fact, only 7.59% ($n = 23$) of participants scored under the mid-point of the scale. Therefore, since I did not have enough scores on the low end for internal control over one's job prospects, I may not have had adequate variability to predict distress.

Another reason I did not observe a quadratic relationship between internal control over one's job prospects and distress is that, although a number of studies have found that the relationship between perceived control and distress becomes positive at very high levels of perceived control (Glavin & Schieman, 2014; Mirowsky & Ross, 2003; Schieman, Upenieks, & Bierman, 2018) other research has found that there are "diminishing returns" in which the relationship instead flattens (Kiecolt, Hughes, & Keith, 2009; Wheaton, 1985). Considering that I observed only 23 data points below the mid-point of the internal control scale, I may be capturing only the high end of this relationship. That is, the relationship in the population may be quadratic, but I am only capturing the part of the relationship that is characterized by "diminishing returns".

On the other hand, the negatively skewed distribution of internal control over one's job prospects may reflect the increasing importance that younger generations are placing on socioeconomic aspirations (Baird, Burge, & Reynolds, 2008; Mortimer, Mont'Alvao, & Aronson, 2019), such as getting a good job despite harsh financial circumstances (Aronson, 2017; Shane & Heckhausen, 2017). Greater perceptions of control, to a certain extent, are beneficial in that they allow individuals to act in goal-directed ways (Kay et al., 2015; i.e., if one

believes that they cannot influence their future employment situation, they will not engage in goal-directed behaviours to attempt to achieve this goal). Considering that getting an education is a goal directed activity with employment as its *telos* (Aronson, 2017), believing that one is in control over getting a good job would be a necessary prerequisite of obtaining an undergraduate degree in the first place. Thus, it is no surprise that having a sense of control over one's job prospects was tremendously high, and the population distribution, at least for North American undergraduate students, may reflect this negative skew. In this way, capturing different levels of the construct may be difficult to obtain via self-report methods and instead, causally manipulating internal control over one's job prospects may be necessary in order to understand its true relationship with distress during economic threat. In Study 2, I build on this theorizing by manipulating internal control over one's job prospects to examine its causal relationship with distress.

Contrary to the first hypothesis, I also found that the relationship between generalized perceived control and distress was not quadratic during economic threat. I maintain that the unobserved quadratic effect may be due to low statistical power. Specifically, Glavin and Schieman (2014) report that the quadratic interaction between perceived control and distress during economic threat is very small. Converting their observed effect size, $b = .16$, into a Pearson correlation coefficient using the *esc* package in R (Lüdecke, 2019) indicates that the interaction effect corresponds to $r = .08$. Therefore, in model 2, I only had 12.77% power to detect this effect with 284 participants at $\alpha = .05$. Future research should aim to capture a large enough sample size (i.e., $N > 2000$) to observe this small effect.

Contrary to the second hypothesis, results also demonstrated that generalized perceived control predicted distress better than internal control over one's job prospects, regardless of

condition. Interestingly, however, is that the observed effect size was small in magnitude, in which generalized perceived control accounted for less than 5% of the variance in distress. One of the reasons that the observed effect size was small may be due to the economic threat manipulation, which accounted for a vast majority of the variability in distress (i.e., ~70%). This means that there was only a third of the variability in distress left to explain after controlling for condition, which includes measurement error.

Lastly, the exploratory mediation model suggested that perceived internal control over one's job prospects may be a mediator, not a moderator, of economic threat on distress. Interestingly, the loss of perceived internal control over one's job prospects predicted lower, and not greater distress, as some would expect (Fritsche et al., 2015). In other words, the appraisal that one had less internal control over their job prospects during economic threat may have been a form of secondary appraisal, or way of coping, with the economic stressor. That is, during economic threat, individuals may relinquish their perception of internal control over their job prospects as a way of coping with the economic stressor. According to Glavin and Schieman (2014), the mechanism by which high perceptions of control lead to greater distress is through greater levels of self-blame. Thus, individuals may have relinquished their perception of control as a way of circumventing self-blame for not being able to find adequate employment. However, not only was the effect very small, but it is not clear if internal control over one's job prospects had a causal effect on distress. In Study 2, I build on this theorizing by examining self-blame as a mediator of experimentally induced internal control over one's job prospects on distress.

Study 2

The purpose of Study 2 was to investigate the role of internal control over one's job prospects in causing distress during economic threat, as well as to investigate the claim that self-

blame is the mechanism by which high internal control leads to greater psychological distress. In order to accomplish this, a manipulation of internal control over one's job prospects was developed and validated.

Study 2 utilized a between-subjects design with one factor (*internal control over one's job prospects*) with three levels (*low*, *moderate*, and *high* internal control) within the context of economic threat. Considering that the economic threat manipulation was effective in generating perceptions of threat and distress compared to a *no-threat* condition in Study 1, a *no-threat* condition in Study 2 was deemed unnecessary and was therefore removed. Furthermore, "external" perceptions of control – that is, perceived control by chance, connections, and others – were not included in Study 2. Perceived control by chance, connections, and others were not included in Study 2 because of their small correlations with internal control over one's job prospects and generalized perceived control in Study 1 and to maintain brevity in Study 2. Instead, considering the wealth of research linking generalized perceived control and SES to health-related outcomes (e.g., Lachman & Weaver, 1998a), only generalized perceived control and subjective SES were included in Study 2 as covariates. Building on Study 1 and the threshold of dysfunction (Glavin & Schieman, 2014), I hypothesized that those in the *moderate* internal control condition would report the lowest distress compared to those in the *low* and *high* internal control conditions. I also hypothesized that internal control would be indirectly related to greater distress through greater levels of self-blame, but only for those in the *high* internal control condition.

Participants

Preregistered Power Analysis

Participants were 590 undergraduate students recruited from York University's Undergraduate Research Participant Pool (URPP). Data were collected in February of 2020. A power analysis conducted using G*Power (Faul et al., 2007) indicated that, in order to detect a small effect ($d = 0.32$) at $\alpha = .05$ and with 80% power, a total sample size of $N = 465$ (i.e., $n = 155$ per condition) would be required. That is, I hypothesized that those in the *high* internal control condition would report average levels of distress that were 0.32 standard deviations higher than those in the *moderate* internal control condition. Based on anticipated attrition rates (e.g., indiscriminate responders; see Marjanovic et al., 2014), participants were over sampled by approximately 20% ($N = 590$).

Preregistered Data Deletion

Participants were removed if they were identified as random responders (2.88%, $n = 17$), guessed the true purpose of the experiment (3.99%, $n = 23$), failed the attention check (6.41%, $n = 38$), completed the experiment on a cellphone (0.51%, $n = 3$), did not complete the study long enough to be randomly assigned to a condition (3.90%, $n = 23$), did not provide informed or post-debriefing consent (6.10%, $n = 36$), or took too long to complete the study (i.e., greater than 60 minutes; 2.71%, $n = 16$). In the current study, participants were not removed if they completed the experiment in less than 10 minutes (as in Study 1) because doing so would require a substantial proportion of the sample to be removed (17.12%, $n = 101$). Arguably, a time of completion greater than an hour, but not less than 10 minutes, threatened the validity of the manipulation because it was unknown when the effects of the manipulation were diminished. Therefore, a long duration, rather than a short one, was maintained as a criterion for data deletion

in order to ensure that time of completion was not a confound in the analyses. In total, the data

from 28.47% ($n = 168$) of the participants was removed. Importantly, the data that were retained

and deleted were statistically equivalent on most demographic and continuous variables (see

Appendix E).

Demographic Statistics

The final sample consisted of 422 predominately female (77.14%, $n = 334$), young adult

undergraduate students ($M_{age} = 20.09$, $SD_{age} = 3.69$, range = 17 to 48 years), randomly assigned

to a *low* ($n = 139$), *moderate* ($n = 145$), or *high* ($n = 138$) internal control condition (see Table 6).

More than one-third of the sample (39.49%, $n = 171$) were international students, most of whom

were born in Asia (74.27%, $n = 127$), and had been living in Canada, on average, for 8.58 years

($SD = 6.60$, range = 0 to 38 years). Additionally, more than half of the participants were first-

year students (54.50%, $n = 236$) who were employed part-time (51.73%, $n = 224$).

Equivalence tests using the *TOSTER* package in R (Lakens, 2017) demonstrated that the

percentage of participants born in Canada, the percentage of unemployed participants, and time

(in years) spent in Canada were not statistically equivalent across conditions (see Appendix E).

However, equivalence tests also demonstrated that whether or not an individual was born in

Canada or whether or not an individual was unemployed were not meaningfully linked to the

study variables. Only time spent in Canada was meaningfully linked to the study variables and

thus, the analyses were re-run controlling for time spent in Canada. Notably, the results did not

substantially differ when controlling for time spent in Canada and thus, the analyses that follow

do not control for this variable, but are reported in Appendix E.

Materials

  Economic Threat Manipulation. To manipulate economic threat, all participants read a fabricated news article that documented an "unstable economic climate" (i.e., higher unemployment rates, higher tuition costs, and lower financial aid), whereby getting a good job upon graduation was "uncertain". As in Study 1, participants were also asked to write how they think they would feel if they were to experience the situation described in the article. No word or time limit was enforced.

  Manipulation Check. Participants completed the same *Threat* subscale of the *Stress Appraisal Measure* (SAM; Peacock & Wong, 1990) from Study 1 as a manipulation check for the economic threat manipulation, $\omega = .83$, 95% CI [.79, .86].

  Internal Control Manipulation. The manipulation of internal control consisted of a cover story in which participants were told they had either *low*, *moderate*, or *high* internal control over their future job prospects based on their responses to a 20-item personality questionnaire (see Table 7). They were told that their level of internal control was calculated by "matching your personality and reports of your behaviour with the demands of the job market." The personality questionnaire was inspired by the 196-item *Work Personality Index-II* (WPI-II; Macnab & Bakker, 2014), one of the most widely used personality assessments by corporations and career counsellors that help businesses seek candidates that would suit their work environment. Twenty face-valid items were developed to ensure that the survey was long enough to be perceived as credible while at the same time maintaining brevity. Some example items included: "People describe me as responsible", "I find it difficult to make decisions on my own", and "It's alright to bend the rules as long as the work gets done", to which participants indicated their responses

on a scale from 1 (*Strongly Disagree*) to 7 (*Strongly Agree*). Upon completion of the ostensible

personality questionnaire, participants were randomly assigned to one of three conditions:

In the *low* internal control condition, participants were told:

> *Based on your responses to the survey, you display low control over your future job prospects. That is, according to your responses, whether or not you will get a good job is not in your own hands.*

In the *moderate* internal control condition, participants were told:

> *Based on your responses to the survey, you display moderate control over your future job prospects. That is, according to your responses, whether or not you will get a good job is moderately in your own hands.*

In the *high* internal control condition, participants were told:

> *Based on your responses to the survey, you display high control over your future job prospects. That is, according to your responses, whether or not you will get a good job is completely in your own hands.*

In order to make the internal control manipulation appear valid, participants also received a

visualization that seemingly displayed their test score (see Appendix A).

Manipulation Check. As a manipulation check for the internal control manipulation,

participants received the following item after they received their results: "Based on the feedback

I just received, I feel that I am in control over my future job prospects", to which they answered

on a scale from 1 (*Strongly disagree*) to 7 (*Strongly agree*).

Self-Blame. Self-blame was measured via the 2-item *Self-Blame* subscale of the Brief

COPE (COPE-SB; Carver, 1997). Participants were asked to report how they would feel if they

were to experience the situation described in the article (i.e., if they had a minimum wage job

with no good job prospects upon graduation) on a scale from 1 (*Not at all)* to 7 (*Extremely*). The

items included, "I would criticize myself", and "I would blame myself for what had happened".

Psychometric analyses indicate that this scale is reliable (α = .69; Carver, 1997). The *Self-Blame*
subscale was reliable in the current experiment, ω = .68, 95% CI [.62, .75].

   Psychological Distress. Participants completed the psychological distress measure
utilized in Study 1 (POMS-SF-ADA; Shacham, 1983), ω = .97, 95% CI [.96, .97]. That is,
participants were asked to report on how they think they would feel if, after they graduated, they
could only get a minimum wage job with no good job prospects.

   Generalized Perceived Control. Participants completed the *Sense of Control Scale*
utilized in Study 1 (SCS; Lachman & Weaver, 1998a) in order to measure generalized perceived
control, ω = .82, 95% CI [.80, .85]. To ensure that the measure did not confound with the
internal control manipulation, participants completed the SCS after the internal control
manipulation but prior to the demographic questionnaire, near the end of the experiment.

   Socioeconomic Status and Demographics. Participants completed the subjective SES
measure (SSS; Goodman et al., 2001) and demographic questionnaire utilized in Study 1.

   Data Quality. As in Study 1, Marjanovic et al.'s (2014) *Conscientious Responders Scale*
(CRS) was used to detect participants who had responded randomly to the measures. Again,
participants were asked to indicate what they believed the purpose of the study was, to specify
the content of the manipulation at the end of the experiment, and if they completed the study on a
laptop or desktop computer.

Procedure

   The experiment was conducted online through *Qualtrics*. Participants were given a URL
linking to the study material. They provided their consent by clicking "I agree to participate" on
the online informed consent form. In the informed consent form, participants were told that the
purpose of the study was to examine "Feelings about the future". At the end of the experiment,

participants were fully debriefed online. Considering that deception was used in the experiment, post-debriefing consent was obtained by asking participants if their data could be retained after they learned about the nature of the study's deception.

Data Analysis Plan

In order to analyze the data, a series of pairwise *t*-tests were conducted using the R Programming language (R Core Team, 2019). The statistical assumptions of normality and homogeneity of variance were evaluated prior to conducting any null hypothesis statistical tests. If the assumptions were not met, a robust test was instead implemented (e.g., a Welch *t*-test on the ranked data; Cribbie, Wilcox, Bewell, & Keselman, 2007).

Furthermore, an ordinary least squares regression model was conducted in order to examine the differences in distress across condition after controlling for theoretically relevant variables (i.e., generalized perceived control and subjective SES). In the model, the statistical assumptions were evaluated by plotting the residuals of the model by its predicted values to check for linearity and homoscedasticity; creating a histogram of the residuals to check for normality; validating the histogram with a Shapiro-Wilk normality test (Razali & Wah, 2011); and validating the visualization of homoscedasticity by conducting a Breusch-Pagan test (Breusch & Pagan, 1979). Multicollinearity was examined by calculating variance inflation factors (VIF) for each model using the *car* package in R (Fox & Weisberg, 2019), whereby a VIF > 3 was further investigated to determine if the variable should be kept in the model. Lastly, participants were removed if they were identified as an outlier via both Cook's Distance (cut-off of [$4/(N\text{-}k)$]) and Leverage values (cut-off [$2(k+1)/N$]), where k represents the total number of predictors. In cases where there were a substantial number of outliers, the matched leverage and distance values that were most extreme were removed first. Once removed, a statistical

examination of outliers was again conducted, and data were removed until there were no more outliers identified. Missing data were removed via pairwise deletion. Following recommendations by Simmons, Nelson, and Simonsohn (2011), all measures, conditions, and data exclusions are reported.

Results

Descriptive Statistics

Descriptive statistics of the study variables and their correlations are presented in Table 8. As in Study 1, generalized perceived control was positively correlated with subjective SES. Furthermore, generalized perceived control and subjective SES were negatively related to distress, but both relationships were quite small in magnitude. Visualizations of the relationships between generalized perceived control and subjective SES with distress appeared curvilinear, with those on the high end of both generalized perceived control and subjective SES reporting greater, and not lower, levels of distress (see Figure 9). Although I did not originally hypothesize that the relationship between subjective SES and distress would be curvilinear, a regression model exploring this quadratic relationship is presented below (see section "Non-Preregistered Exploratory Analysis"). Contrary to claims by Glavin and Schieman (2014), those with high levels of generalized perceived control were more likely to report lower, and not higher, levels of self-blame (see Figure 9). Lastly, self-blame was strongly positively correlated with both threat and distress.

Manipulation Checks

Economic threat manipulation

To ensure that the economic threat manipulation induced perceptions of threat and distress, one-sample *t*-tests were conducted in order to examine if the overall means were

significantly larger than the mid-point of the scales (i.e., > 3 for threat and > 4 for distress).

Results indicated that perceptions of threat ($M = 4.18$, $SD = 0.71$) were significantly larger than

the mid-point of the threat scale, $t(421) = 33.91$, $p < .001$, 95% CI [4.11, 4.25], and the effect

was large, $d = 1.65$, 95% CI [1.50, 1.80]. In fact, 90.76% of the threat scores were above the

mid-point of the scale. One-sample t-tests also demonstrated that the group mean level of distress

($M = 4.94$, $SD = 1.34$) was significantly larger than the mid-point of the distress scale, $t(421) =$

14.42, $p < .001$, 95% CI [4.81, 5.07], but the effect was not as large, $d = 0.70$, 95% CI [0.59,

0.81], whereby 75.36% of the scores were above the mid-point of the scale. Therefore, as

demonstrated in Study 1, the economic threat manipulation was effective in generating high

levels of threat and distress, further supporting its validity as a manipulation of economic threat.

Internal control manipulation

Pairwise sample t-tests demonstrated that the internal control manipulation was effective

in causing the belief that one was in control over their job prospects (see Figure 10 and Table 9).

That is, those in the *low* internal control condition had significantly lower levels of perceived

control over their job prospects ($M = 3.67$, $SD = 1.91$) than those in the *moderate* internal control

condition ($M = 4.71$, $SD = 1.38$), $t(250.77) = -5.24$, $p < .001$, 95% CI [-1.43, -0.65], and the

effect was medium in magnitude, $d = -0.63$, 95% CI [-0.87, -0.37]. Furthermore, those in the *low*

internal control condition had significantly lower levels of perceived control over their job

prospects compared to those in the *high* internal control condition ($M = 5.46$, $SD = 1.33$),

$t(246.31) = -9.07$, $p < .001$, 95% CI [-2.18, -1.41], and the effect was large, $d = -1.09$, 95% CI [-

1.34, -0.84]. Lastly, those in the *moderate* internal control condition also had significantly lower

levels of perceived control over their job prospects than those in the *high* internal control

condition, $t(280.97) = -4.67$, $p < .001$, 95% CI [-1.07, -0.44], and the effect was medium in

magnitude, $d = -0.55$, 95% CI [-0.79, -0.32], further supporting the validity of the internal control manipulation.

Preregistered Analysis 1: Differences in Distress

In order to examine if those in the *moderate* internal control condition had the lowest levels of distress, and if those in the *low* internal control condition had the greatest levels of distress, a series of pairwise *t*-tests were conducted. Visualizing the distributions of the distress scores by condition to evaluate the assumption of normality indicated that the distributions were negatively skewed in all three conditions (see Figure 11), which was further supported by statistically significant Shapiro-Wilk tests of normality, $W_{\text{low internal control}} = 0.97$, $p = .004$; $W_{\text{moderate internal control}} = 0.95$, $p < .001$; $W_{\text{high internal control}} = 0.97$, $p = .006$. However, the data met the homogeneity of variance assumption, which was supported by non-significant Levene's tests for homogeneity of variance, $F(1, 287)_{\text{low vs. moderate}} = 0.35$, $p = .553$; $F(1, 284)_{\text{low vs. high}} = 0.19$, $p = .659$; $F(1, 289)_{\text{moderate vs. high}} = 1.05$, $p = .307$. Therefore, taking into account that all distributions were negatively skewed but had equal variances, Welch's *t*-tests on the ranked distress variable were conducted. Welch's *t*-tests on the ranked data were conducted because simulation studies suggest that Welch's *t*-test on ranked data maintains low Type I and Type II error rates when the distributions are skewed but variances are equal (Cribbie et al., 2007). Importantly, however, results with the ranked data were similar to the results obtained with the original untransformed data and thus, for ease of interpretation, only the results with the untransformed data are presented here (see Appendix F for the results with the transformed data).

Contrary to the first hypothesis and as presented in Table 9, those in the *moderate* internal control condition did not have significantly lower levels of distress ($M = 4.97$, $SD = 1.34$) than those in the *high* internal control condition ($M = 4.90$, $SD = 1.29$), $t(280.83) = 0.44$, p

= .663. In fact, those in the *moderate* internal control had distress levels that were 0.05 standard deviations greater than those in the *high* internal control condition, $d = 0.05$, 95% CI [-0.18, 0.29]. Furthermore, those in the *moderate* internal control condition did not have significantly lower levels of distress than those in the *low* internal control condition ($M = 4.95$, $SD = 1.33$), $t(282) = 0.10$, $p = .920$, $d = -0.01$, 95% CI [-0.25, 0.22]. Additionally, those in the *low* internal control condition did not have significantly greater levels of distress than those in the *high* internal control condition, $t(274.85) = 0.34$, $p = .735$, and the effect was negligible, $d = 0.04$, 95% CI [-0.20, 0.28]. Therefore, no evidence was found to support the hypothesis that during economic threat, those who have *moderate* internal control over their job prospects would experience the lowest levels of distress, or that those with *low* internal control would experience the greatest levels of distress. In other words, no evidence was found to support the causal and curvilinear relationship between internal control over one's job prospects and distress during economic threat.

Preregistered Analysis 2: Differences in Distress Controlling for Covariates

To examine the hypothesis that those in the *moderate* internal control condition would report lower levels of distress than those in the *high* internal control condition after controlling for generalized perceived control and subjective SES, a linear multiple regression model was conducted only for those in the *moderate* and *high* internal control conditions. Visualizing the distribution of the residuals suggested that the residuals were fairly negatively skewed, which was further supported by a statistically significant Shapiro-Wilk test of normality, $W = 0.98$, $p < .001$. However, the data were sufficiently homoscedastic, as indicated by plotting the residuals of the model against the predicted values of the model and by a non-significant studentized Breusch-Pagan test for homogeneity of variance, $BP(3) = 7.41$, $p = .060$. Transforming the

distress variable by squaring it sufficiently improved the normality of the residuals. However, the final results did not differ from those obtained with the original, non-transformed distress variable (see Table 10) and thus, only the results with the original, untransformed data are reported.

Outlier diagnostics suggested that there were three outliers based on distance and leverage values, and they were removed (remaining $N = 280$). Results demonstrated that, when controlling for generalized perceived control and subjective SES, those in the *high* internal control condition did not have significantly greater levels of distress than those in the *moderate* internal control condition, $b = -0.03$, $SE = 0.15$, 95% CI [-0.32, 0.27], $p = .864$, $sr^2 < .001$. Instead, generalized perceived control, $b = -0.44$, $SE = 0.08$, 95% CI [-0.60, -0.27], $p < .001$, $sr^2 = .086$, and subjective SES, $b = -0.12$, $SE = 0.05$, 95% CI [-0.22, -0.02], $p = .018$, $sr^2 = .018$, uniquely predicted lower distress (see Table 10 and Figure 12). Thus, only generalized perceived control was a strong predictor of distress, accounting for more than 8% of the variance in distress.

Preregistered Analysis 3: Self-Blame as a Mediator

Although condition did not significantly predict distress, a mediation model with 5000 bootstrap samples was conducted to examine the indirect coefficient of *high* levels of internal control over one's job prospects predicting distress through greater levels of self-blame. That is, the predictor was condition (*low* versus *high* internal control), the mediator was self-blame, the criterion variable was distress, and the covariates were generalized perceived control and subjective SES. Note that the mediation analysis differs from the pregresitered data analytic plan (https://osf.io/hvx34/), whereby a moderation analysis was instead specified. A mediation analysis, rather than a moderation analysis, is maintained as the correct analysis because the

purpose of this analysis was to look for the mechanism by which internal control may cause

distress, rather than specifying a boundary condition by which this effect occurs.

Results (see Figure 13) indicated that the indirect effect of condition on greater distress

through self-blame was small and not statistically significant, b = .033, 95% CI [-0.18, 0.11]. In

fact, those with *high* internal control were 0.07 standard deviations *less* likely to blame

themselves for not being able to get a good job in an uncertain job market compared to those

with *low* internal control. When controlling for self-blame, the effect of condition on distress was

practically null, b = 0.01, yet the confidence interval was narrow, 95% CI [-0.01, 0.03], thereby

providing evidence that the mediation model reliably captured this null effect. Therefore,

contrary to the hypotheses, there was no evidence to suggest that self-blame mediates the effect

of high internal control on greater psychological distress.

Non-Preregistered Exploratory Analysis

Visualizing the relationships between generalized perceived control and distress, as well

as subjective SES and distress, suggested that both relationships may be curvilinear (see Figure

9). Therefore, a regression model predicting distress by generalized perceived control, subjective

SES, and their quadratic terms were conducted in order to examine if their curvilinear

relationships were statistically significant and large enough to be considered meaningful. Prior to

evaluating the model, both generalized perceived control and subjective SES were mean centred.

Assumption diagnostics suggested that the residuals were slightly negatively skewed but that the

data were homoscedastic.

After removing twelve outliers based on distance and leverage values (remaining N =

411), results suggested that the quadratic relationship between subjective SES and distress was

statistically significant (see Figure 14), b = 0.06, SE = 0.02, 95% CI [0.01, 0.10], p = .009, but

the effect was small, accounting for only 1.52% of the unique variance in distress, $sr^2 = .015$.

Dividing the negative value for the linear coefficient between subjective SES and distress by 2*

the curvilinear term indicated that the 'knot', or the bend point, occurred at 0.67 units above the

mean of subjective SES (or equivalently, at a value of 6.89 out of 10). That is, the slope between

subjective SES and distress went from negative to positive at a value of 0.67 units above the

mean of subjective SES. Furthermore, the slope at one standard deviation below the mean of

subjective SES was negative, $b = -0.22$, but the slope was positive at one standard deviation

above the mean of subjective SES, $b = 0.07$. Although exploratory, these results suggest that the

relationship between subjective SES and distress may be more complicated during economic

threat.

The quadratic relationship between generalized perceived control and distress, on the

other hand, was not statistically significant, $b = 0.08$, $SE = 0.06$, 95% CI [-0.04, 0.19], $p = .197$,

$sr^2 = .004$. Instead, the linear relationship between generalized perceived control and distress was

statistically significant, $b = -0.32$, $SE = 0.07$, 95% CI [-0.46, -0.18], $p < .001$, $sr^2 = .044$.

Therefore, once again, no evidence was found to suggest that the relationship between

generalized perceived control and distress is curvilinear during economic threat.

Study 2 Discussion

The purpose of Study 2 was to examine, in a causal manner, the curvilinear relationship

between internal control over one's job prospects and distress in the context of economic threat,

whereby participants found themselves working a minimum wage job with no good job

prospects. I hypothesized that those with *low* levels of internal control would forecast higher

levels of distress than those with *moderate* or *high* levels of internal control, because those with

low levels of internal control would construe the economic stressor as normative and

unavoidable and would thus be more likely to imbue such an event with greater salience and negative affect (Glavin & Schieman, 2014). At the same time, I also hypothesized that those with *moderate* levels of internal control, rather than those with *high* levels of internal control, would forecast the lowest levels of distress when imagining oneself in a state of economic precarity. The reasoning is that, although a greater sense of internal control implies a greater sense of motivation to achieve one's goals, an excessive amount of perceived internal control assumes an almost perfect correspondence between one's actions and intended outcomes (Ross & Mirowsky, 2013). In this way, individuals with a high level of internal control should be more likely to blame themselves for their misfortunes, thereby causing more distress. Therefore, I hypothesized that those with *high* levels of internal control would forecast greater distress than those with *moderate* levels of internal control because they would be more likely to engage in self-blame.

To examine these hypotheses, a manipulation of internal control – whereby participants were provided false feedback based on a personality questionnaire – was developed and implemented. Although results suggested that the manipulation was effective in causing perceived internal control over one's job prospects, those in the *low*, *moderate*, and *high* internal control conditions did not differ in how much distress they would experience if they found themselves with no good job prospects upon graduation.

The reason that those with *low*, *moderate*, and *high* levels of internal control over one's job prospects did not differ in their levels of distress may be explained by the theoretical orientation of the internal locus of control construct. Rotter (1966) argued that the development of an internal locus of control arises from a *generalized expectancy* whereby previous experiences shape the individual's perception that rewards – or adequate employment in the context of this research – are the result of one's own behavior and/or personality, as opposed to

chance, luck, or powerful others. Furthermore, he argued that such expectancies "generalize from a specific situation to a series of situations which are perceived as related or similar" and these expectancies depend on "whether or not the person perceives a causal relationship between his own behavior and the reward" (pp. 1-2). Therefore, in order for internal control over one's job prospects to have any relevance for the youth population, one must have had similar experiences in an occupational context in order to develop a generalized expectancy that the outcome of the event would be the result of their own behaviour and/or actions. In other words, since university students are just beginning their journey into the world of employment, they may not have had the generalized expectancy whereby they felt that their future job prospects depended on their own behavior. Considering that they may not have had such a generalized expectancy, the construct was not yet relevant and thus, did not predict outcome. This is why internal control was able to be successfully manipulated, yet not related to the outcomes of interest.

In Study 2, I also examined the hypothesis that those with high levels of internal would report greater levels of distress because they would be more likely to engage in self-blame than those with low levels of internal control. However, contrary to this hypothesis, those in the *low*, *moderate*, and *high* internal control conditions did not differ in the extent to which they would blame themselves if they found themselves with no good job prospects upon graduation. On the one hand, this study was the first to empirically examine the mechanism by which high levels of perceived control may lead to greater levels of distress during economic threat (i.e., the threshold of dysfunction; Glavin & Schieman, 2014). Thus, it might be the case that self-blame is not the mechanism by which this effect occurs. The negative relationship between generalized perceived control and self-blame, rather than being a positive or a curvilinear one, sheds some doubt on self-blame as the mechanism between high perceptions of control and distress.

On the other hand, however, it might be the case that the self-blame construct, as it was measured and operationalized in Study 2, was too general to be related to the internal control construct. For instance, in the context of traumatic experiences, Janoff-Bulman (1979) found that victims of sexual assault typically engaged in two different types of self-blame: behavioural and characterological self-blame. Behavioural self-blame involves attributions of an event to one's behaviour – which is perceived as modifiable – whereas characterological self-blame is esteem related and involves attributions of blame to one's character, which is perceived as immutable. Previous research also suggests that characterological self-blame strongly and positively predicts distress, but behavioural self-blame does not (Breitenbecher, 2006; Malcarne, Compas, Epping-Jordan, & Howell, 1995; Peterson, Schwartz, & Seligman, 1981). The reasoning is that behavioural self-blame is perceived as controllable, in which avoiding a stressful encounter in the future demands a change of one's behavior (a modifiable aspect of oneself) rather than one's personality (an aspect of oneself that is more ardent). Importantly, in the manipulation of internal control, participants were told that they would receive a score of their internal control "by matching your *personality* and reports of your *behaviour* with the demands of the job market." In this way, participants could have construed their level of internal control as being influenced by either their behaviour or their personality. That is, if they perceived their internal control as being a result of their behaviour, they may have engaged in behavioural self-blame, which has found to not significantly predict distress, whereas if they perceived their internal control as a result of their personality, they may have engaged in characterological self-blame, which would have predicted greater distress. Since the measurement of self-blame in the current study did not tease apart both behavioural and characterological aspects of self-blame, it may have captured both, thereby canceling out any effects in predicting distress.

Although internal control over one's job prospects did not cause distress, generalized perceived control – i.e., feeling in control over one's life more generally – significantly and meaningfully predicted distress in Study 2. Thus, in the context of economic threat for the youth population, generalized perceived control – rather than domain specific perceptions of control – may be the more relevant variable. From the standpoint of Rotter's (1966) concept of generalized expectancy, individuals may have had reinforcements that shaped their perception that events *more generally* are the result of their behavior or personality. In fact, research suggests that generalized perceived control are highest among those under the age of 30 (Ross & Mirowsky, 2013).

On the other hand, the negative and stronger relationship between generalized perceived control and distress may be due to the multidimensional nature of the perceived control construct. Specifically, Judge, Erez, Bono, and Thoresen (2002) have argued that perceived control, self-esteem, neuroticism, and generalized self-efficacy may all be a part of a common core construct. In this way, the shared variance between generalized perceived control and distress in the current study may actually be due to self-esteem, neuroticism, or generalized self-efficacy, and not perceived control *ipso facto*. Thus, it is possible that generalized perceived control would not predict distress during economic threat above and beyond these constructs. For example, if most of the shared variance between generalized perceived control and distress was actually due to neuroticism, then it would be tautological to suggest that "emotional stability" predicts less distress. Future research should manipulate generalized perceived control during economic threat and examine its effect on distress after controlling for self-esteem, neuroticism, and generalized self-efficacy to tease apart the unique variance that generalized perceived control

shares with distress during economic threat. Only then can one be confident that generalized perceived control is the more relevant variable in predicting less distress within this context.

In an exploratory manner, I also found that the relationship between subjective SES and distress was curvilinear when individuals found themselves with no good job prospects. That is, the relationship between subjective SES and distress was at first negative but became positive slightly above the mean in subjective SES. In the context of the Great Recession of 2008, qualitative research suggested that those from a higher SES reported experiencing more concern over getting a job than those from a lower SES (Tevington, 2013). Although some have argued that economic insecurity is a salient threat because it causes individuals to fear for their economic descent (Fritsche et al., 2017), Tevington (2013) argues that this distress is instead an indication that those from a higher SES are 'privileged' to worry, wherein their distress calls to action specific behaviours and resources that would mitigate the effects of the recession (e.g., through investing, taking on unpaid internships, etc.). Thus, the curvilinear relationship between subjective SES and distress during economic threat is theoretically cogent, as the increase in predicted distress by those from a high SES may have been a signal by which they could adequately cope with the economic stressor by calling on their resources to mitigate the stressor's effects. However, it is important to note that this finding was not hypothesized *a priori,* and future research should scientifically investigate this potential curvilinear relationship and the mechanism by which it occurs (e.g., status anxiety or a way of coping).

General Discussion

Across two studies, the purpose of the current program of research was to examine the causal and curvilinear relationship between perceptions of control (both generalized and internal control over one's job prospects) and distress when individuals found themselves

working a minimum wage job with no good job prospects upon graduation. Additionally, I also examined if self-blame was the mechanism by which high levels of internal control may lead to greater levels of distress. Both studies utilized an experimental paradigm whereby participants read an ostensibly true article depicting an unstable economic future, whereby getting a good job upon graduation was "uncertain". Furthermore, both studies examined the relationship between internal control over one's job prospects and distress via both self-report and experimental methods in order to more cogently examine the causal relationship between the two variables. Participants in both studies were predominantly female, first year undergraduate students who were employed part-time. Additionally, approximately one-third of the samples were international students, most of whom were born in Asia.

Initially, it was hypothesized that, although both generalized perceived control and internal control over one's job prospects would be curvilinearly related to distress, internal control over one's job prospects would be the better predictor. In both studies, however, neither generalized perceived control nor internal control over one's job prospects were curvilinearly related to distress. Instead, generalized perceived control was a much stronger linear predictor in both studies. Additionally, I hypothesized that self-blame would mediate the effect of internal control on greater distress, but only for those with high internal control. That is, I hypothesized that the relationship between internal control over one's job prospects and distress would be curvilinear because individuals with high levels of perceived control would be more likely to blame themselves for not being able to secure adequate employment. However, results indicated that those with *low*, *moderate*, and *high* internal control over their job prospects did not differ in their levels of self-blame, and thus, self-blame did not mediate the effect of high internal control on greater psychological distress. Furthermore, those with

high levels of generalized perceived control were not more likely to engage in self-blame than those with low levels of generalized perceived control. These results shed light onto the salience of economic threat for the youth population, the theoretical nature of generalized versus domain specific perceptions of control, and the mechanism by which the relationship between perceived control and distress may or may not be curvilinear.

The Salience of Economic Threat

In two studies, I manipulated economic threat by having participants read a fabricated news article that documented an "unstable economic climate" (i.e., higher unemployment rates, higher tuition costs, and lower financial aid), whereby getting a good job upon graduation was "uncertain". Furthermore, participants were asked to imagine and reflect on how they would feel if, upon graduation, they could only get a minimum wage job that was outside of their field of interest, with no good job prospects. In both studies, results suggested that participants found this experience to be extremely distressing, whereby perceptions of distress were more than three standard deviations higher when compared to those who instead imagined an economic neutral scenario (i.e., a tour of the Canadian Mint), and perceptions of threat were more than one and a half standard deviations higher than the mid-point of the measurement of the threat construct. Qualitative responses demonstrated that many individuals forecasted feeling hopeless, with some stating that life would not be worth living if they found themselves in such a circumstance – an alarming fact considering that many of recent graduates in North America are suffering from such economic precarity (Vedder et al., 2013).

A counterargument from the affective forecasting literature, however, is that although people are fairly accurate in predicting the types of emotions they will feel in the future, they are generally poor at predicting the intensity and duration of their future feelings (Wilson & Gilbert,

2005). Thus, one could argue that, although participants were correct to predict that they would feel anxious, depressed, and angry if they could not secure adequate employment upon graduation, they may have overestimated how severe such emotions would be, which may explain why the distributions of distress were substantially negatively skewed in both studies. In this way, future research should examine the experience of economic threat for recent graduates who are currently on the job market, in order to get an accurate estimate of how severe their levels of anxiety, depression, and anger actually are.

On the other hand, qualitative research indicates that recent graduates are extremely fearful for their economic futures, and many believe that the greatest challenge they faced since graduating has been finding a decent job (Aronson et al., 2015) and thus, the anxiety, depression, and anger that participants forecasted in the current program of research may not be substantially more severe than the actual emotions experienced by those on the job market (Aronson, 2017b). In fact, one of the most salient resources that are threatened during difficult economic times is the need for self-determination (Blustein, 2008; Ryan & Deci, 2000), the feeling that one is authoring the direction of one's own life, fulfilled through a sense of autonomy, competence, and relatedness and achieved through intrinsically motivated action (Ryan & Deci, 2000). For instance, in one study, participants who experienced economic threat felt less competent and less autonomous than controls (Dupuis & Newby-Clark, 2016). Thus, in this way, the fear of being underemployed may also be a threat to one's need for self-determination, and thus, the severity of the emotions reported may reflect the intensity of negative affect experiences by those on the job market. Future research should examine the extent to which economic threat reduces one's need for self-determination, in order to investigate the reasons why economic threat is such a salient stressor.

Generalized Perceived Control versus Domain Specific Perceived Control

A major purpose of the current program of research was to compare generalized perceived control with domain specific perceptions of control (i.e., internal control over one's job prospects) in their ability to predict distress when one's job prospects were threatened. However, generalized perceived control predicted distress better than internal control over one's job prospects both when internal control over one's job prospects was measured via self-report (Study 1) and when experimentally manipulated (Study 2). In this way, generalized perceived control may be the more relevant variable in predicting distress during economic threat for the youth population. According to the transactional theory of stress and coping, every stressful encounter is unique and contextually dependent and thus, one's appraisal that an event is controllable is also context dependent (Folkman, 1984; Folkman & Lazarus, 1988). Therefore, according to this theory, individuals should have drawn on their perception of internal control that is directly tied to the economic stressor (e.g., internal control over getting a good job), rather than a generalized perception of control over their life (Folkman, 1984) simply because it is the more relevant variable in meeting the demands of the stressful encounter. However, the current program of research suggests that this was not the case in the context of economic threat for the youth population.

According to Rotter (1966), in order for an individual to develop an internal locus of control, the individual must have had similar experiences in an occupational context in order to develop a generalized expectancy that the outcome of the event would be the result of their own behaviour and/or actions. Therefore, since university students are just beginning their journey into world of employment, they may not have had the generalized expectancy whereby they felt that their future job prospects depended on their own behavior. Considering that they may not

have had such a generalized expectancy, the construct was not yet relevant and thus, did not predict outcome when measured via self-report (Study 1) or when experimentally manipulated (Study 2).

Another reason that generalized perceived control was the better predictor is because internal control over one's job prospects may be a mediator, and not a moderator, in predicting relevant outcomes. For instance, in one study, perceived control over one's current job mediated the effect of job insecurity on lower job satisfaction, lower organizational commitment, and greater psychological distress (Elst et al., 2011). Interestingly, in Study 1, the loss of internal control over one's job prospects when one's job prospects were threatened predicted lower, and not greater, distress, but the effect was very small. That is, the relationship between internal control over one's job prospects and distress was slightly positive during economic threat. However, when internal control was manipulated in Study 2, there was no causal relationship between internal control and distress. Thus, economic threat may reduce perceptions of internal control over one's job prospects, but it might not be related to distress. Future research should examine the extent to which the loss of internal control over one's job prospects during economic threat predicts other social phenomena.

One potential motivational consequence of the loss of control during economic threat is a willingness to engage in collective action. For instance, in response to high levels of economic threat, students across Ontario walked out of their classrooms on March 20th, 2019 to demonstrate that they will not "tolerate [the government's] attacks on students" (Rocca, 2019, March 20). Based on social identity theory (Tajfel & Turner, 1979) and self-categorization (Turner et al., 1987), in which groups shape individual psychology through their capacity to be internalized into a person's sense of self (Greenaway et al., 2015), the model of group-based

control assumes that people think or act in terms of group membership as an attempt to restore or maintain a sense of perceived control when one's sense of perceived control is threatened (see Fritsche & Jugert, 2017; Fritsche et al., 2013; Fritsche, Jonas, & Kessler, 2011). Therefore, future research should examine the extent to which perceived control over one's job prospects predicts collective action intentions for the youth population during economic threat.

Generalized Perceived Control: The More Relevant Variable?

Why then, did generalized perceived control predict distress better than internal control over one's job prospects in both studies? Firstly, generalized perceived control may actually be the more relevant variable for youth undergoing economic threat. From the standpoint of Rotter's (1966) concept of generalized expectancy, individuals may have had reinforcements that shaped their perception that events *more generally* are the result of their behavior or personality and thus, the overall perception of control over one's life was already a formidable perception for the youth population. Furthermore, in the West, perceptions of control over one's life is a socially desirable construct because such perceptions function to create a more positive outlook, or optimism, towards one's life (Glavin & Schieman, 2014) and they serve to maintain the perception that social class boundaries are permeable (Kraus & Tan, 2015), whereby one could move up the social ladder if they work hard enough (Shane & Heckhausen, 2013). Sociological and psychological research suggests that there has been a substantial increase in socioeconomic and educational aspirations in high school students, which have bordered on "too ambitious" and "unrealistic" (Baird, Burge, & Reynolds, 2008). In one longitudinal survey, Reynolds et al. (2006) found that between the years 1976 and 2000, the gap between high school seniors expecting to obtain a professional job by those who actually work in professional jobs by the age of 30 increased from 32% in 1976 to 51% in 2000. In another longitudinal survey spanning three

generations of family members (i.e., grandparents, parents, and adolescents), Mortimer, Mont'Alvao, and Aronson (2019) found that third generation individuals (i.e., the adolescents) had higher socioeconomic aspirations and life course optimism than their parents did when they were the same age. Experimental evidence also suggests that university students believe that they will achieve a higher socioeconomic status than their parents, and that Americans tend to overestimate their social class mobility, especially those that are younger (Kraus & Tan, 2011). Thus, in this way, perceptions of control over one's life fit the social mold of being able to maintain the ideal that one can move up the social ladder by getting an education and thus, perceived control over one's life supports the goal of getting an education and achieving success (Aronson, 2017a).

The Threshold of Dysfunction and Self-Blame as a Mediator

The current program of research also sought to examine if the relationship between perceived control (both generalized and internal control over one's job prospects) and distress were curvilinear when one's job prospects were threatened. Previous research with adults suggests that, during times of economic insecurity – such as job insecurity (Glavin & Schieman, 2014) and unemployment (Heidemeier & Göritz, 2013 – higher levels of generalized perceived control predict greater, and not lower, distress. Wheaton (1985) describes the "threshold of dysfunction" as the optimum level of perceived control to achieve the lowest levels of distress, whereby extremely high levels of perceived control may become problematic because they are then "applied even in situations which obviously do not suggest control is possible" (as cited in Schieman et al., 2018, p. 124), thereby leading to "self-blame for failure to affect adverse circumstances that are beyond individual control" (Bierman & Kelty, 2014, p. 31). In this way, moderate levels of perceived control may be beneficial because they permit a balance of

optimism and realism, while at the same time, enabling individuals to engage in active, problem-focused coping and less catastrophizing (Schieman et al., 2018). In Studies 1 and 2, however, results suggested that the relationships between perceived control (both generalized and internal control over one's job prospects) were not curvilinearly related to distress. Furthermore, in Study 2, generalized perceived control was negatively related to self-blame, and internal control over one's job prospects was unrelated to self-blame.

As previously mentioned, the reason a quadratic relationship between internal control over one's job prospects and distress were not observed may be due to the theoretical nature of the internal control construct, whereby a generalized expectancy may have not been developed for participants to find relevance in the construct. However, the reason that generalized perceived control did not have a curvilinear relationship with distress may be due to low statistical power. Specifically, Glavin and Schieman (2014) report that the curvilinear relationship between perceived control and distress is $b = .16$, or equivalently, $f^2 = .01$. Therefore, in Study 1 (Model 3), I only had 19.20% power to detect this effect, and only 25.80% power to detect this effect in Study 2. Although an effect size of $f^2 = .01$ is very small, I maintain that this effect size is meaningful when considering the psychological and social consequences of increased distress (e.g., suicide/suicidal ideation and increased health care costs). Therefore, future research should examine this curvilinear relationship in the youth population with an adequate sample size, which may require cross-lab collaborations. Furthermore, it might be the case that the self-blame construct, as it was measured and operationalized in Study 2, was too general to be related to the perceived control constructs. That is, the relationship between perceptions of control and distress may not be quadratic simply because individuals with high control would be more likely to engage in "self-blame for failure to affect adverse circumstances that are beyond individual

control" (Bierman & Kelty, 2014, p. 31). Instead, it might be the case that the type of self-blame – that is, behavioural or characterological self-blame (Janoff-Bulman, 1979) – moderates the effect of high internal control on high distress. In this way, one would expect that high perceptions of control predicts greater levels of distress for those who engage in high levels of characterological, but not behavioural, self-blame. Future research should investigate how the type of self-blame may explain the potential curvilinear relationship between perceptions of control and distress during economic threat.

Limitations

In both Studies 1 and 2, participants were asked to imagine how they thought they would feel if, upon graduation, they could only secure a minimum wage job with no good job prospects. Furthermore, the measurement of distress was framed in terms of how participants thought they would feel if they were in that situation. Thus, the current program of research may not be ecologically valid for depicting what the experience of economic threat is actually like for the youth population. In this way, future research should examine the relationship between perceptions of control and relevant outcomes for those who recently graduated and are currently on the job market.

Studies 1 and 2 are also limited in their generalizability across the youth population. Specifically, approximately a third of the sample in both Studies 1 and 2 were international students, most of whom were born in Asia. Importantly, Yamaguchi and Sawaumi (2019) argue that, although both Westerners and Easterners are highly motivated to feel in control over their environments, they do so for different reasons. Specifically, Westerners prefer to control their environment so that they could feel autonomous, whereas Easterners prefer to control their environment in order to maintain personal harmony. Therefore, in the case of economic threat,

not being able to secure adequate employment upon graduation may have been more distressing

for Westerners because employment fulfills the need for self-determination and thus, one's need

for autonomy. On the other hand, Easterners may have felt less distress when imagining

themselves in the same scenario because they may have felt that many other students were in a

similar situation, whereby personal harmony was still able to be maintained. Thus, future

research should examine the extent to which a threat to one's future job prospects threatens

autonomy but not personal harmony, and how culture moderates the effect of control motivations

on greater or less distress.

Conclusions

> In a global economy where the most valuable skill you can sell is your knowledge, a
> good education is no longer just a pathway to opportunity – it is a pre-requisite.

– Barack Obama, Address to Joint Session of Congress, 2009

Since the advent of the Great Recession of 2008, the youth population have been at a

great disadvantage, with youth unemployment rates double that of the national average (Bernard,

2018). In an effort to avoid unemployment, many young people have attended university in an

effort to get a 'good job' (Aronson, 2017a), but are finding that, upon graduation, they are

overqualified and underutilized in the employment they could obtain (Fogg & Harrington, 2011).

Paradoxically, Barack Obama, 44th President of the United States, sought to use education as a

means of combating youth unemployment and, in his 2009 *Address*, argued that newly

established "education policies will open the doors of opportunity for our children" and that "by

2020, America will once again have the highest proportion of college graduates in the world"

(Obama, 2009, paras. 66-68). What he failed to consider, however, was that the supply of young

adults with a postsecondary education already exceeded the demand of jobs that required one.

Specifically, only half of college graduates in 2010 were in occupations that required a

bachelor's degree; in fact, there were 13 million more working college graduates than jobs demanding a college degree (Vedder, et al., 2013). Considering that many college-educated youths experience a mismatch between their education and their socioeconomic aspirations (Reynolds et al., 2006), I sought to empirically investigate the personality factors that may serve a protective role in predicting and reducing distress within this context.

This research extends previous research by being one of the first to empirically investigate the distress experienced by the youth population in an uncertain job market (by which there are only five papers: Aronson, 2017a; Aronson, 2017b; Aronson et al., 2015; Chiacchia et al., 2018; Tevington, 2013) as well as one of the first to examine personality and cognitive factors that may serve a protective role. Theoretically, this research applies stress and coping theory within an economic framework and finds that generalized perceived control, and not domain specific perceptions of control, are a stronger predictor of distress during economic threat. Furthermore, the current program of research was the first to empirically examine if self-blame was the mechanism by which high levels of perceived control lead to greater levels of distress during economic precarity, thereby refining the threshold of dysfunction by beginning to disentangle why the relationship may be curvilinear.

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Tables

Table 1. *Study 1 Demographic Characteristics of the Total Sample (*N *= 303)*

	n	*%*	*M*	*SD*
Age			19.73	3.95
Gender				
Female	225	74.26		
Male	74	24.42		
Gender diverse	0	0		
Born in Canada				
Yes	202	66.67		
No	97	32.01		
Time spent in Canada			9.77	7.72
Place of birth				
USA	3	3.13		
Europe	7	7.29		
Caribbean	3	3.13		
South America	7	7.29		
Africa	8	8.33		
Asia	67	69.49		
Oceania	1	1.04		
Pacific Islands	0	0		
Year of study				
First	171	56.44		
Second	83	27.39		
Third	22	7.26		
Fourth +	23	7.59		
Employment Status				
Full-time	4	1.32		
Part-time	162	53.47		
Unemployed	123	40.59		
Other	10	3.30		

Note. "Time spent in Canada" and "Place of birth" were only displayed to participants who indicated that they were not born in Canada. The numbers do not add up to 100% due to missing data from four participants.

Table 2. *Study 1 Correlation Matrix and Descriptive Statistics of Study Variables for the Total Sample (N = 303)*

		M	*SD*	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
1.	Internal Control	5.31	0.91	**.68**									
2.	Control by Chance	3.98	1.12	.01	**.61**								
3.	Control by Connections	5.26	1.25	-.02	.38***	**.85**							
4.	Control by Others	3.77	1.12	-.09	.27***	.32***	**.72**						
5.	General Control	4.78	0.88	.30***	-.07	-.08	-.28***	**.82**					
6.	Subjective SES	6.28	1.62	.16**	.11†	-.05	-.10†	.30***	--				
7.	Anxiety	3.94	2.09	-.17**	.10†	.16**	.04	-.18**	-.11†	**.97**			
8.	Depression	3.49	2.11	-.20***	.09	.18**	.09	-.23***	-.14*	.91***	**.97**		
9.	Anger	3.36	2.11	-.17**	.13*	.19***	.11†	-.16**	-.09	.88***	.94***	**.98**	
10.	Total Distress	3.60	2.04	-.19**	.11*	.18**	.08	-.20***	-.12*	.96***	.98***	.97***	**.99**

Note. Omega coefficients are on the diagonal in bold. Pearson correlations are displayed below the omega coefficients.

†*p* < .10, * *p* < .05, ** *p* < .01, *** *p* < .001

Table 3. *Manipulation Checks in Study 1*

	Economic threat (*n* = 164)		No threat (*n* = 137)		*t*	*df*	95% CI	*d*	95% CI of *d*
	M	*SD*	*M*	*SD*					
Threat	4.26	0.76	1.48	0.58	36.01***	300.20	[2.62, 2.92]	4.05	[3.66, 4.45]
Anxiety	5.41	1.32	2.10	1.26	22.12***	288.13	[3.02, 3.61]	2.56	[2.25, 2.87]
Depression	5.05	1.41	1.55	0.83	26.76***	274.77	[3.24, 3.76]	2.95	[2.62, 3.28]
Anger	4.88	1.50	1.46	0.82	24.98***	264.83	[3.15, 3.69]	2.73	[2.42, 3.06]
Total Distress	5.11	1.31	1.70	0.86	27.03***	285.73	[3.16, 3.66]	3.01	[2.67, 3.34]

Note: *M* = mean, *SD* = standard deviation, *CI* = confidence interval, *d* = Cohen's *d*. All variables range from 1 to 7.

***$p < .001$.

Table 4. *Regression Models Predicting Distress in Study 1*

Predictors	Model 1 (N = 286)			Model 2 (N = 277)			Model 3 (N = 285)		
	b	*SE*	95% CI	*b*	*SE*	95% CI	*b*	*SE*	95% CI
Condition	3.37	5.92	-8.29, 15.03	3.34***	0.18	2.99, 3.70	3.26***	0.14	2.89, 3.62
Internal Control	-0.34	1.99	-4.27, 3.58	-0.11	0.16	-0.42, 0.20	-0.08	0.16	-0.40, 0.23
Internal Control^2	-0.02	0.18	-0.33, 0.38	0.33†	0.14	-0.04, 0.71	0.29	0.18	-0.06, 0.64
Condition * Internal Control	-0.04	2.21	-4.39, 4.30	0.36†	0.20	-0.02, 0.75	0.23	0.20	-0.16, 0.63
Condition * Internal Control^2	0.01	0.20	-0.39, 0.41	0.21	0.21	-0.62, 0.20	-0.15	0.20	-0.54, 0.25
General Control				-0.39**	0.04	-0.65, -0.12	-0.30*	0.12	-0.54, -0.06
General Control^2				-0.01	0.12	-0.25, 0.24	-0.05	0.11	-0.27, 0.16
Condition * General Control				-0.16	0.18	-0.51, 0.19	-0.08	0.16	-0.39, 0.24
Condition * General Control^2				0.06	0.16	-0.26, 0.38	0.21	0.15	-0.08, 0.50
Control by Chance							0.01	0.07	-0.13, 0.16
Control by Connections							0.10†	0.06	-0.01, 0.21
Control by Others							-0.04	0.06	-0.17, 0.09
Subjective SES							-0.03	0.04	-0.11, 0.06

Note. b represents the unstandardized regression coefficient. Condition is a categorical variable, dummy coded as 0 = *no threat* and 1 = *threat*. All variables range from 1 to 7, except for subjective SES, which ranges from 1 to 10.

†*p* < .10, * *p* < .05, **, *p* < .01, ***p* < .001

Table 5. *Study 1 Group Differences in Perceived Control Variables*

	Economic threat (*n* = 164)		No threat (*n* = 137)						
	M	*SD*	*M*	*SD*	*t*	*df*	95% CI	*d*	95% CI of *d*
Internal Control	5.13	0.98	5.54	0.75	-4.07***	300.02	[-0.60, -0.21]	-0.46	[-0.69, -0.23]
Control by Connections	5.39	1.22	5.10	1.28	1.98*	281.99	[0.00, 0.57]	0.23	[0.00, 0.46]
Control by Chance	3.88	0.94	3.75	1.01	1.12	279.05	[-0.35, 0.10]	0.13	[-0.36, 0.10]
Control by Others	3.79	1.11	3.75	1.14	0.35	285.46	[-0.30, 0.21]	0.04	[-0.27, 0.19]
General Control	4.73	0.87	4.84	0.88	-1.09	281.85	[-0.09, 0.31]	-0.13	[-0.10, 0.36]

Note: M = mean, *SD* = standard deviation, *CI* = confidence interval, *d* = Cohen's *d*. All variables range from 1 to 7.

* *p* < .05, ****p* < .001.

Table 6. *Study 2 Demographic Characteristics of the Total Sample (N = 422)*

	n	%	M	SD
Age			20.09	3.69
Gender				
Female	334	77.14		
Male	88	20.32		
Gender diverse	0	0		
Born in Canada				
Yes	261	60.28		
No	171	39.49		
Time spent in Canada			8.58	6.60
Place of birth				
USA	6	3.51		
Europe	8	4.68		
Caribbean	5	2.92		
South America	10	5.85		
Africa	14	8.19		
Asia	127	74.27		
Oceania	1	0.58		
Pacific Islands	0	0		
Year of study				
First	236	54.50		
Second	112	25.87		
Third	59	13.63		
Fourth +	24	5.54		
Employment Status				
Full-time	11	2.54		
Part-time	224	51.73		
Unemployed	184	42.49		
Other	13	3.00		

Note. "Time spent in Canada" and "Place of birth" were only displayed to participants who indicated that they were not born in Canada. The numbers do not add up to 100% due to missing data.

Table 7. *Internal Control Manipulation in Study 2*

Instructions:

In examining your feelings about the future, we would now like to turn your attention toward your future job prospects. Based on your responses to these questions, you will receive a calculated score that tells you how much control you display with regard to your future job prospects. That is, whether or not getting a good job is in your hands. We do this by matching your personality and reports of your behaviour with the demands of the job market.

Strongly Disagree	Somewhat Disagree	Disagree a little	Neither agree nor disagree	Agree a little	Somewhat Agree	Strongly Agree
1	2	3	4	5	6	7

1. People describe me as responsible.

2. I am socially confident.

3. I can be relied on to fulfill my obligations.

4. I always see the task through till the end.

5. I like to develop detailed plans for the task at hand.

6. I would volunteer to do things that would not be part of my job description.

7. People describe me as persistent.

8. I would rather complete an entire project each day than complete parts of several projects.

9. People describe me as proactive.

10. I respect team decisions even when I disagree with them.

11. I prefer to set goals that are easily achievable.

12. I always complete a task once I start it.

13. I sometimes need a push to get started.

14. I find it difficult to make decisions on my own.

15. I work hard to get ahead.

16. I sometimes leave work unfinished.

17. I am not particularly motivated by new challenges.

18. It's alright to bend the rules as long as the work gets done.

19. I prefer others to take the initiative.

20. I am able to remain relaxed even under extreme pressure.

Table 8. *Study 2 Correlation Matrix and Descriptive Statistics of Study Variables for the Total Sample (N = 422)*

	M	SD	1.	2.	3.	4.	5.	6.	7.	8.
1. General Control	4.86	0.92	**.82**							
2. Subjective SES	6.22	1.55	.22***	--						
3. Self-Blame	4.58	1.64	-.27***	-.16**	**.68**					
4. Threat	4.18	0.71	-.12*	-.14**	.40***	**.83**				
5. Anxiety	5.33	1.37	-.17***	-.13*	.69***	.56***	**.92**			
6. Depression	4.81	1.49	-.29***	-.14**	.79***	.52***	.83***	**.93**		
7. Anger	4.69	1.42	-.19**	-.11*	.80***	.52***	.80**	.85***	**.90**	
8. Total Distress	4.94	1.34	-.23***	-.13**	.81***	.56***	.93***	.95***	.94***	**.97**

Note. Omega coefficients are on the diagonal in bold. Pearson correlations are displayed below the omega coefficients.

* *p* < .05, ** *p* < .01, *** *p* < .001

Table 9. *Differences in Study Variables Across Condition in Study 2*

	Low Control (n = 139)		Moderate Control (n = 145)		High Control (n = 138)		Cohen's d		
	M	*SD*	*M*	*SD*	*M*	*SD*	**L** vs. **M**	**M** vs. **H**	**L** vs. **H**
Internal Control Manipulation Check	3.67	1.91	4.71	1.38	5.46	1.33	-0.63	-0.55	-1.09
Anxiety	5.30	1.35	5.32	1.43	5.36	1.34	-0.01	-0.03	-0.05
Depression	4.82	1.50	4.86	1.53	4.74	1.44	-0.03	-0.08	0.05
Anger	4.74	1.40	4.73	1.46	4.60	1.40	0.01	0.09	0.10
Distress	4.95	1.33	4.97	1.34	4.90	1.29	-0.01	0.05	0.04
Self-Blame	4.67	1.64	4.61	1.64	4.46	1.64	-0.04	0.09	0.13

Note. All of the displayed variables range from 1 to 7. L = Low Control, M = Moderate Control, and H = High Control.

Table 10. *Regression Model Predicting Distress in Study 2*

Predictors	Regular Data (N = 280)			Transformed Data (N = 279)		
	b	*SE*	95% CI	*b*	*SE*	95% CI
Condition	-0.03	0.15	-0.32, 0.27	-0.71	1.40	-3.46, 2.04
General Control	-0.44***	0.08	-0.60, -0.27	-3.97***	0.80	-5.54, -2.40
Subjective SES	-0.12*	0.05	-0.22, -0.02	-1.19*	0.47	-2.12, -0.26

Note. b represents the unstandardized regression coefficient. Condition is a categorical variable with two conditions: *moderate* internal control (dummy coded 0) and *high* internal control (dummy coded 1). Generalized perceived control ranges from 1 to 7 and subjective SES ranges from 1 to 10. For the transformed data, the criterion variable is in squared units.

* $p < .05$, *** $p < .001$

Figures
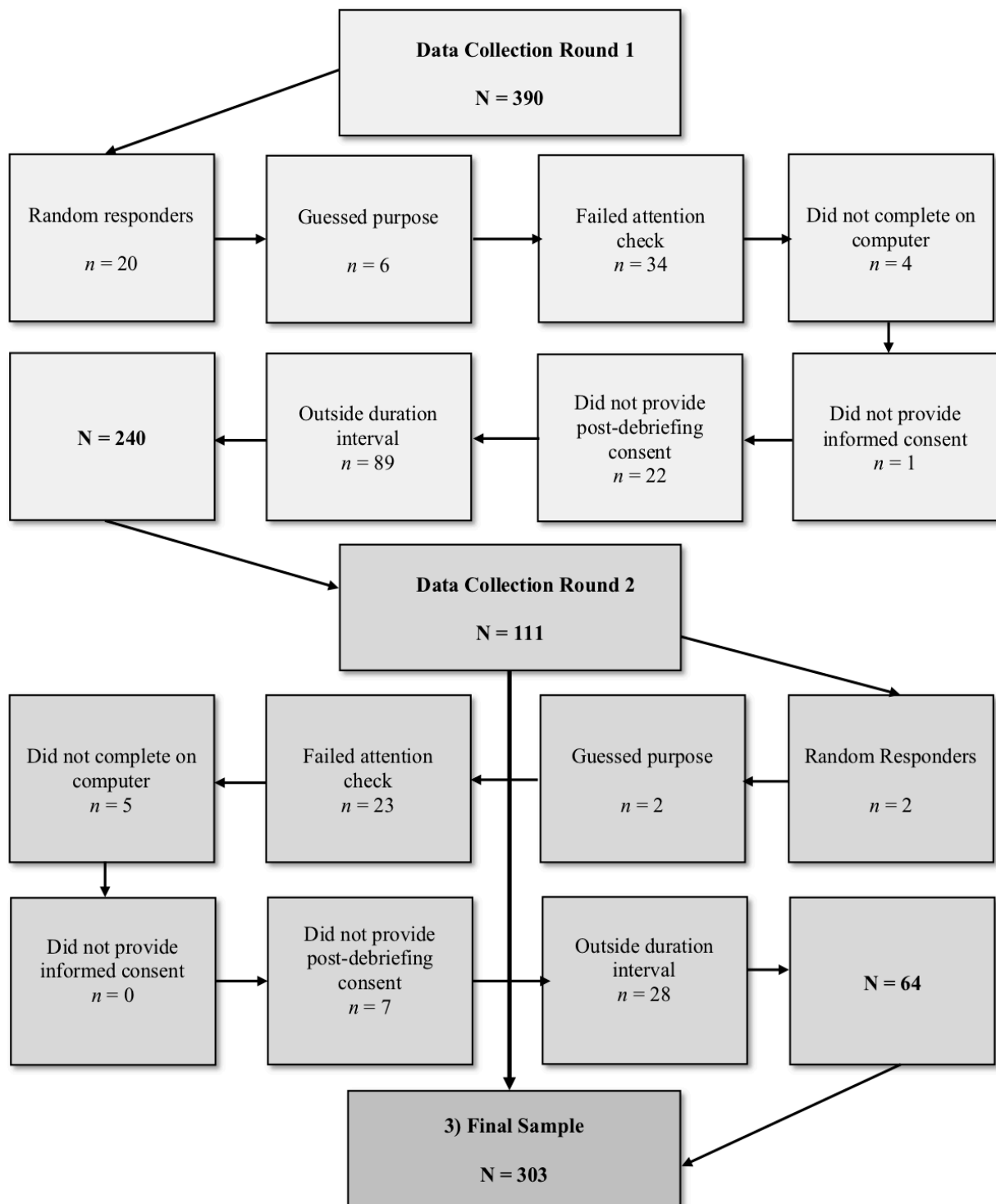
Figure 1. Participant recruitment and data deletion in Study 1.
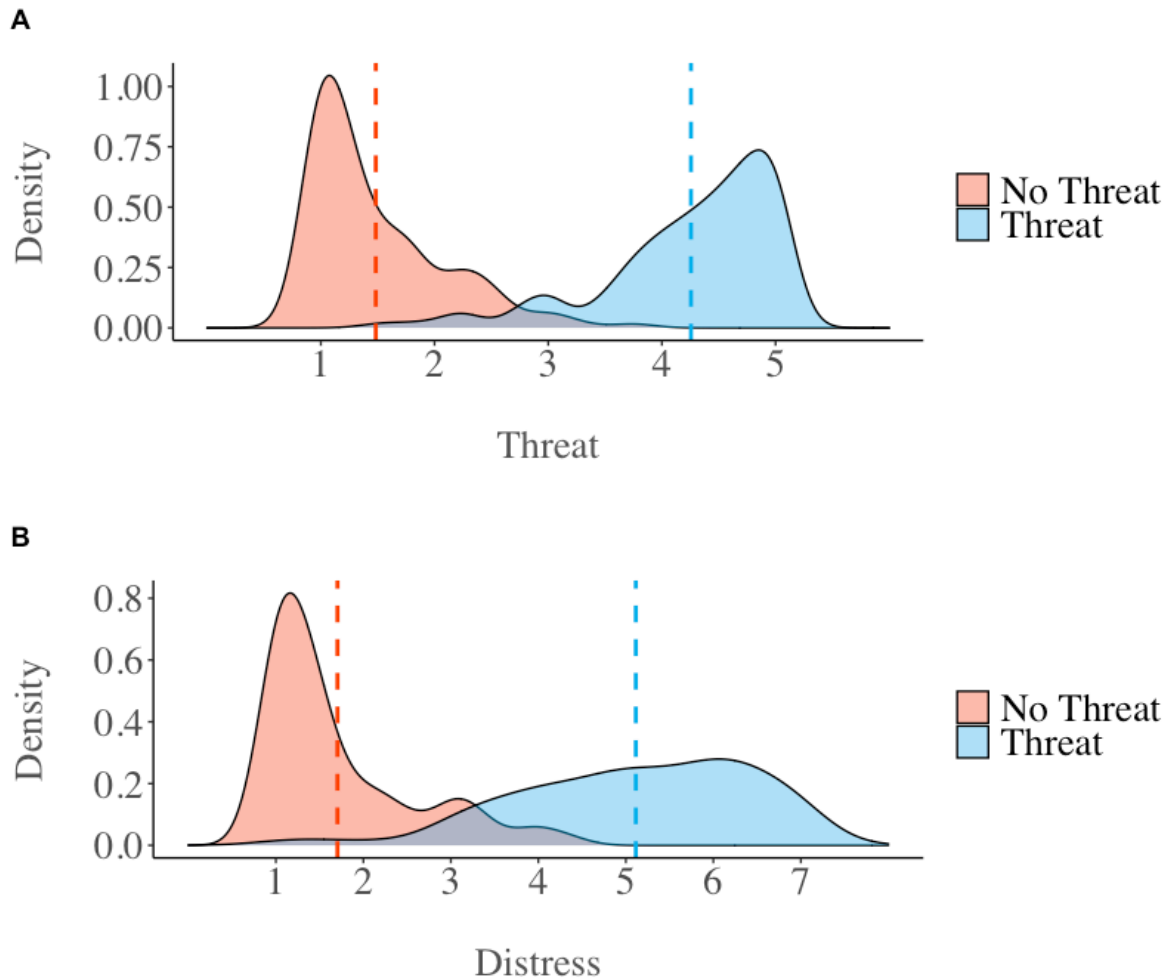
Figure 2. Density plots of threat (A) and distress (B) by condition in Study 1. *Note. Economic threat* condition in blue and *no threat* condition in red. Vertical dotted lines display the mean of threat/distress for each condition (blue for *threat*, red for *no threat)*. Threat ranges from 1 to 5 and distress ranges from 1 to 7. Demonstrated here is that the economic threat manipulation produced very high levels of threat and distress, resulting in quite extreme negative skew.

A

Economic Threat (N = 154)

Distress

Internal Control Over Job Prospects

B

No Threat (N = 132)

Distress

Internal Control Over Job Prospects
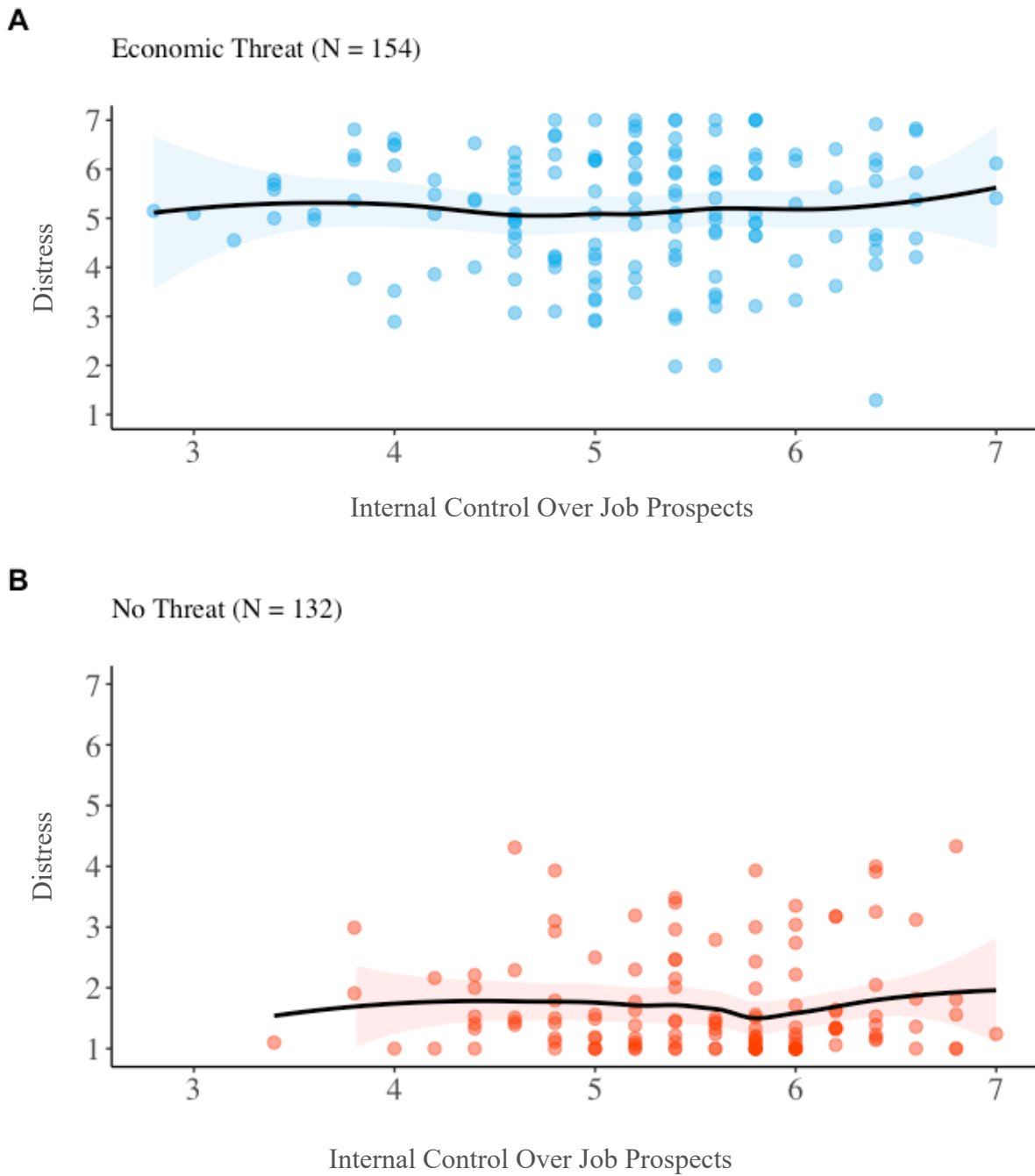
Figure 3. Scatterplots with loess curves of the relationship between internal control over one's job prospects and distress in (A) the *threat* condition, $r =$-0.001, $p = .999$ and (B) the *no threat* condition, $r = 0.01$, $p = .881$ in Study 1. Both displayed variables range from 1 to 7.
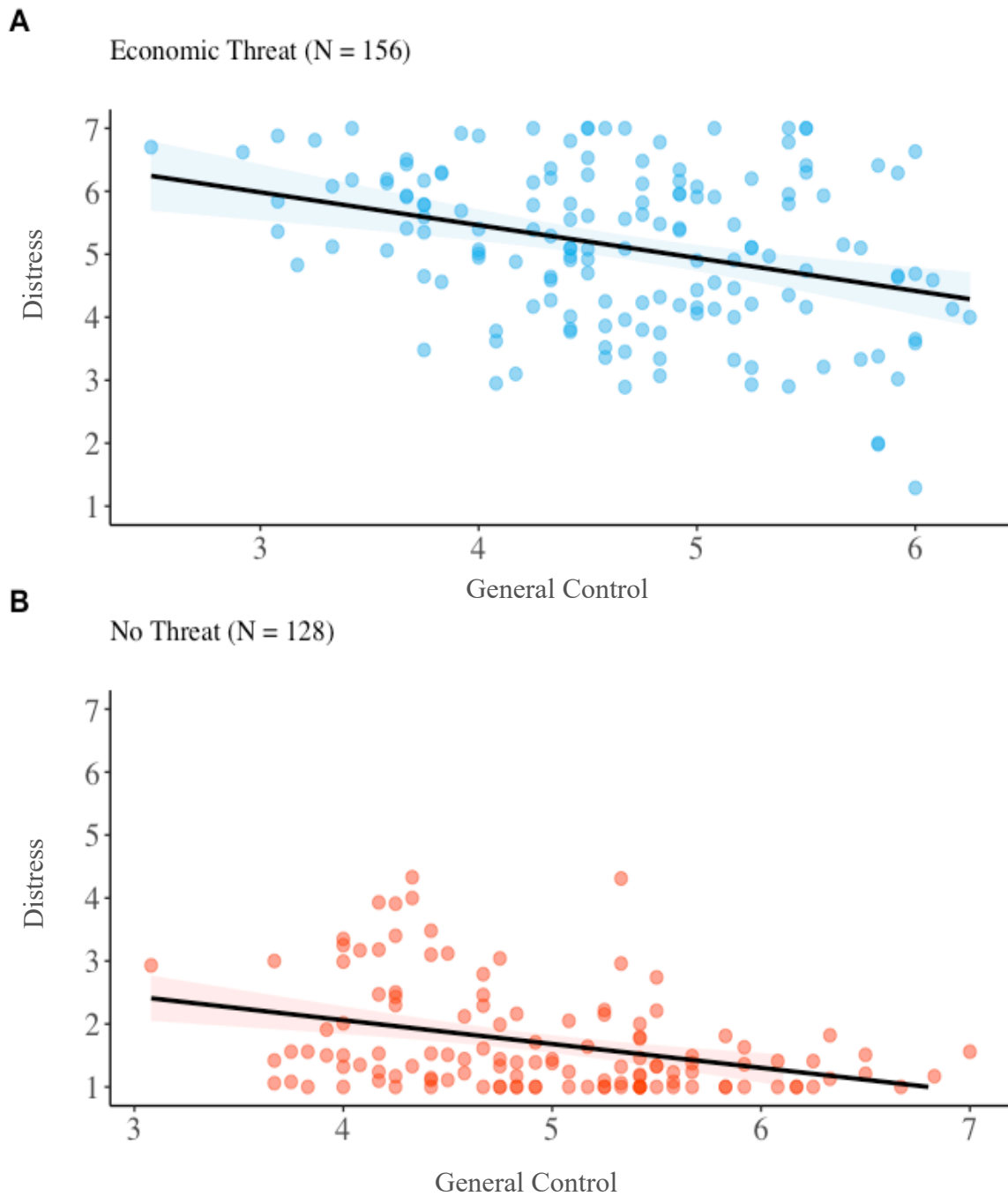
Figure 4. Scatterplots with slopes of generalized perceived control predicting distress in (A) the *threat* condition, $r = -0.33$, $p < .001$ and (B) the *no threat* condition, $r = -0.36$, $p < .001$ in Study 1. Both displayed variables range from 1 to 7.
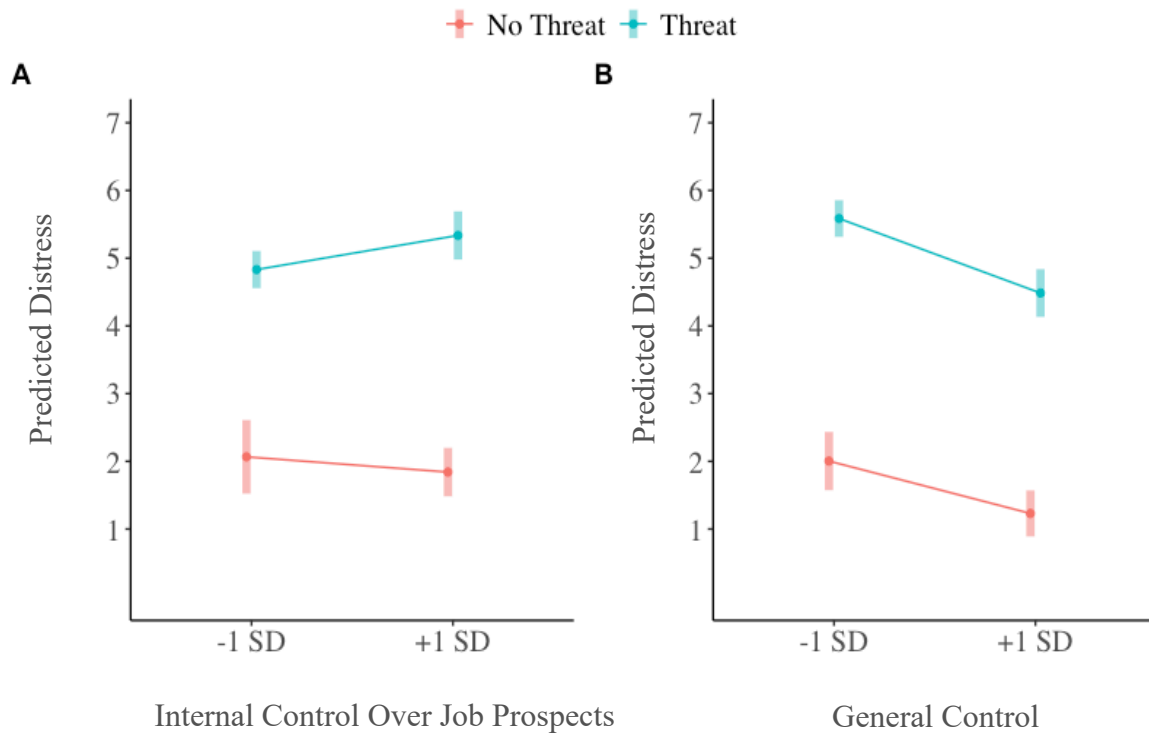
Figure 5. Non-significant interaction (Model 2) between (A) condition and internal control over one's job prospects predicting distress and non-significant interaction between (B) condition and generalized perceived control predicting distress in Study 1. *Note*. Predicted distress ranges from 1 to 7. The band around the point estimates represent the 95% confidence interval.
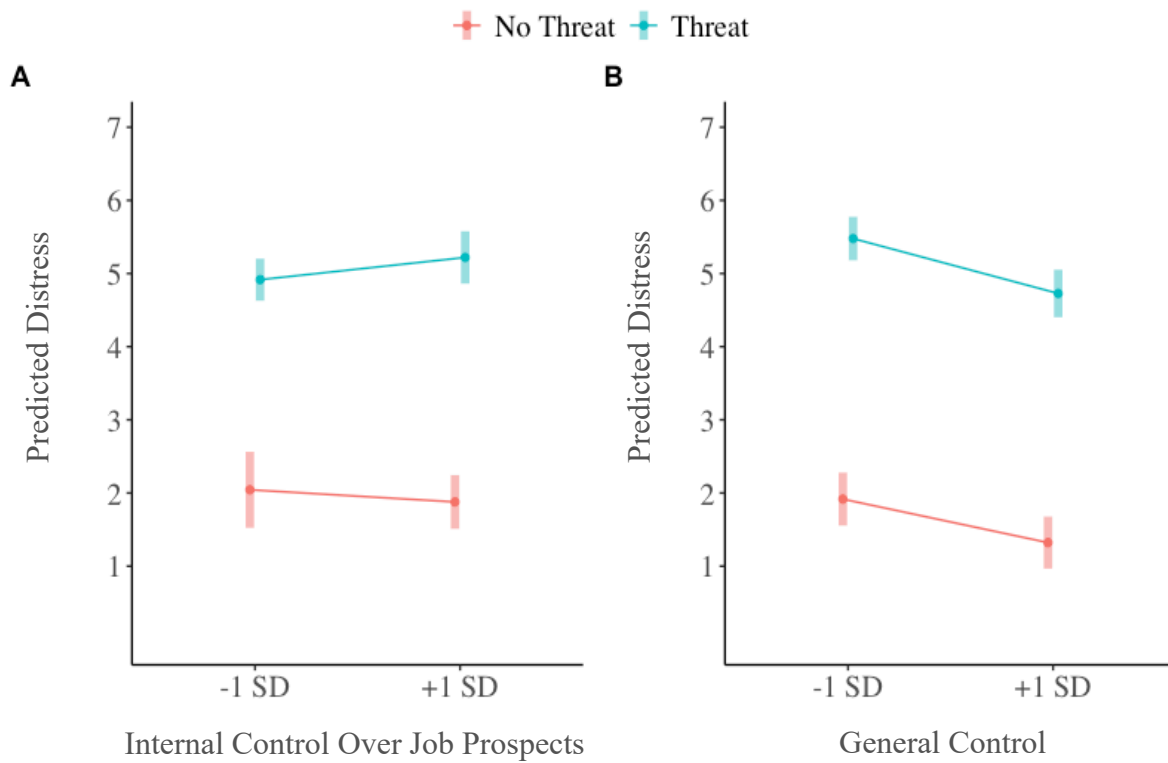
Figure 6. Non-significant interactions (Model 3) between condition and (A) internal control over one's job prospects and (b) generalized perceived control predicting distress after controlling for subjective SES, control by chance, control by connections, and control by others in Study 1.

Note. Predicted distress ranges from 1 to 7. The band around the point estimates represent the 95% confidence interval.
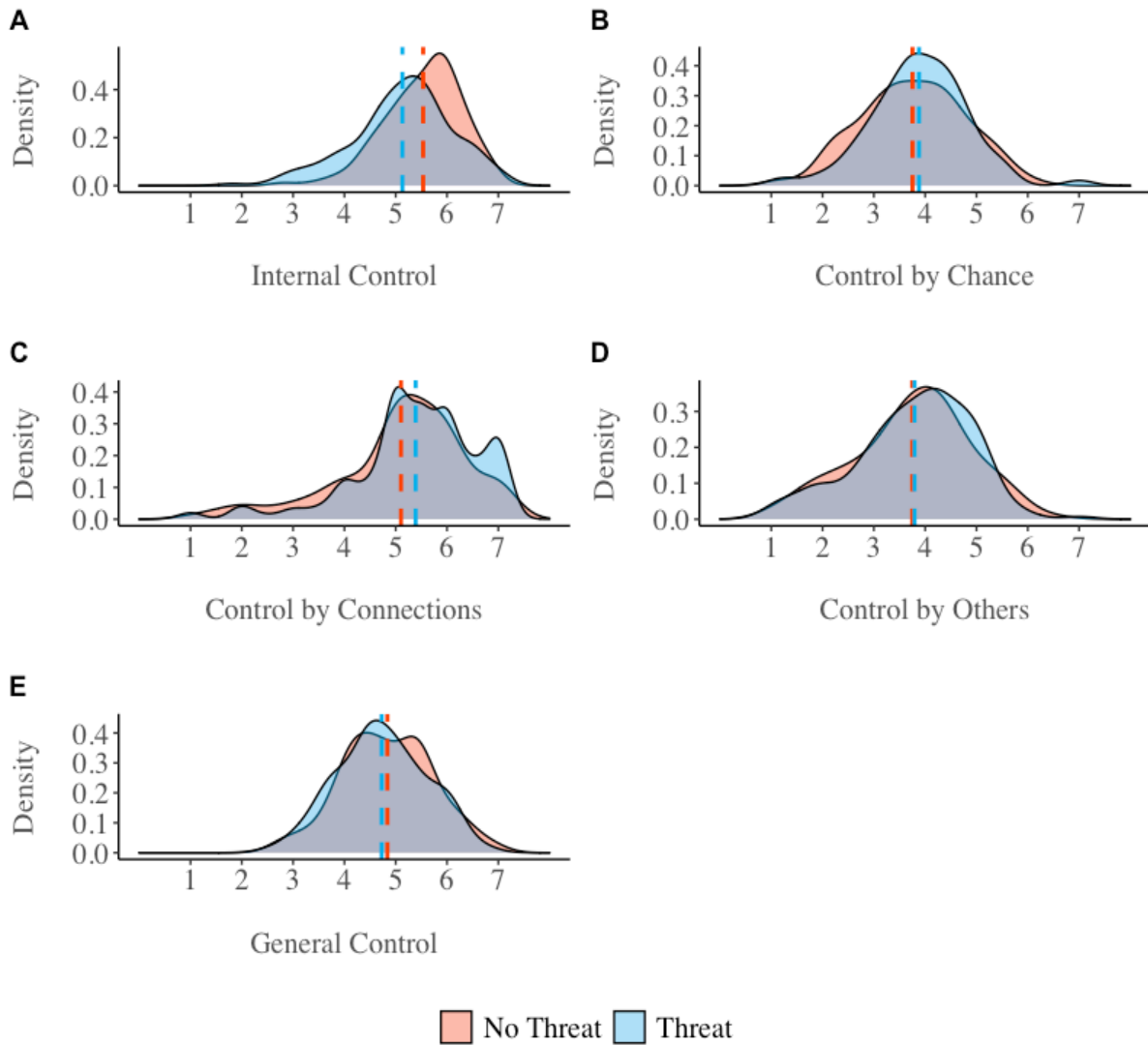
Figure 7. Density plots of (A) perceived internal control over one's job prospects, (B) perceived control by chance over one's job prospects, (C) perceived control by connections over one's job prospects, (D) perceived control by others over one's job prospects, and (E) generalized perceived control by condition in Study 1. Vertical dotted lines display the mean of the relevant variable for each condition (blue for *threat*, red for *no threat)*. All variables range from 1 to 7.

Indirect effect = -0.06, 95% CI [-0.13, -0.002]
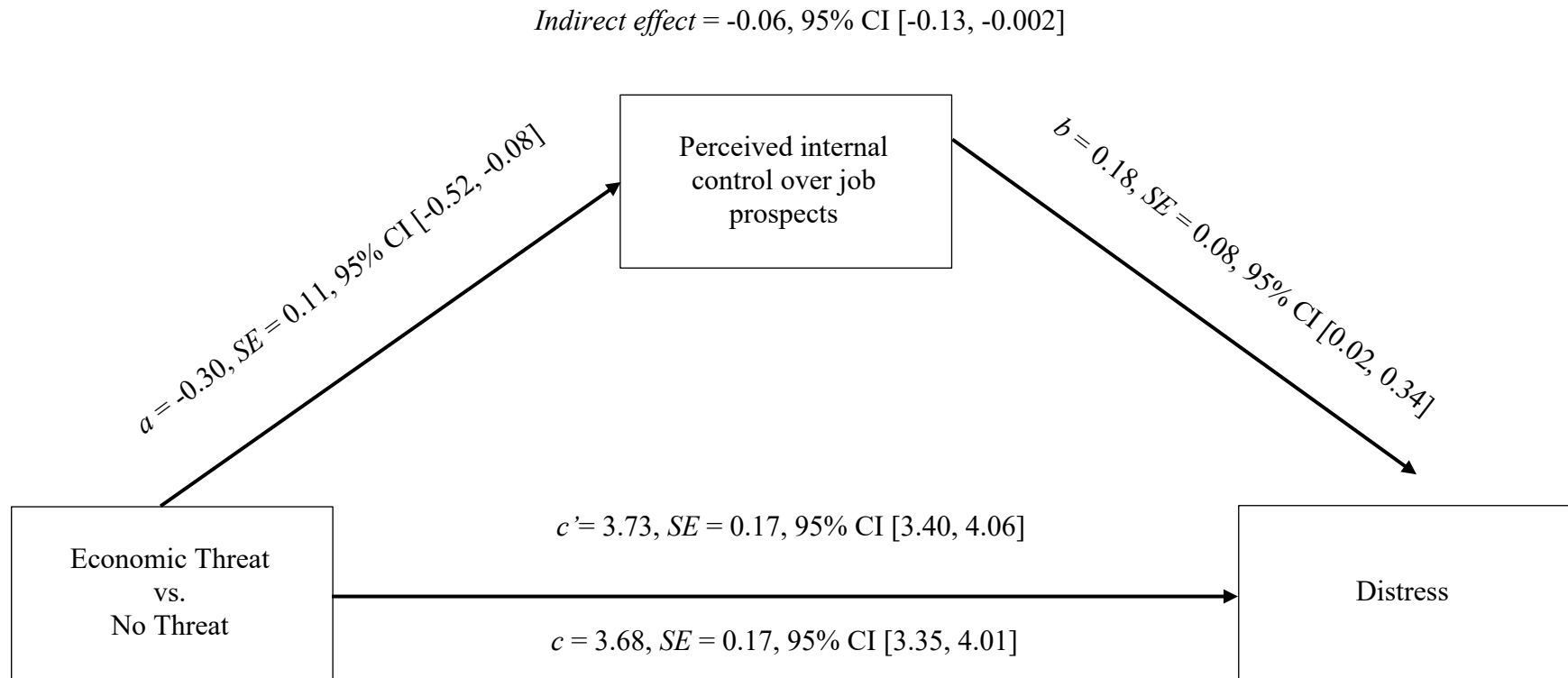
Figure 8. Perceived internal control over one's job prospects as a mediator of economic threat on distress, controlling for generalized

perceived control; control by chance, connections, and others; as well as subjective SES in Study 1. All reported values are

unstandardized estimates (*b* values).
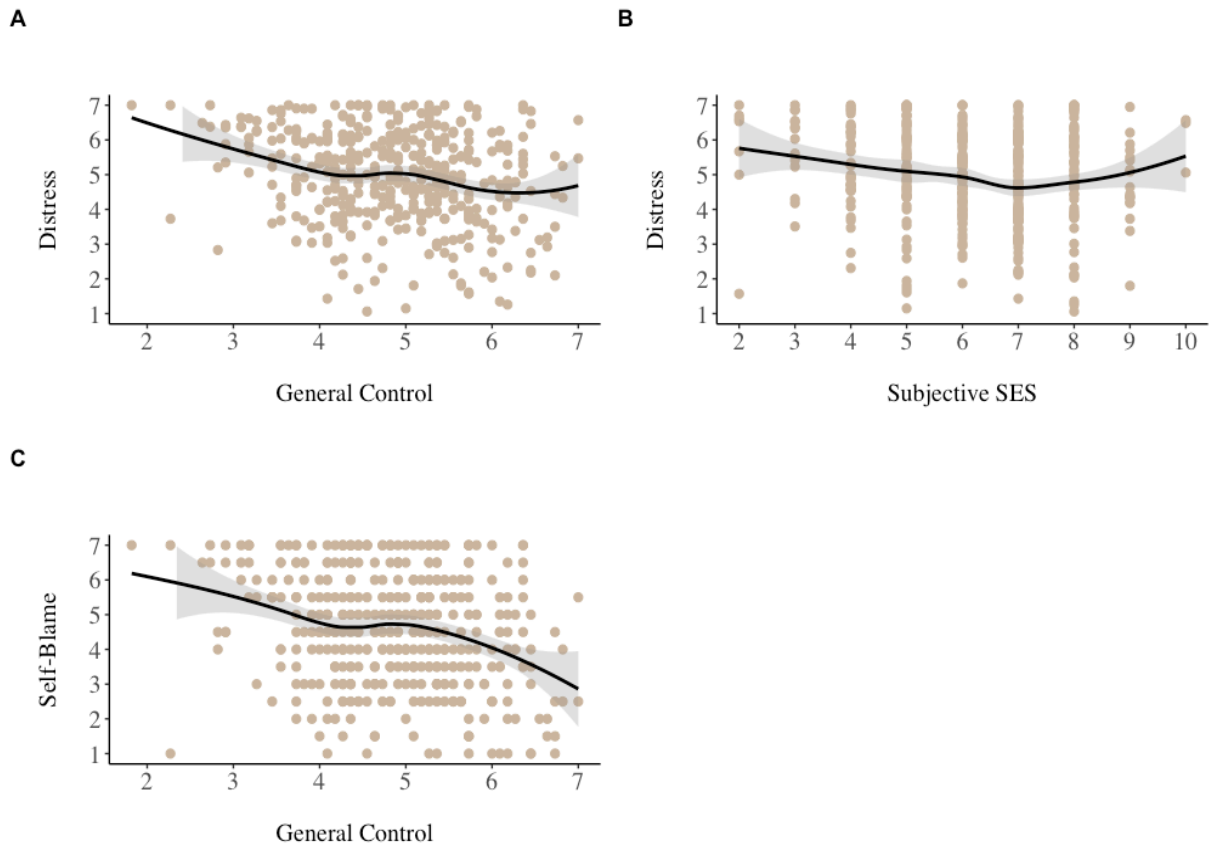
Figure 9. Scatterplots with loess curves of the relationship between (A) generalized perceived control and self-blame, $r = -.27$, $p < .001$, (B) subjective SES and distress, $r = -.13$, $p = .006$, and (C) generalized perceived control and distress, $r = -.23$, $p < .001$. Generalized perceptions of control, self-blame, and distress range from 1 to 7. Subjective SES ranges from 1 to 10.
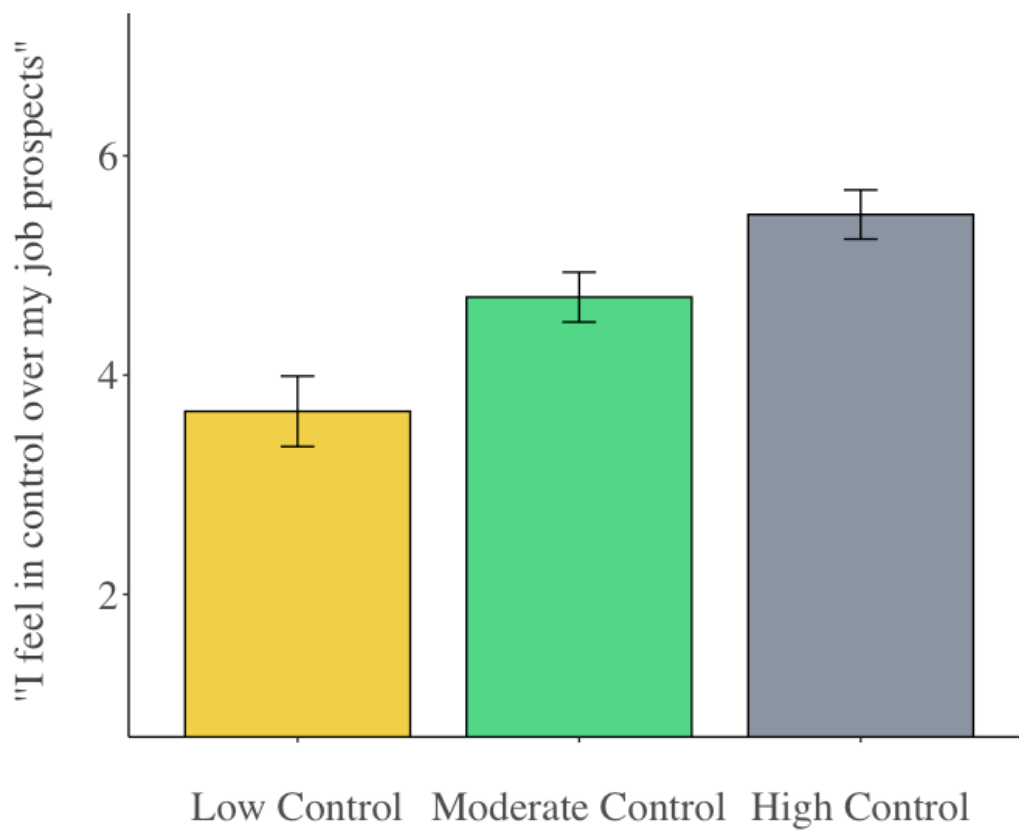
Figure 10. Manipulation check for the internal control manipulation in Study 2. The item, "I feel in control over my job prospects" was endorsed on a scale from 1 to 7. Error bars represent standard errors.
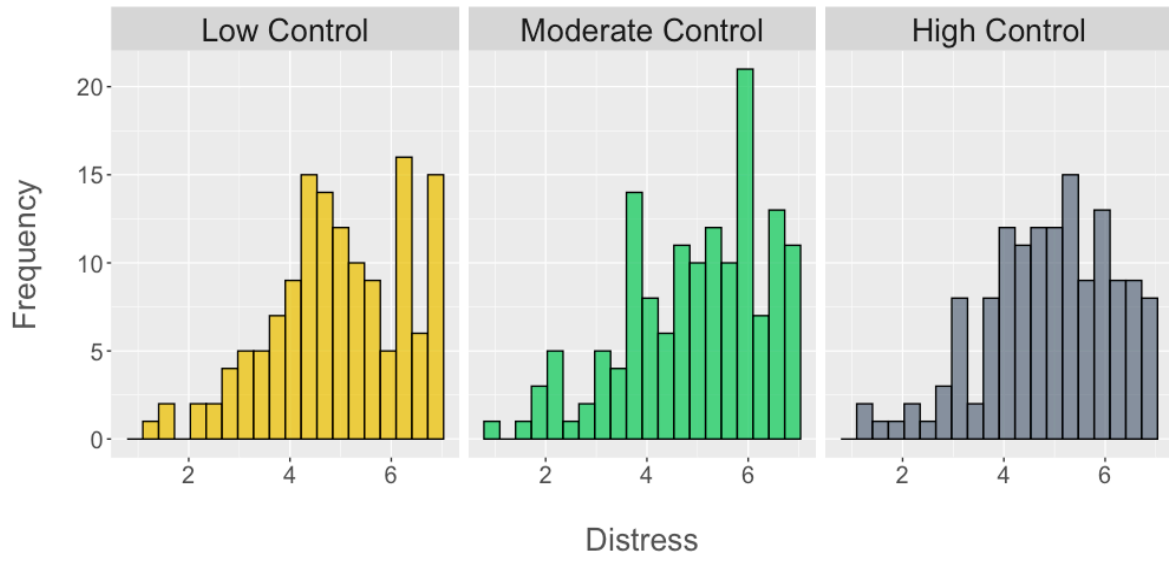
Figure 11. Histograms of distress by condition in Study 2.
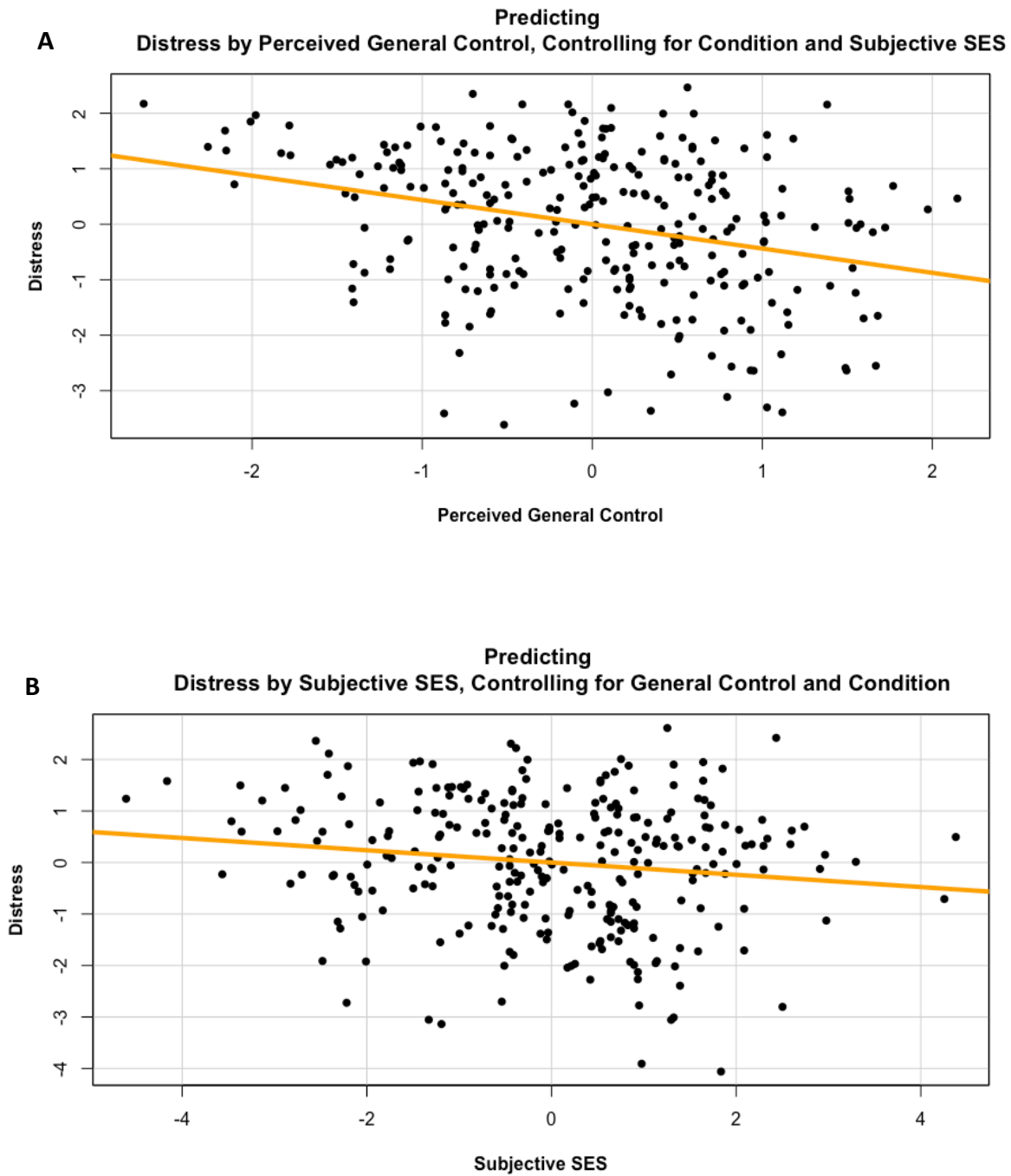
Figure 12. Added-variable plots of (A) generalized perceived control predicting distress after controlling for condition (*moderate* versus *high* internal control) and subjective SES, and (B) subjective SES predicting distress after controlling for condition (*moderate* versus *high* internal control) and generalized perceived control.

Indirect effect = 0.03, 95% CI [-0.18, 0.11]
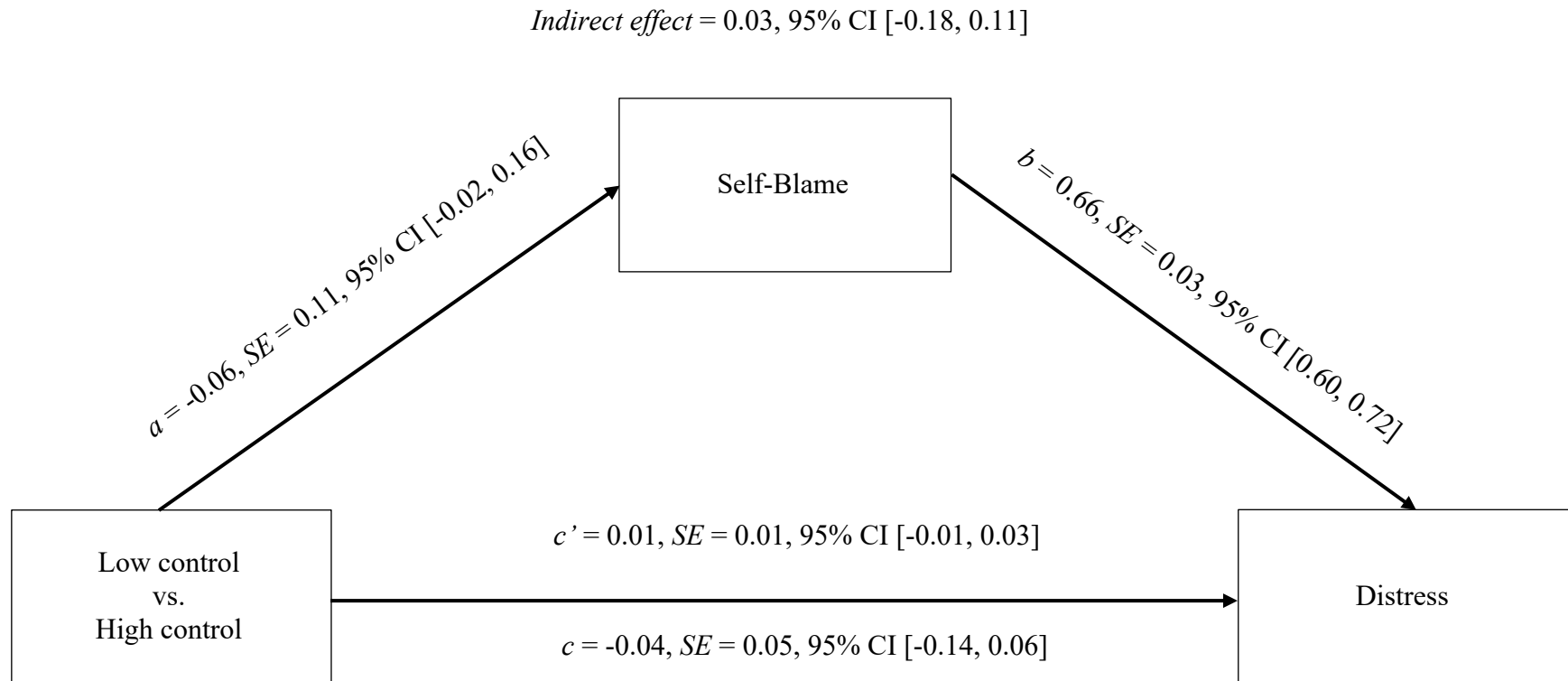
Figure 13. Self-blame as a non-significant mediator of high internal control on distress, controlling for generalized perceived control and subjective SES in Study 2. All reported values are unstandardized estimates (*b* values).
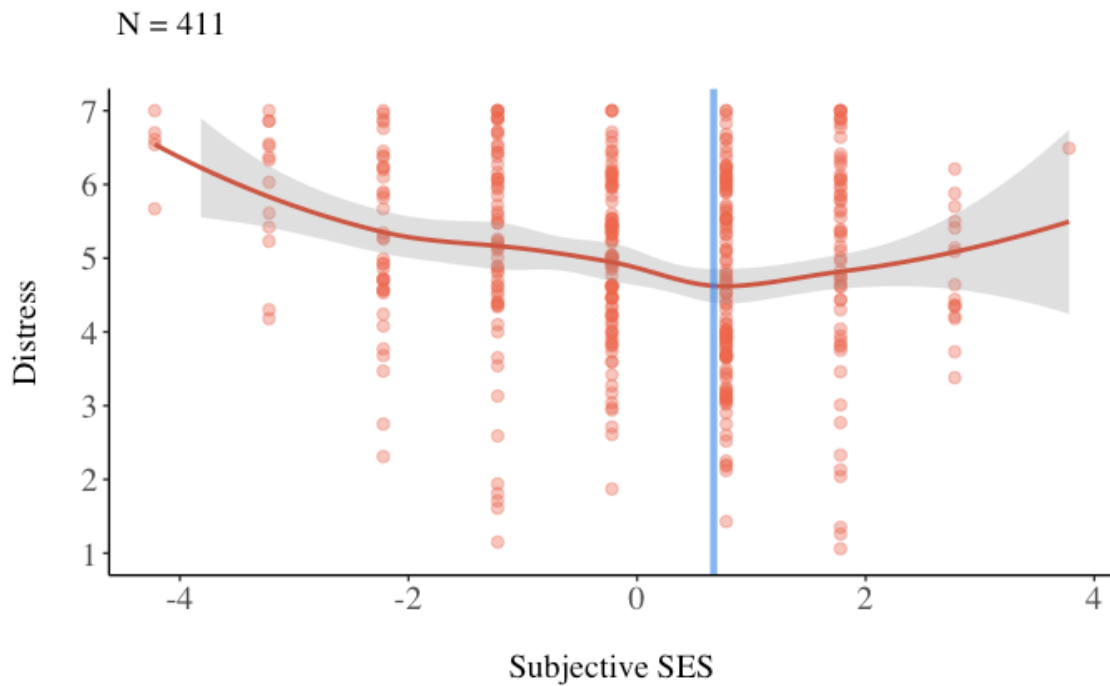
Figure 14. The curvilinear relationship between subjective SES and distress in Study 2.

Subjective SES is mean centered. The point at which the slope changes from negative to positive

is 0.67 units above the mean of subjective SES. At one standard deviation below the mean, the

slope is negative, b = -0.22. At one standard deviation above the mean, the slope is positive, b =

0.07.

Appendix A:

Study 1 and 2 Protocol and Materials

Outline of Study 1 Protocol and Materials

1. Informed Consent form
   - 2 minutes

2. Threat Manipulation (Wohl et al., 2014)
   - 5 minutes

3. Manipulation Check (SAM; Peacock & Wong, 1990)
   - 4 items; 1 minute

4. Generalized Perceived Control (SCS; Lachman & Weaver, 1998a)
   - 12 items; 3 minutes

5. Domain Specific Perceptions of Control (DSPC; Wallston et al., 1978)
   - 17 items; 4 minutes

6. Psychological Distress (POMS-SF-ADA; Shacham, 1983)
   - 21 items; 4 minutes

7. Demographics and SES (SSS; Goodman et al., 2001)
   - 6-8 items; 2 minutes

8. Demand Characteristics Checklist
   - 2 items; 1 minute

9. Conscientious Responders Scale (CRS; Marjanovic et al., 2014)
   - 5 items dispersed throughout procedure; 1 minute
   - Represented as a highlighted item throughout Appendix

10. Attention Check
   - 2 items (< 1 minute)

11. Debriefing forms (2 minutes)

TOTAL TIME: ~ 25 minutes

TOTAL ITEMS: 69-71

Stem to Threat Manipulation

You will now be presented with an article taken from a recent edition of a major Canadian news magazine. Please read this article carefully and answer the associated questions.

Economic Threat Condition (Wohl et al., 2014)

A Student's Financial Future: Foreseeable Economic Threat

Students attending university in Ontario may have more than grades to worry about next year. Recently released information suggests that effects of the global financial crisis will continue to be felt by students across the province.

Effective September 2020, students will be hit with additional tuition fees, accompanied by a drastic drop in the amount of financial aid. To make matters worse, there will be a continued decrease in Federal and Provincial funding, which typically provides several million dollars to students each year. If the lack of funding was not enough, there will be an increase in interest rates for student loans provided by the Ontario Student Assistance Program (OSAP). Jane Carmichael, an administrator with OSAP stated, "it is going to become increasingly difficult for students to obtain provincial student loans. Less available money, higher tuition fees looming and an increase in applications, just does not add up for the student." Some have speculated that it may take years for tuition rates and funding to return to their previous levels.

With youth unemployment rates projected to continue to increase from their current 13.6%, in the foreseeable future, higher education, though once considered an investment, may not even be enough to secure the few positions available in this unstable economic climate. The employment situation means that students who graduate over the next few years will face a job market upon graduation where it is uncertain if they will find a good job.

Reflection for Economic Threat Condition

Please imagine that when you graduate, you find yourself in the negative economic circumstances described in the article above. That is, you have a minimum wage job, and you have no good job prospects. In the space provided, please write about how you think you would feel if you were in that situation.

No Threat Condition (Wohl et al., 2014)

A Student's Future Excursion: The Royal Canadian Mint

York University has partnered with The Royal Canadian Mint to make guided tours of the Mint available to university students interested in the industry. The Ottawa site of the Mint produces all of Canada's circulation coins, as well as circulation coins for other nations.

The Mint has the capacity to produce over 2 billion circulation coins per year for foreign governments; its patented coin plating technology helps minimize coin cost for foreign governments. The Royal Canadian Mint provides its proven expertise to foreign markets to develop, produce, package and market custom commemorative coins. For example, the 1997 commission from the Hong Kong Monetary Authority to produce a $1,000 22-karat gold coin to mark the historic transfer of the territory to the People's Republic of China.

In addition to the production of circulation coins, the Ottawa branch of the Mint provides storage services for branded precious metals in its vaults. The Royal Canadian Mint operates one of the most technically advanced and respected gold refineries in the world, producing bars, wafers and custom products. Every gold bar and wafer is struck with the Royal Canadian Mint hallmark, an internationally recognized guarantee of weight and purity.

The Mint's high-speed circulation presses can produce 20 million coins each day. That's 750 coins per second! Via their collaboration with York University, these and other interesting facts will be among the information gathered by young minds interested in their nation's money-making industry in Ottawa.

OTHER ARTICLES

Sweet surprises: How much sugar is in your favourite foods?
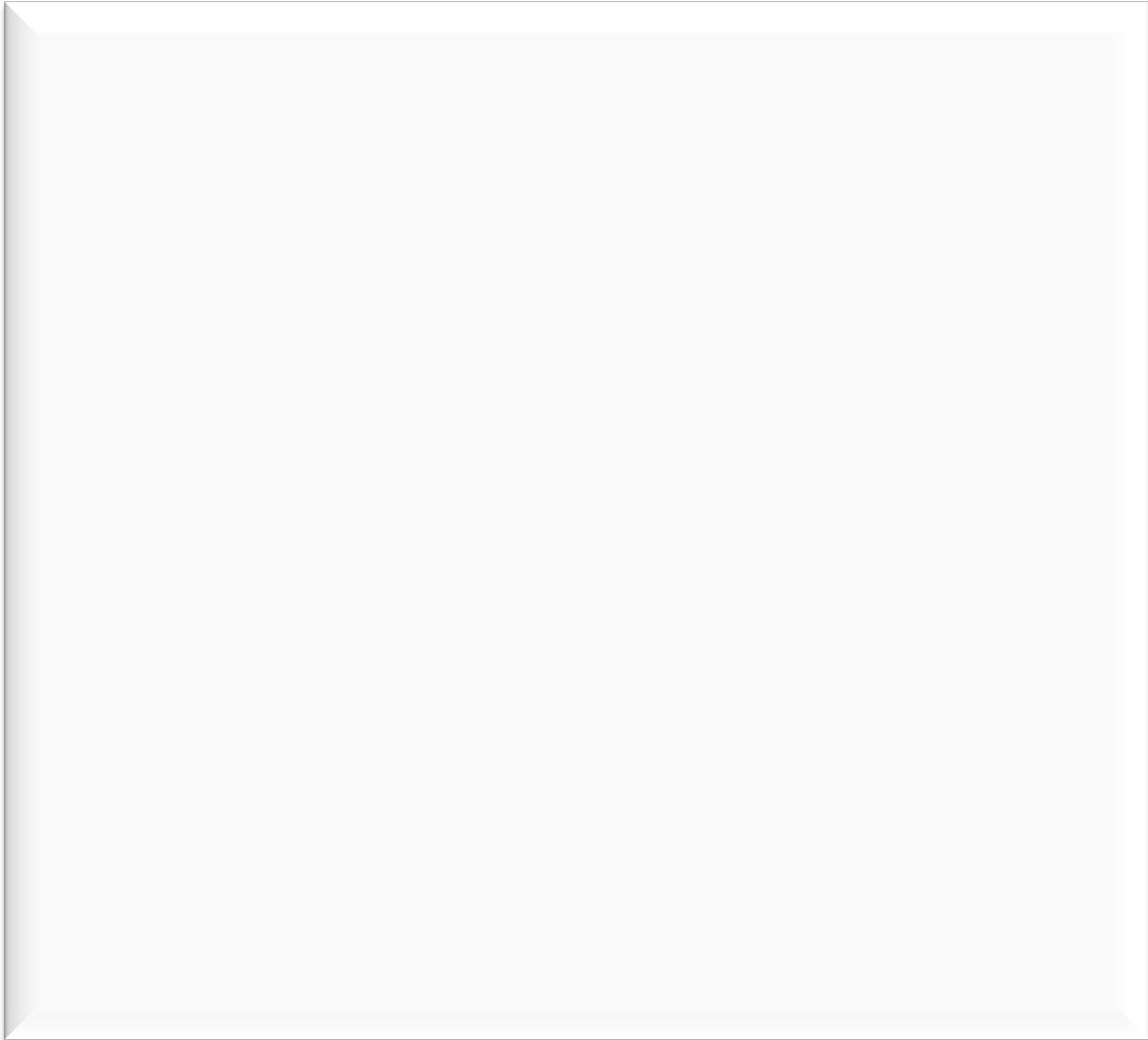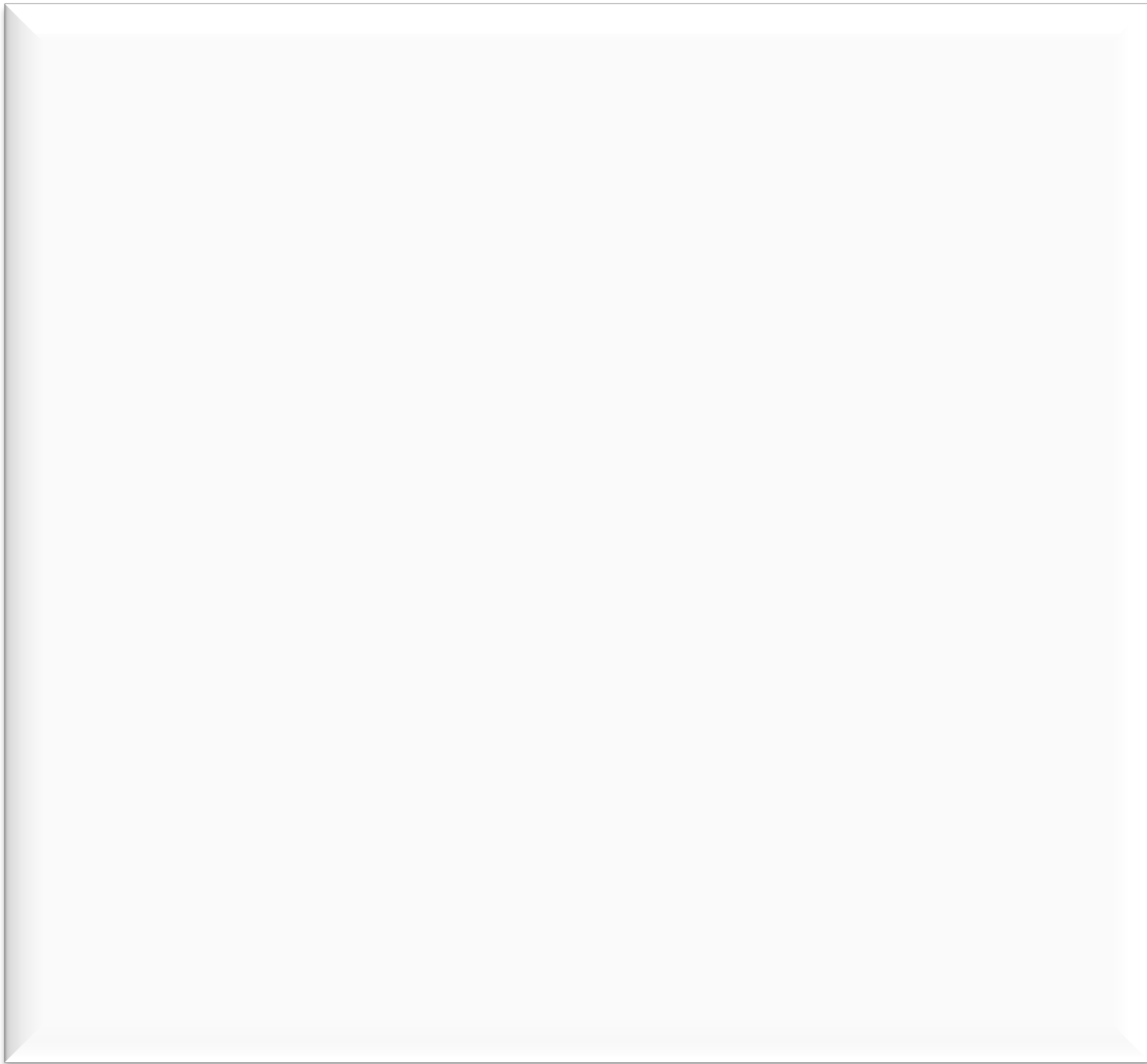
Letters: 'I am appalled so little has been done to help protect women'

+ 19 more posts this week

Reflection for No Threat Condition

Please imagine that when you graduate, you find yourself taking a tour of the Royal Canadian Mint described in the article above. That is, you get to see the production and storage of foreign and Canadian coins, as well as the golden bars and wafers. In the space provided, please write about how you think you would feel if you were in that situation.

Manipulation Check for Economic Threat (SAM-T; Peacock & Wong, 1990)

Continue to imagine yourself in the situation you just read about in the article. Using the scale below, please respond according to how you think you would feel if you were in that situation.

Not at all	A little	Moderately	Quite a bit	Extremely
1	2	3	4	5

1. Would this situation make me feel anxious?

2. How threatening would this situation be?

3. Would it have a negative impact on me?

4. Would the outcome of the situation be negative?

5. For this question, please select option "1, Not at all." [1]

---

[1] CRS 1

Generalized Perceived Control (SCS; Lachman & Weaver, 1998a)

Please select the answer that best represents your level of agreement with each statement as it applies to you.

Strongly Disagree	Somewhat Disagree	Disagree a little	Neither agree or disagree	Agree a little	Somewhat Agree	Strongly Agree
1	2	3	4	5	6	7

1. There is little I can do to change the important things in my life (R).

2. I often feel helpless in dealing with the problems of life (R).

3. For this question, please select the option "Disagree a little."[2]

4. I can do just about anything I set my mind to.

5. Other people determine most of what I can and cannot do (R).

6. What happens in my life is often beyond my control (R).

7. When I really want to do something, I usually find a way to succeed at it.

8. There are many things that interfere with what I want to do (R).

9. Whether or not I am able to get what I want is in my own hands.

10. I have little control over the things that happen to me (R).

11. There is really no way I can solve some of the problems I have (R).

12. Sometimes I feel that I am being pushed around in life (R).

13. What happens to me in the future mostly depends on me.

---

[2] CRS 2

Domain Specific Perceptions of Control (DSPC; Wallston et al., 1978)[3]

These questions focus on your beliefs about getting a good job after you graduate. Please indicate your level of agreement with each of the items using the scale below.

Strongly Disagree	Somewhat Disagree	Disagree a little	Neither agree or disagree	Agree a little	Somewhat Agree	Strongly Agree
1	2	3	4	5	6	7

1. It will be my own behaviour that determines if I get a good job.

2. It does not matter what I do; if I am going to get a good job, I will get the job.

3. Having the right connections will be the best way for me to get a good job.

4. Getting a good job will be influenced by accidental happenings.

5. I will get a good job by having the right connections.

6. I will be in control of getting a good job.

7. For this question, please select the option "Strongly agree". [4]

8. Other people will play a big part in whether or not I get a good job.

9. If I don't get a good job, I will be the one to blame.

10. Other people will be in control of whether or not I get a good job.

11. The main thing that will affect me in getting a good job is what I myself do.

12. If I get a good job, it will be because other people enabled me to do so.

13. Getting a good job will largely be a matter of good fortune.

14. If I take the right actions, I will get a good job.

15. Regarding getting a good job, I will only be able to do what other people tell me to do.

---

[3] This measure was counterbalanced with the *Sense of Control Scale* (Lachman & Weaver, 1998a).
[4] CRS 3

16. No matter what I do, I'm likely to get a good job.

17. For this question, please select the option "Neither agree or disagree".[5]

18. If it's meant to be, I will get a good job.

19. Luck will play a big part in determining if I get a good job.

---

[5] CRS 4

Psychological Distress (POMS-SF-ADA; Shacham, 1983)

Instructions for Economic Threat Condition:
Please imagine that when you graduate, you find yourself in the negative economic circumstances described in the article you read at the outset. That is, you have a minimum wage job, and you have no good job prospects. Please respond according to how you think you would feel if you were in that situation.

Instructions for No Threat Condition:
Please imagine that when you graduate, you find yourself taking a tour of the Royal Canadian Mint described in the article you read at the outset. That is, you get to see the production and storage of foreign and Canadian coins, as well as the golden bars and wafers. Please respond according to how you think you would feel if you were in that situation.

Not at all			Moderately			Extremely
1	2	3	4	5	6	7

1. Unhappy

2. Sad

3. Angry

4. Peeved

5. Tense

6. On edge

7. Blue

8. Annoyed

9. Uneasy

10. Hopeless

11. For this question, please choose

    option "6" [6]

12. Discouraged

13. Restless

14. Nervous

15. Resentful

16. Bitter

17. Miserable

18. Helpless

19. Furious

20. Anxious

21. Worthless

22. Grouchy

---

[6] CRS 5

Demographics

1. Which of the following best describes your gender?

    ○ Male
    ○ Female
    ○ Gender diverse (e.g., trans-woman, non-binary)

2. What is your age? _____

3. Were you born in Canada?

    ○ Yes
    ○ No

[IF SELECT NO TO QUESTION 3][7]

3a. How many years have you been living in Canada? _____

3b. Where were you born?
    ○ United States
    ○ Europe (e.g., Germany, France)
    ○ Caribbean (e.g., Jamaica, Trinidad)
    ○ Latin, Central, and South America (e.g., Ecuador, Uruguay)
    ○ Africa (e.g., Nigeria, Chad)
    ○ Asia (e.g., Iran, Sri Lanka)
    ○ Oceania (e.g., Australia, New Zealand)
    ○ Pacific Islands (e.g., Hawaii, Samoa)

4. What is your year of study?

    ○ First year
    ○ Second year
    ○ Third year
    ○ Fourth year or greater

5. Which of the following best describes your current employment status?

---

[7] This is a conditional statement. In Qualtrics, only those who selected "No" to question 3 saw questions 3a and 3b.

○ Employed full time
○ Employed part-time
○ Unemployed
○ Other (Please specify) _____

Subjective SES (SSS; Goodman et al., 2001)

Imagine that this ladder depicts how Canadian society is set up.

At the top of the ladder are the people who are the best off — those who have the most money, the highest amount of education, and the jobs that bring the most respect. At the bottom are people who are the worst off — those who have the least money, little or no education, no job, or jobs that no one wants or respects.

Now think about your family.

Using the slider below, please tell us where you think your family would be on this ladder.

1	2	3	4	5	6	7	8	9	10

Demand Characteristics Checklist

1. As far as you can recall, what was the purpose of the study?

2. Was there anything about the study that you found confusing or unusual?
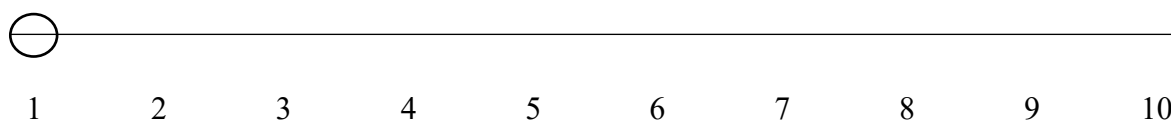
Attention Check for Manipulation[8]

1. Think back to the article you read at the outset. What was it about?

    - ○ A continuing financial crisis
    - ○ The economic impacts of climate change
    - ○ Where money is made in Canada
    - ○ I don't know

2. Did you complete this study on a computer (i.e., laptop or desktop computer)?

    - ○ Yes
    - ○ No

---

[8] Participants were unable to scroll back to read the article and thus this question assesses their ability to recall the article they read.

Outline of Study 2 Protocol and Materials

1. Informed Consent form
   - 2 minutes

2. Threat Manipulation (Wohl et al., 2014)
   - 5 minutes

3. Manipulation Check (SAM-T; Peacock & Wong, 1990)
   - 4 items, 1 minute

4. Internal Control Manipulation (WPI-II; Macnabb & Bakker, 2014)
   - 20-item Career survey with feedback; 4 minutes

5. Internal Control Manipulation Check (unpublished item)
   - 1 item; < 1 minute

6. Psychological Distress (POMS-SF-ADA; Shacham, 1983) and Self-Blame (Brief COPE – SB; Carver, 1997)
   - 23 items; 5 minutes

7. Generalized Perceived Control (SCS; Lachman & Weaver, 1998a)
   - 12 items; 3 minutes

8. Demographics and SES (SSS; Goodman et al., 2001)
   - 6-8 items; 2 minutes

9. Demand Characteristics checklist
   - 2 items; 1 minutes

10. Conscientious Responders Scale (CRS; Marjanovic et al., 2014)
    - 5 items dispersed throughout procedure; 1 minute

11. Attention Check
    - 2 items (< 1 minute)

12. Debriefing forms
    - 2 minutes

TOTAL TIME: ~ 25 minutes

TOTAL ITEMS: 75-77

Stem to Threat Manipulation

You will now be presented with an article taken from a recent edition of a major Canadian news magazine. Please read this article carefully and answer the associated questions.

Economic Threat Manipulation (Wohl et al., 2014)

A Student's Financial Future: Foreseeable Economic Threat

Students attending university in Ontario may have more than grades to worry over the next few years. Recently released information suggests that effects of the global financial crisis will continue to be felt by students across the province.

Effective September 2020, students will be hit with additional tuition fees, accompanied by a drastic drop in the amount of financial aid. To make matters worse, there will be a continued decrease in Federal and Provincial funding, which typically provides several million dollars to students each year. If the lack of funding was not enough, there will be an increase in interest rates for student loans provided by the Ontario Student Assistance Program (OSAP). Jane Carmichael, an administrator with OSAP stated, "it is going to become increasingly difficult for students to obtain provincial student loans. Less available money, higher tuition fees looming and an increase in applications, just does not add up for the student." Some have speculated that it may take years for tuition rates and funding to return to their previous levels.

With youth unemployment rates projected to continue to increase from their current 13.6%, in the foreseeable future, higher education, though once considered an investment, may not even be enough to secure the few positions available in this unstable economic climate. The employment situation means that students who graduate over the next few years will face a job market upon graduation where it is uncertain if they will find a good job.

Reflection for Economic Threat Condition

Please imagine that when you graduate, you find yourself in the negative economic circumstances described in the article above. That is, you have a minimum wage job, and you have no good job prospects. In the space provided, please write about how you think you would feel if you were in that situation.

Manipulation Check for Economic Threat (SAM-T; Peacock & Wong, 1990)

Continue to imagine yourself in the situation you just read about in the article. Using the scale below, please respond according to how you think you would feel if you were in that situation.

Not at all	A little	Moderately	Quite a bit	Extremely
1	2	3	4	5

1. Would this situation make me feel anxious?

2. How threatening would this situation be?

3. Would it have a negative impact on me?

4. Would the outcome of the situation be negative?

5. For this question, please select option "1, Not at all."[9]

---

[9] CRS 1

Internal Control Manipulation (WPI-II; Macnabb & Bakker, 2014)[10]

In examining feelings about the future, we would now like to turn your attention toward your future job prospects. Based on your responses to these questions, you will receive a calculated score that tells you how much control you display with regard to your future job prospects. That is, whether or not getting a good job is in your hands. We do this by matching your personality and reports of your behaviour with the demands of the job market.

Strongly Disagree	Somewhat Disagree	Disagree a little	Neither agree or disagree	Agree a little	Somewhat Agree	Strongly Agree
1	2	3	4	5	6	7

1. People describe me as responsible.

2. I am socially confident.

3. I can be relied on to fulfill my obligations.

4. I always see the task through till the end.

5. I like to develop detailed plans for the task at hand.

6. For this question, please select the option "Disagree a little" [11]

7. I would volunteer to do things that would not be part of my job description.

8. People describe me as persistent.

9. I would rather complete an entire project each day than complete parts of several projects.

10. People describe me as proactive.

11. I respect team decisions even when I disagree with them.

12. I prefer to set goals that are easily achievable.

13. For this question, please select the option "Somewhat Agree". [12]

14. I always complete a task once I start it.

15. I sometimes need a push to get started.

16. I find it difficult to make decisions on my own.

17. I work hard to get ahead.

18. I sometimes leave work unfinished.

19. I am not particularly motivated by new challenges.

20. It's alright to bend the rules as long as the work gets done.

21. I prefer others to take the initiative.

22. I am able to remain relaxed even under extreme pressure

---

[10] This questionnaire was not scored.
[11] CRS 2
[12] CRS 3

Low Internal Control Feedback

Your Results: Low Control

LOW   MODERATE   HIGH

Based on your responses to the survey, you display low control over your future job prospects. That is, according to your responses, whether or not you will get a good job is not in your own hands.

Moderate Internal Control Feedback

Your Results: Moderate Control
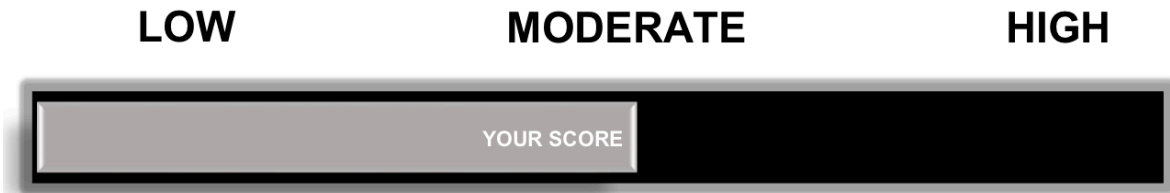
LOW　　　　　　　MODERATE　　　　　　　HIGH

YOUR SCORE

Based on your responses to the survey, you display moderate control over your future job prospects. That is, according to your responses, whether or not you will get a good job is moderately in your own hands.

High Internal Control Feedback

Your Results: High Control
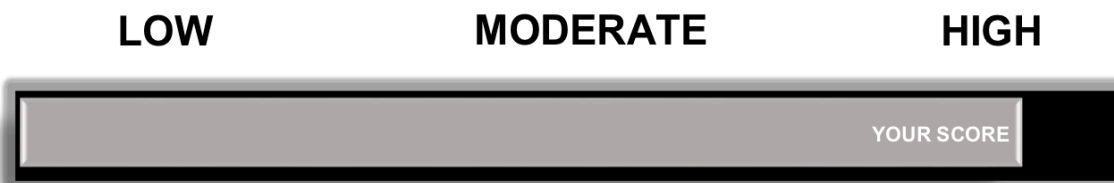
LOW　　　　　　　　MODERATE　　　　　HIGH

YOUR SCORE

Based on your responses to the survey, you display high control over your future job prospects. That is, according to your responses, whether or not you will get a good job is completely in your own hands.

Manipulation Check for the Internal Control Manipulation

Based on the feedback I just received, I feel that I am in control over my future job prospects.

Strongly Disagree	Somewhat Disagree	Disagree a little	Neither agree or disagree	Agree a little	Somewhat Agree	Strongly Agree
1	2	3	4	5	6	7

Economic Threat Condition: Psychological Distress (POMS-SF-ADA; Shacham, 1988) **and Self-Blame** (COPE-SB; Carver, 1997)

Please imagine that when you graduate, you find yourself in the negative economic circumstances described in the article you read at the outset. That is, you have a minimum wage job, and you have no good job prospects. Please respond according to how you think you would feel if you were in that situation.

Not at all			Moderately			Extremely
1	2	3	4	5	6	7

1. Unhappy

2. Sad

3. Angry

4. Peeved

5. Tense

6. On edge

7. I would criticize myself.

8. Blue

9. Annoyed

10. Uneasy

11. Hopeless

12. For this question, choose option "6."[13]

13. Discouraged

14. Restless

15. Nervous

16. I would blame myself for what had happened.

17. Resentful

18. Bitter

19. Miserable

20. Helpless

21. Furious

22. Anxious

23. Worthless

24. Grouchy

---

[13] CRS 4

Generalized Perceived Control (SCS; Lachman & Weaver, 1998a)

Please select the answer that best represents your level of agreement with each statement as it applies to you.

Strongly Disagree	Somewhat Disagree	Disagree a little	Neither agree or disagree	Agree a little	Somewhat Agree	Strongly Agree
1	2	3	4	5	6	7

1. There is little I can do to change the important things in my life (R).

2. I often feel helpless in dealing with the problems of life (R).

3. For this question, please select the option "Disagree a little."[14]

4. I can do just about anything I set my mind to.

5. Other people determine most of what I can and cannot do (R).

6. What happens in my life is often beyond my control (R).

7. When I really want to do something, I usually find a way to succeed at it.

8. There are many things that interfere with what I want to do (R).

9. Whether or not I am able to get what I want is in my own hands.

10. I have little control over the things that happen to me (R).

11. There is really no way I can solve some of the problems I have (R).

12. Sometimes I feel that I am being pushed around in life (R).

13. What happens to me in the future mostly depends on me.

---

[14] CRS 5

Demographics

1. Which of the following best describes your gender?

    ○ Male
    ○ Female
    ○ Gender diverse (e.g., trans-woman, non-binary)

2. What is your age? _____

3. Were you born in Canada?

    ○ Yes
    ○ No

[IF SELECT NO TO QUESTION 3]

3a. How many years have you been living in Canada? _____

3b. Where were you born?
    ○ United States
    ○ Europe (e.g., Germany, France)
    ○ Caribbean (e.g., Jamaica, Trinidad)
    ○ Latin, Central, and South America (e.g., Ecuador, Uruguay)
    ○ Africa (e.g., Nigeria, Chad)
    ○ Asia (e.g., Iran, Sri Lanka)
    ○ Oceania (e.g., Australia, New Zealand)
    ○ Pacific Islands (e.g., Hawaii, Samoa)

4. What is your year of study?

    ○ First year
    ○ Second year
    ○ Third year
    ○ Fourth year or greater

5. Which of the following best describes your current employment status?

○ Employed full time
○ Employed part-time
○ Unemployed
○ Other (Please specify) _____

Subjective SES (SSS; Goodman et al., 2001)

Imagine that this ladder depicts how Canadian society is set up.

At the top of the ladder are the people who are the best off — those who have the most money, the highest amount of education, and the jobs that bring the most respect. At the bottom are people who are the worst off — those who have the least money, little or no education, no job, or jobs that no one wants or respects.

Now think about your family.

Using the slider below, please tell us where you think your family would be on this ladder.

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |

Demand Characteristics Checklist

1. As far as you can recall, what was the purpose of the study?

2. Was there anything about the study that you found confusing or unusual?
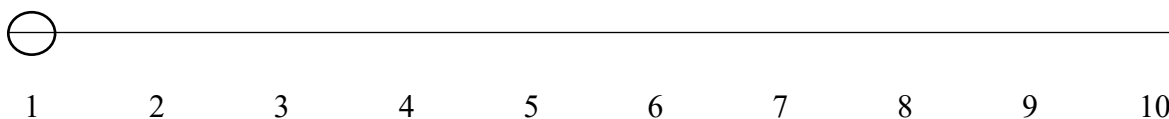
Attention Check for Manipulation

1. Think back to the article you read at the outset. What was it about?

      ○ A continuing financial crisis
      ○ The economic impacts of climate change
      ○ Where money is made in Canada
      ○ I don't know

2. Did you complete this study on a computer (i.e., a laptop or desktop computer)?

      ○ Yes
      ○ No

Appendix B:

Equivalence Tests in Study 1

Two one-sided equivalence tests using the *TOSTER* package in R (Lakens, 2017) were conducted to examine if the differences between the data that was retained and deleted and if the differences across condition were small enough to be considered equivalent. Equivalence tests, rather than traditional *t*-tests, were conducted because statistical non-significance in a traditional *t*-test does not prove the null to be true (in this case, H_0 = the data that were retained and deleted are equivalent). Equivalence intervals between Cohen's *d* of -0.5 and 0.5 for *t*-tests, and -25% and 25% for proportions, were created so that any differences that fell into these intervals were considered negligible. A mean difference greater or less than a half a standard deviation, and a proportion difference greater or less than 25%, were chosen as the smallest effect sizes of interest because they were deemed sufficiently large enough to threaten the external validity of random assignment (e.g., if the deleted data had 25% more males, then generalizing the findings across males will have proved difficult because such high attrition might indicate bias).

Retained versus deleted data

Equivalence tests indicated that participants who were removed from the study did not have equivalent levels of time spent in Canada (M_{years} = 6.91, SD_{years} = 7.72) than those who were retained (M_{years} = 9.77, SD_{years} = 5.80), *t*(123.38), *p* = 0.317, 90% CI [0.94, 4.78]. Participants who were removed from the study also did not have equivalent levels of believing that one's job prospects were controlled by chance (*M* = 4.18, *SD* = 0.97) than those who were retained (*M* = 3.82, *SD* = 4.18), *t*(256) = 2.51, *p* = .096, 90% CI [-0.52, -0.20]. All of the other study variables were statistically equivalent to zero (see Tables 1B and 2B).

Demographics across conditions

Equivalence tests were again conducted to examine if the differences in demographics between those in the *threat* condition and those in the *no threat* condition were small enough to be considered equivalent (see Table 3B). Similarly, equivalence intervals between Cohen's *d* of -0.5 and 0.5 for *t*-tests, and -25% and 25% for proportions, were created so that any differences that fell into these intervals were considered negligible. Results indicated that participants were not equivalently born in Canada in the *threat* condition (37.95%, *n* = 63) and in the *no threat* condition (25.56%, *n* = 34), *Z* = 1.31, *p* = .096, 90% CI [-0.28, 0.03]. However, for those not born in Canada, participants in the *no threat* condition did not live in Canada for an equivalent amount of time (*M* $_{years}$ =11.17, *SD* $_{years}$ = 8.96) as those in the *threat* condition (*M* $_{years}$ = 8.93, *SD* $_{years}$ = 6.82), *t*(55.82) = -0.98, *p* = .165, 90% CI [-0.75, 5.21]. Importantly, levels of internal control over one's job prospects; generalized perceived control; perceived control by chance, connections, and others; subjective SES; as well as threat, anxiety, depression, anger, and total distress were equivalent between those who were born in Canada and those who were not (see Table 4B). However, given equivalence bounds of *r* = ± 0.24 (the equivalent of *d* = ± 0.50), time spent living in Canada and internal control over one's job prospects, generalized perceived control, subjective SES, and total distress were not statistically equivalent to zero (see Table 5B). Therefore, time spent in Canada was controlled for in a regression model predicting distress by condition (*threat* versus *no threat*), subjective SES, internal control over one's job prospects, generalized perceived control, as well as the interactions between internal control over one's job prospects and generalized perceived control. The quadratic interactions between condition and both internal control over one's job prospects and generalized perceived control were not included due to the small sample size and thus low statistical power.

Regression model controlling for time spent in Canada

Once again, since time spent in Canada was meaningfully related to most of the study variables, the interactions between condition and perceived control predicting distress controlling for time spent in Canada was conducted. Considering that only those who were not born in Canada responded to this question, the regression model was conducted for those who were not born in Canada ($N = 97$). Visualizing the distribution of the residuals suggested that the residuals were normally distributed, which was further supported by a non-significant Shapiro-Wilk test of normality, $W = 0.99$, $p = .452$. However, the data were fairly heteroscedastic, $BP(7) = 23.93$, $p = .001$, which was due to the variability of distress in the *no threat* condition.

After removing two outliers (remaining $N = 95$), results suggested that, after controlling for time spent in Canada, the interaction between internal control over one's job prospects, $b = -0.09$, $SE = 0.32$, 95% CI [-0.72, 0.55], $p = .789$, $sr^2 < .001$, and the interaction between condition and generalized perceived control, $b = -0.50$, $SE = 0.33$, 95% CI [-1.16, 0.16], $p = .137$, $sr^2 = .01$, were not statistically significant. Furthermore, both subjective SES, $b = -0.05$, $SE = 0.09$, 95% CI [-0.23, 0.12], $p = .547$, $sr^2 = .001$, and time spent in Canada, $b = 0.001$, $SE = 0.02$, 95% CI [-0.03, 0.04], $p = .937$, $sr^2 < .001$, did not uniquely predict distress.

Table 1B. *Two One-Sided Equivalence Tests Comparing Demographics for Retained and*

Deleted Data in Study 1

	Retained (*n* = 390)	Deleted (*n* = 153)	90% TOST CI	*t* or *Z*	*df*	*p*
Age						
M	19.67	19.47				
SD	4.10	1.87	-1.45, 0.27	4.98	450	< .001
Range	17 – 64	17 – 29				
Gender, *n* (%)						
Female	225 (75.25)	95 (64.19)	0.02, 0.20	2.45		.007
Male	74 (24.75)	53 (35.81)	-0.25, 0.03	1.13		.046
Gender Diverse	0	0	--	--		--
Born in Canada, *n* (%)						
Yes	202 (67.60)	96 (64.87)	-0.07, 0.12	3.79		< .001
No	97 (32.44)	52 (35.14)	-0.20, 0.10	2.74		.003
Time spent in Canada						
M	9.77	6.91				
SD	6.80	7.72	0.94, 4.78	0.48	123	.317
Range	0 – 44	0 – 21				
Place of birth, *n* (%)						
USA	3 (3.13)	2 (3.85)	--	--		--
Europe	7 (7.29)	2 (3.85)	--	--		--
Caribbean	3 (3.13)	1 (1.92)	--	--		--
South America	7 (7.29)	1 (1.92)	--	--		--
Africa	8 (8.33)	6 (11.54)	--	--		--
Asia	67 (69.79)	40 (76.92)	-0.22 0.07	2.05		.020
Oceania	1 (1.04)	0	--	--		--
Year of study, *n* (%)						
First	171 (57.19)	74 (50.00)	-0.04, 0.19	2.57		.005
Second	83 (27.76)	43 (29.05)	-0.15, 0.13	2.79		.003
Third	22 (7.36)	21 (14.19)	--	--		--
Fourth +	23 (7.69)	10 (6.76)	--	--		--
Employment Status, *n* (%)						
Full-time	4 (2.02)	8 (5.41)	--	--		--
Part-time	162 (54.18)	75 (50.68)	-0.08, 0.15	3.08		.001
Unemployed	123 (41.14)	61 (41.22)	-0.13, 0.13	3.23		< .001
Other	10 (3.34)	34(2.70)	--	--		--

Note. 90% TOST represents the 90% confidence intervals for the two one-sided tests of

equivalence. A TOST *t*-value was calculated for tests of mean equivalence, and a TOST *z*-value

was calculated for tests of proportion equivalence. The 90% TOST CI for mean differences is displayed in raw units. The equivalence bounds $(-\delta, \delta)$ for age is (-1.59, 1.59) and time spent in Canada is (-3.41, 3.41) in raw units (d = -0.50 and 0.50 in standardized units). The equivalence bounds for proportions is (-0.25, 0.25). $p < .05$ signifies that the observed effect is statistically equivalent to zero. "--" signifies that the equivalence test was not conducted due to small sample sizes and therefore low power to detect the smallest meaningful effect.

Table 2B. *Two One-Sided Equivalence Tests Comparing Study Variables for Retained and Deleted Data in Study 1*

	Retained (*n* = 390)		Deleted (*n* = 153)		90% TOST CI	*t*	*df*
	M	*SD*	*M*	*SD*			
Domain Internal	5.31	0.91	5.11	1.07	0.03, 0.37	2.91**	256
Domain Chance	3.82	0.98	4.18	0.97	-0.52, -0.20	1.31†	297
Domain Connections	5.26	1.25	5.15	1.24	-0.10, 0.32	4.12***	297
Domain Others	3.77	1.12	4.00	1.09	-0.41, -0.05	2.93**	302
General Control	4.78	0.88	4.52	0.83	0.12, 0.40	1.97*	309
Subjective SES	6.28	1.62	6.20	1.63	-0.20, 0.36	4.36***	267
Threat	3.01	1.50	2.87	1.40	-0.10, 0.38	4.13***	328
Anxiety	3.90	1.98	3.70	2.14	-0.03, 0.61	3.59***	330
Depression	3.49	2.11	3.38	2.10	-0.22, 0.44	4.51***	322
Anger	3.36	2.11	3.25	1.88	-0.22, 0.44	4.52***	325
Total Distress	3.60	2.04	3.43	1.81	-0.14, 0.48	4.18***	326

Note. 90% TOST represents the 90% confidence intervals for the two one-sided tests of equivalence. The 90% TOST CI for mean differences is displayed in raw units. ($-\delta$, δ) represents the equivalence bounds, also displayed in raw units (*d* = -0.50 and 0.50 in standardized units). All variables displayed range from 1 to 7, except for subjective SES, which ranges from 1 to 10. $p < .05$ signifies that the observed effect is statistically equivalent to zero.

†$p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$

Table 3B. *Equivalence of Demographics Across Condition in Study 1*

	Economic threat (*n* = 167)	No threat (*n* = 136)	90% TOST CI	*t* or *z*	*df*	*p*
Age						
M	19.62	19.87				
SD	3.22	4.72	-0.54, 1.04	3.72	229.87	< .001
Range	17 – 47	17 – 64				
Gender, *n* (%)						
Female	125 (75.30)	100 (75.19)	-0.10, 0.09	4.30		< .001
Male	41 (24.70)	33 (24.81)	-0.17, 0.17	2.47		.006
Gender Diverse	0	0	--	--		--
Born in Canada, *n* (%)						
Yes	103 (62.05)	99 (74.44)	0.02, 0.23	1.94		.026
No	63 (37.95)	34 (25.56)	-0.28, 0.04	1.31		.096
Time spent in Canada						
M	8.93	11.17				
SD	6.82	8.96	-0.75 5.21	0.98	55.82	.165
Range	0 – 33	0 – 44				
Place of birth, *n* (%)						
USA	1 (1.61)	2 (5.88)	--	--		--
Europe	4 (6.45)	3 (8.82)	--	--		--
Caribbean	3 (4.84)	0	--	--		--
South America	4 (6.45)	3 (8.82)	--	--		--
Africa	6 (9.68)	2 (5.88)	--	--		--
Asia	43 (69.36)	24 (70.59)	-0.18, 0.20	2.04		.021
Oceania	1 (1.61)	0	--	--		--
Year of study, *n* (%)						
First	98 (59.04)	73 (54.89)	-0.17, 0.08	2.72		.003
Second	46 (27.71)	37 (27.82)	-0.16, 0.16	2.52		.006
Third	9 (5.42)	13 (9.77)	--	--		--
Fourth +	13 (7.83)	10 (7.52)	--	--		--
Employment Status, *n* (%)						
Full-time	2 (1.21)	2 (1.50)	--	--		--
Part-time	89 (53.61)	73 (54.89)	-0.12, 0.14	3.02		.001
Unemployed	72 (43.37)	51 (38.35)	-0.20, 0.10	2.23		.013
Other	3 (1.81)	7 (5.26)	--	--		--

Note. 90% TOST represents the 90% confidence intervals for the two one-sided tests of equivalence. A TOST *t*-value was calculated for tests of mean equivalence, and a TOST *z*-value was calculated for tests of proportion equivalence. The 90% TOST CI for mean differences is

displayed in raw units. The equivalence bounds $(-\delta, \delta)$ for age is (-2.02, 2.02) and time spent in Canada is (-3.98, 3.98) in raw units (d = -0.50 and 0.50 in standardized units). The equivalence bounds for proportions is (-0.25, 0.25). $p < .05$ signifies that the observed effect is statistically equivalent to zero. "--" signifies that the equivalence test was not conducted due to small sample sizes and therefore low power to detect the smallest meaningful effect.

Table 4B. *Two One-Sided Equivalence Tests Comparing Study Variables Across Those Born and Not Born in Canada*

	Born in Canada (*n* = 202)		Not born in Canada (*n* = 97)		90% TOST CI	*t*	*df*
	M	*SD*	*M*	*SD*			
Internal Control	5.35	0.89	5.27	0.91	-0.11, 0.27	3.32***	185.73
Control by Chance	3.77	1.02	3.92	0.88	-0.34, 0.04	2.85**	215.74
Control by Connections	5.23	1.21	5.29	1.35	-0.33, 0.21	3.60***	172.12
Control by Others	3.85	1.12	3.57	1.10	0.05, 0.51	2.01*	192.58
General Control	4.84	0.87	4.66	0.89	-0.04, 0.40	2.38**	185.64
Subjective SES	6.20	1.62	6.45	1.62	-0.58, 0.08	2.80**	189.47
Threat	2.91	1.57	3.24	1.48	-0.64, 0.02	2.32*	199.90
Anxiety	3.80	2.10	4.24	2.06	-0.86,-0.02	2.34*	192.79
Depression	3.40	2.14	3.67	2.03	-0.69, 0.15	3.03**	198.76
Anger	3.26	2.12	3.257	2.09	-0.74, 0.12	2.86**	191.92
Total Distress	3.47	2.06	3.83	1.99	-0.77, 0.05	2.63*	195.49

Note. 90% TOST represents the 90% confidence intervals for the two one-sided tests of equivalence. The 90% TOST CI for mean differences is displayed in raw units. $(-\delta, \delta)$ represents the equivalence bounds, also displayed in raw units (d = -0.50 and 0.50 in standardized units). All variables displayed range from 1 to 7, except for subjective SES, which ranges from 1 to 10. $p < .05$ signifies that the observed effect is statistically equivalent to zero.

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

Table 5B. *Two One-Sided Equivalence Tests Correlating Study Variables with Time Spent in*

Canada in Study 1

	Observed r	90% TOST CI	p
Internal Control	.22	.05, .28	.421
Control by Chance	-.04	-.21, .14	.027
Control by Connections	.05	-.13, .22	.034
Control by Others	-.06	-.23, .12	.042
General Control	.19	.02, 0.35	.311
Subjective SES	.10	-.08, .27	.089
Threat	-.19	-.32, -.02	.311
Anxiety	-.19	-.35, -.02	.311
Depression	-.17	-.33, .004	.246
Anger	-.14	-.31, 0.03	.165
Total Distress	-.17	-.33, .004	.246

Note. 90% TOST represents the 90% confidence intervals for the two one-sided tests of

equivalence. The equivalence bounds for the correlation coefficients are -.24, .24. $p < .05$

signifies that the observed effect is statistically equivalent to zero.

Appendix C:

Confirmatory Factor Analysis of the Perceived Control Over One's Job Prospects

Construct

The *Multidimensional Health Locus of Control Scale* was originally constructed (see Wallston et al., 1978) to have three subscales, whereby participants respond on a scale from 1 (*Strongly Disagree*) to 7 (*Strongly Agree*): *internal control* (6 items, e.g., "I am in control of my health" modified to "I will be in control of getting a good job"), *control by chance* (6 items, e.g., "Luck plays a big part in determining how soon I will recover from an illness" modified to "Luck will play a big part in determining if I get a good job"), and *control by powerful others* (6 items, e.g., "Other people play a big part in whether I stay healthy or become sick" modified to "Other people will play a big part in whether or not I get a good job"). In the current study, one item from the *internal control* subscale was not included because it did not translate cogently from a health to an occupational context: "If I take care of myself, I can avoid illness."

Previous research suggests that, although the subscales of the measure have demonstrated acceptable reliability (i.e., coefficient alphas range from .60 to .75 and test re-test coefficients range from .60 to .70), as well as convergent, discriminant, and predictive validity, its factor structure has been called into question (Luszczynska & Schwarzer, 2005). Specifically, the *powerful others* dimension has been found to constitute two independent dimensions, representing both *doctors/experts* and *other people* instead of its single *powerful others* dimension (Wallston, 2005). Considering both the inconsistency of the factor structure of the scale and the modification of its items to fit an occupational context, a confirmatory factor analysis comparing a three- and four-factor model was conducted. The three-factor model consisted of *internal control* (items 1, 6, 8, 10, and 13), *control by chance* (items 2, 4, 12, 15, 16,

17), and *control by powerful others* (items 3, 5, 7, 9, 11, 14; see Table 1C for the scale items). The four-factor model differed in that the *control by powerful others* subscale was split into *control by connections* (the equivalent of *control by doctors/experts* in an occupational context; items 3 and 5) and *control by others* (items 7, 9, 11, and 14).

The model fit statistics indicated that the four-factor model fit the data substantially better than the three-factor model (see Table 2C) and thus, the four-factor model was used in Study 1. Furthermore, a scaled chi-squared difference test indicated that the three-factor model fit the data significantly worse than the four-factor model, $\chi^2_{difference}(3) = 162.85, p < .001$, thereby providing further support for a four-factor model. The four-factor model consisted of the following factors: *internal control* (5 items), $\omega = .68$, 95% CI [.61, .74]; *control by chance* (6 items), $\omega = .61$, 95% CI [.45, .70]; *control by connections* (2 items), $\omega = .85$, 95% CI [.79, .89]; and *control by others* (4 items), $\omega = .72$, 95% CI [.65, .77]. *Internal control* was not significantly correlated with any of the other subscales, *ps* > .10, but the *control by chance*, *connections*, and *control by others subscales* were all positively and strongly related to each other, *ps* < .001 (see Figure 1C), thereby supporting the orthogonal nature of both the internal and "external" (i.e., control by chance, connections, and others) dimensions of the construct (Wallston, 2005).

Table 1C. *Original and Modified Items of the Multidimensional Health Locus of Control Scale*

	Original Item	Modified Item
1.	If I get sick, it is my own behavior which determines how soon I get well again	It will be my own behaviour that determines if I get a good job.
2.	No matter what I do, if I am going to get sick, I will get sick.	It does not matter what I do; if I am going to get a good job, I will get the job.
3.	Having regular contact with my physician is the best way for me to avoid illness.	Having the right connections will be the best way for me to get a good job.
4.	It seems that my health is greatly influenced by accidental happenings.	Getting a good job will be influenced by accidental happenings.
5.	I can only maintain my health by consulting health professionals.	I will get a good job by having the right connections.
6.	I am in control of my health.	I will be in control of getting a good job.
7.	Other people play a big part in whether I stay healthy or become sick.	Other people will play a big part in whether or not I get a good job.
8.	When I get sick, I am to blame.	If I don't get a good job, I will be the one to blame.
9.	Other people will be in control of whether I stay healthy or become sick.	Other people will be in control of whether or not I get a good job.
10.	The main thing which affects my health is what I myself do.	The main thing that will affect me in getting a good job is what I myself do.
11.	Whenever I recover from an illness, it's usually because other people (for example, doctors, nurses, family, friends) have been taking good care of me.	If I get a good job, it will be because other people enabled me to do so.
12.	My good health is largely a matter of good fortune.	Getting a good job will largely be a matter of good fortune.
13.	If I take the right actions, I can stay healthy.	If I take the right actions, I will get a good job.
14.	Regarding my health, I can only do what my doctor tells me to do.	Regarding getting a good job, I will only be able to do what other people tell me to do.
15.	Often, I feel that no matter what I do, if I am going to get sick, I will get sick.	No matter what I do, I'm likely to get a good job.
16.	If it's meant to be, I will stay healthy.	If it's meant to be, I will get a good job.
17.	Luck plays a big part in determining how soon I will recover from an illness.	Luck will play a big part in determining if I get a good job.

Table 2C. *Fit Statistics Comparing a Three- and Four-Factor Model of Perceived Control Over One's Job Prospects*

	df	RMSEA robust	90% CI of RMSEA	CFI robust	TLI robust	SRMR
Three-factor	116	.10	[.09, .11]	.68	.63	.10
Four-factor	113	.07	[.06, .08]	.84	.81	.08

Note. df = degrees of freedom; *RMSEA robust* = robust root mean square error of approximation; *CI* = Confidence interval*; CFI robust* = robust comparative fit index; *TLI robust* = robust Tucker-Lewis index; *SRMR* = standardized root mean square residual.
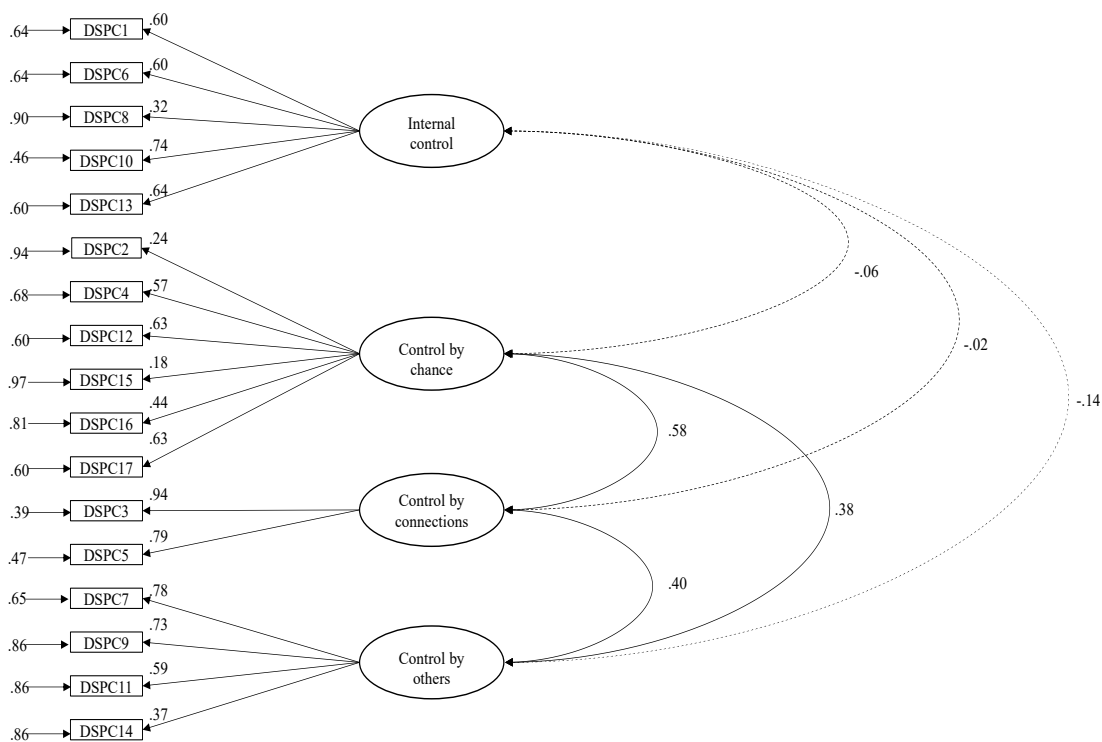
Figure 1C. Four-factor model of perceived control over one's job prospects with completely standardized estimates in Study 1. *Note*. Dotted curved arrows represent non-significant inter-factor correlations at *p* > .10. Solid curved arrows represent significant inter-factor correlations at *p* < .001.

Appendix D:

Data Transformations and Assumption Checks in Study 1

In each model, the assumptions of the test were evaluated by plotting the residuals of the model by its predicted values to check for homoscedasticity; creating a histogram of the residuals to check for normality; validating the histogram with a Shapiro-Wilk normality test (Razali & Wah, 2011); and validating the visualization of homoscedasticity by conducting a Breusch-Pagan test (Breusch & Pagan, 1979). When assumptions were not met, model transformations were carried out by conducting a Box-Cox analysis (Box & Cox, 1964) to examine which transformation was most suitable for the data.

Model 1

In model 1, assumption diagnostics indicated that the residuals were moderately non-normal, $W = 0.97$, $p < .001$ and moderately heteroscedastic, $BP(5) = 34.04$, $p < .001$ (see Figure 1D). However, performing a square, log, and square root transformation did not substantially improve the normality of the residuals or make the data less heteroscedastic (see Figure 1D). Therefore, the model was evaluated in its original form, without the transformations.

Model 2

Assumption diagnostics for Model 2 indicated that the residuals of the model were normally distributed, $W = 0.98$, $p = .002$ (see Figure 2D); however, the data were fairly heteroscedastic, $BP(9) = 70.52$, $p < .001$. Splitting the data by condition indicated that most of the heteroscedasticity was due to the data from the *no threat* condition. Although transforming the distress variable into is reciprocal-square made the data less heteroscedastic in the *no threat* condition, the data were maintained in its original form for ease of interpretation.

Model 3

Assumption diagnostics for model 3 were similar to model 2. The residuals of the model were normally distributed, $W = 0.99$, $p = .016$ (see Figure 3D); however, the data were fairly heteroscedastic, $BP(13) = 69.26$, $p < .001$. Splitting the data by condition indicated that most of the heteroscedasticity was due to the data from the *no threat* condition. Although transforming the distress variable into is reciprocal-square made the data less heteroscedastic in the *no threat* condition, the data were maintained in its original form for ease of interpretation and to maintain continuity from Model 2.
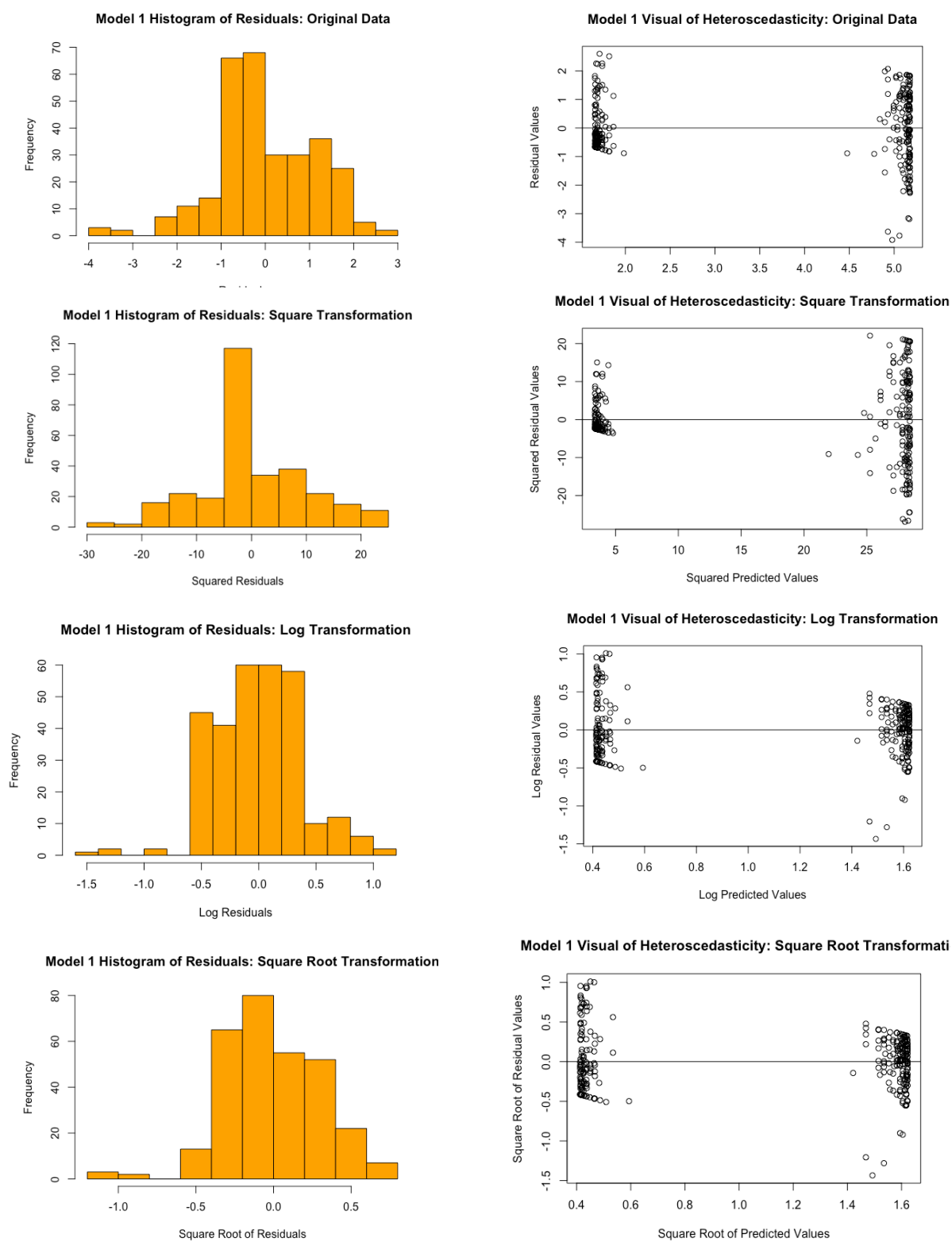
Figure 1D. Assumption checks and data transformations (Model 1) in Study 1.
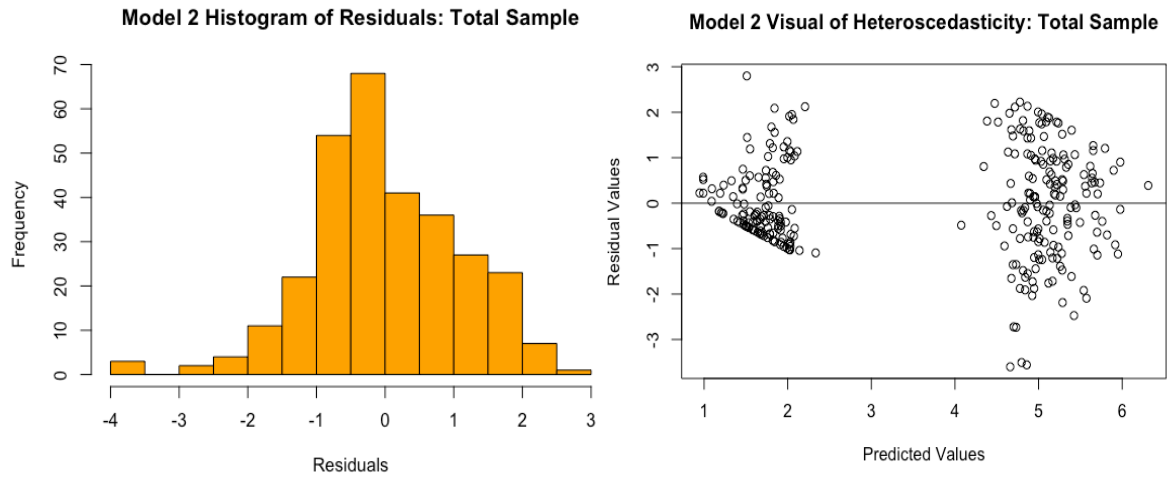
Figure 2D. Assumption checks (Model 2) in Study 1.
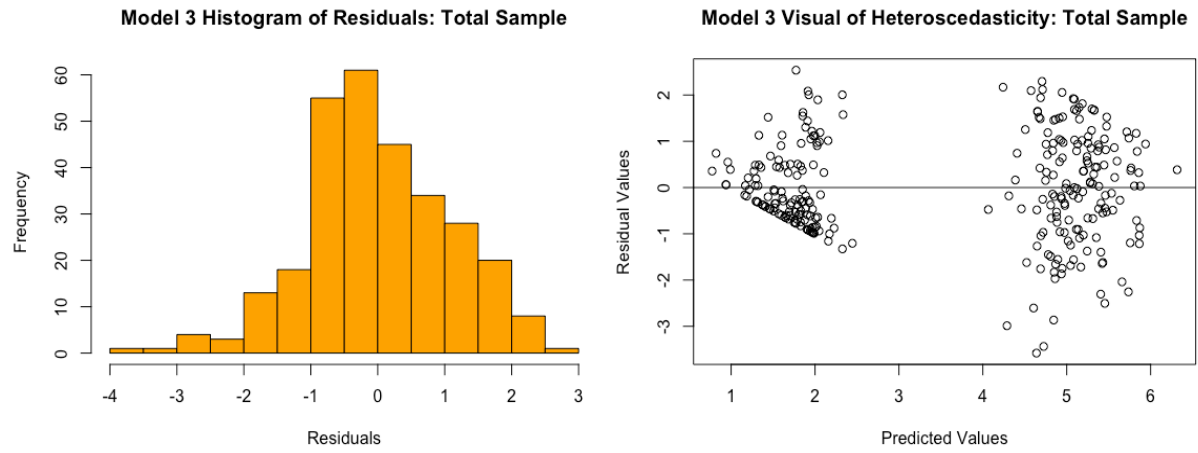
Figure 3D. Assumption checks (Model 3) in Study 1.

Appendix E:

Equivalence Tests in Study 2

Two one-sided equivalence tests using the *TOSTER* package in R (Lakens, 2017) were conducted to examine if the differences between the data that was retained and deleted were small enough to be considered equivalent. Equivalence tests, rather than traditional *t*-tests, were conducted because statistical non-significance in a traditional *t*-test does not prove the null to be true (in this case, H_0 = the data that were retained and deleted are equivalent). Equivalence intervals between Cohen's *d* of -0.5 and 0.5 for *t*-tests, and -25% and 25% for proportions, were created so that any differences that fell into these intervals were considered negligible. A mean difference greater or less than a half a standard deviation, and a proportion difference greater or less than 25%, were chosen as the smallest effect sizes of interest because they were deemed sufficiently large enough to threaten the external validity of random assignment (e.g., if the deleted data had 25% more males, then generalizing the findings across males will have proved difficult because such high attrition might indicate bias).

Retained versus deleted data

Equivalence tests indicated that participants who were removed from the study had statistically equivalent demographic characteristics as those who were retained for analysis (see Table 1E). Therefore, participant attrition was not considered a confound in any statistical analysis conducted. Furthermore, comparing continuous variables (see Table 2E) across those who were retained and deleted indicated that those who were retained did not have significantly equivalent levels of anxiety (*M* = 5.33, *SD* = 1.37) to those who were removed (*M* = 4.82, *SD* = 1.37), $t(239.38) = 1.30$, $p = 0.098$, 90% CI [0.29, 0.73].

Demographics across conditions

Equivalence tests were also conducted to examine if the differences in demographics

between those in the *low*, *moderate*, and *high* internal control conditions were small enough to be

considered equivalent (see Tables 3E, 4E, and 5E). Similarly, equivalence intervals between

Cohen's *d* of -0.5 and 0.5 for *t*-tests, and -25% and 25% for proportions, were created so that any

differences that fell into these intervals were considered negligible. Results showed that

participants were not equivalently likely to have been born in Canada in the *low* internal

condition and in the *high* internal control condition. Furthermore, participants in the *high* internal

condition did not spend an equivalent amount of time in Canada compared to those in both the

low and *moderate* internal control conditions (see Tables 4E and 5E). Importantly, levels of

threat, anxiety, depression, anger, total distress, self-blame, generalized perceived control, and

subjective SES were equivalent between those who were born in Canada and those who were not

(see Table 6E) and between those who were employed and unemployed (see Table 7E).

However, given equivalence bounds of $r = \pm 0.24$ (the equivalent of $d = \pm 0.50$), time spent

living in Canada and threat, anxiety, depression, anger, total distress, self-blame, and subjective

SES were not statistically equivalent to zero (see Table 8E). Instead, only the correlations

between time spent in Canada and generalized perceived control were statistically equivalent to

zero. Therefore, time spent in Canada was controlled for in the regression model predicting

distress by condition (*moderate* versus *high* internal control), generalized perceived control, and

subjective SES.

Regression model controlling for time spent in Canada

Once again, since time spent in Canada was meaningfully related to most of the study

variables, the effect of condition on distress controlling for time spent in Canada was conducted.

Considering that only those who were not born in Canada responded to this question, the regression model was conducted for those who were not born in Canada ($N = 119$). Visualizing the distribution of the residuals suggested that the residuals were normally distributed, which was further supported by a non-significant Shapiro-Wilk test of normality, $W = 0.98$, $p = .094$. Although there was a significant studentized Breusch-Pagan test for homogeneity of variance, $BP(4) = 12.44$, $p = .014$, there did not appear to be any sufficient problems of heteroscedasticity, as indicated by plotting the residuals of the model against the predicted values of the model.

Similar to the model without controlling for time spent in Canada, those in the *high* internal control condition did not report significantly higher levels of distress than those in the *moderate* internal control condition (see Table 9E), $b = 0.23$, $SE = 0.25$, 95% CI [-0.26, 0.72], $p = .354$, $sr^2 = .01$. Generalized perceived control, on the other hand, strongly predicted lower levels of distress, $b = -0.51$, $SE = 0.13$, 95% CI [-0.76, -0.26], $p < .001$, $sr^2 = .13$. When controlling for time spent in Canada, subjective SES no longer significantly predicted lower distress – instead, the coefficient became slightly positive, $b = 0.05$, $SE = 0.13$, 95% CI [-0.13, 0.22], $p = .604$, $sr^2 = .002$. Lastly, time spent in Canada predicted greater levels of distress, $b = 0.04$, $SE = 0.02$, 95% CI [0.01, 0.08], $p = .022$, and the effect held after controlling for age, but the effect was small, $sr^2 = .05$. Put another way, each year spent in Canada predicted a 0.04 unit increase in distress (see Figure 1E).

Table 1E. *Two One-Sided Equivalence Tests Comparing Demographics by Retained and Deleted*

Data in Study 2

	Retained (*n* = 422)	Deleted (*n* = 140)	90% TOST CI	*t* or *z*	*df*	*p*
Age						
M	20.06	21.04				
SD	3.68	6.53	-1.94, -0.02	2.88	169.21	.002
Range	17 – 48	0 – 65				
Gender, *n* (%)						
Female	344 (79.34)	119 (85.00)	-0.21, 0.01	4.92		< .001
Male	87 (20.67)	20 (14.29)	-0.08, 0.21	2.08		.019
Gender Diverse	0	1 (0.71)	--	--		--
Born in Canada, *n* (%)						
Yes	257 (61.05)	71 (50.71)	-0.01, 0.21	2.20		.014
No	171 (38.96)	64 (49.29)	-0.22, 0.04	2.06		.020
Time spent in Canada						
M	8.50	7.64				
SD	6.57	5.97	-0.65, 2.37	2.51	131.64	.007
Range	0 – 38	0 – 25				
Place of birth, *n* (%)						
USA	5 (3.05)	2 (2.90)	--	--		--
Europe	7 (4.27)	2 (2.90)	--	--		--
Caribbean	5 (3.05)	5 (7.25)	--	--		--
South America	10 (6.10)	2 (2.90)	--	--		--
Africa	13 (7.93)	5 (7.25)	--	--		--
Asia	123 (75.00)	52 (75.36)	-0.21, 0.11	3.45		< .001
Oceania	1 (0.61)	0	--	--		--
Pacific Islands	0	1 (1.45)				
Year of study, *n* (%)						
First	233 (55.48)	74 (52.86)	-0.08, 0.14	3.36		< .001
Second	108 (25.71)	42 (30.00)	-0.18, 0.09	2.52		.006
Third	57 (13.57)	12 (8.57)	--	--		--
Fourth +	22 (5.24)	12 (8.57)	--	--		--
Employment Status, *n* (%)						
Full-time	11 (2.61)	10 (7.14)	--	--		--
Part-time	219 (52.02)	56 (40.00)	-0.00, 0.24	1.76		.039
Unemployed	179 (42.52)	67 (47.86)	-0.17, 0.06	2.76		.003
Other	12 (2.85)	7 (5.00)	--	--		--

Note. 90% TOST represents the 90% confidence intervals for the two one-sided tests of

equivalence. A TOST *t*-value was calculated for tests of mean equivalence, and a TOST *z*-value was calculated for tests of proportion equivalence. The 90% TOST CI for mean differences is displayed in raw units. The equivalence bounds ($-\delta$, δ) for age is (-2.65, 2.65) and time spent in Canada is (-3.14, 3.14) in raw units (d = -0.50 and 0.50 in standardized units). The equivalence bounds for proportions is (-0.25, 0.25). $p < .05$ signifies that the observed effect is statistically equivalent to zero. "--" signifies that the equivalence test was not conducted due to small sample sizes and therefore low power to detect the smallest meaningful effect.

Table 2E. *Two One-Sided Equivalence Tests Comparing Study Variables Across Data Collection*

Rounds in Study 2

	Retained (n = 422)		Deleted (n = 140)		90% TOST CI	t	df
	M	*SD*	*M*	*SD*			
Threat	4.18	0.71	4.02	0.81	0.03, 0.29	2.88**	214.30
Anxiety	5.33	1.37	4.82	1.37	0.29, 0.73	1.30†	239.38
Depression	4.81	1.49	4.46	1.38	0.12, 0.58	2.68**	254.73
Anger	4.69	1.42	4.28	1.39	0.19, 0.64	2.15*	242.32
Total Distress	4.94	1.34	4.52	1.29	0.21, 0.63	1.87*	245.92
General Control	4.86	0.92	4.70	1.01	0.00, 0.32	3.35***	220.73
Subjective SES	6.22	1.55	6.35	1.68	-0.40, 0.14	4.20***	221.31

Note. 90% TOST represents the 90% confidence intervals for the two one-sided tests of equivalence. The 90% TOST CI for mean differences is displayed in raw units. $(-\delta, \delta)$ represents the equivalence bounds, also displayed in raw units ($d = -0.50$ and 0.50 in standardized units). All variables displayed range from 1 to 7, except for subjective SES, which ranges from 1 to 10. $p < .05$ signifies that the observed effect is statistically equivalent to zero.

†$p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$

Table 3E. *Two One-Sided Equivalence Tests Comparing Demographics by Condition in Study 2*

(Low *versus* Moderate *Control*)

	Low (n = 139)	Moderate (n = 145)	90% TOST CI	t or z	df	p
Age						
M	19.86	20.38				
SD	3.44	4.35	-1.29, 0.25	3.10	272.26	.001
Range	17 – 48	18 – 45				
Gender, n (%)						
Female	111 (79.86)	111 (77.08)	-0.06, 0.12	4.03		<.001
Male	28 (20.14)	33 (22.92)	-0.20, 0.15	2.11		.018
Gender Diverse	0	0	--	--		--
Born in Canada, n (%)						
Yes	94 (67.63)	68 (52.78)	0.02, 0.28	1.31		.095
No	47 (33.10)	68 (46.58)	-0.30, 0.00	1.10		.136
Time spent in Canada						
M	8.74	9.00				
SD	5.55	6.99	-2.29, 1.77	2.37	101.54	.010
Range	1 – 22	0.5 – 38				
Place of birth, n (%)						
USA	1 (2.22)	2 (2.94)	--	--		--
Europe	1 (2.22)	4 (5.88)	--	--		--
Caribbean	1 (2.22)	3 (4.41)	--	--		--
South America	0	5 (7.35)	--	--		--
Africa	6 (13.33)	5 (7.35)	--	--		--
Asia	35 (77.78)	49 (72.06)	-0.10, 0.21	2.03		.021
Oceania	1 (2.22)	0	--	--		--
Pacific Islands	0	0				
Year of study, n (%)						
First	75 (53.96)	84 (58.74)	-0.18, 0.08	2.57		.005
Second	33 (28.06)	39 (23.08)	-0.12, 0.22	1.94		.026
Third	16 (11.51)	20 (13.99)	--	--		--
Fourth +	9 (6.47)	6 (4.20)	--	--		--
Employment Status, n (%)						
Full-time	3 (2.16)	3 (4.17)	--	--		--
Part-time	67 (48.21)	70 (48.61)	-0.14, 0.14	2.89		.002
Unemployed	62 (45.07)	67 (45.89)	-0.18, 0.11	2.44		.007
Other	7 (5.04)	1 (0.69)	--	--		--

Note. 90% TOST represents the 90% confidence intervals for the two one-sided tests of

equivalence. A TOST *t*-value was calculated for tests of mean equivalence, and a TOST *z*-value

was calculated for tests of proportion equivalence. The 90% TOST CI for mean differences is displayed in raw units. The equivalence bounds ($-\delta$, δ) for age is (-1.96, 1.96) and time spent in Canada is (-3.16, 3.16) in raw units ($d = -0.50$ and 0.50 in standardized units). The equivalence bounds for proportions is (-0.25, 0.25). $p < .05$ signifies that the observed effect is statistically equivalent to zero. "--" signifies that the equivalence test was not conducted due to small sample sizes and therefore low power to detect the smallest meaningful effect.

Table 4E. *Two One-Sided Equivalence Tests Comparing Demographics by Condition in Study 2*
(Low versus High Control)

	Low (n = 139)	High (n = 138)	90% TOST CI	*t* or *z*	*df*	*p*
Age						
M	19.86	19.92				
SD	3.44	3.12	-0.71, 0.59	4.01	272.78	< .001
Range	17 – 48	17 – 36				
Gender, *n* (%)						
Female	111 (79.86)	112 (81.16)	-0.10, 0.10	4.47		< .001
Male	28 (20.14)	26 (18.84)	-0.16, 0.19	2.20		.014
Gender Diverse	0	0		--		--
Born in Canada, *n* (%)						
Yes	94 (67.63)	87 (63.04)	-0.07, 0.16	2.88		.002
No	47 (33.10)	51 (36.96)	-0.21, 0.11	2.10		.018
Time spent in Canada						
M	8.74	7.66				
SD	5.55	6.88	-1.08, 3.24	1.58	89.4	.059
Range	1 – 22	0 – 26.5				
Place of birth, *n* (%)						
USA	1 (2.22)	2 (3.92)	--	--		--
Europe	1 (2.22)	2 (3.92)	--	--		--
Caribbean	1 (2.22)	1 (1.96)	--	--		--
South America	0	5 (9.80)	--	--		--
Africa	6 (13.33)	2 (3.92)	--	--		--
Asia	35 (77.78)	39 (76.47)	-0.19, 0.15	2.30		.011
Oceania	1 (2.22)	0	--	--		--
Pacific Islands	0	0	--	--		--
Year of study, *n* (%)						
First	75 (53.96)	76 (52.78)	-0.19, 0.07	2.45		.007
Second	33 (28.06)	38 (26.39)	-0.14, 0.20	2.16		.015
Third	16 (11.51)	21 (14.58)	--	--		--
Fourth +	9 (6.47)	9 (4.14)	--	--		--
Employment Status, *n* (%)						
Full-time	3 (2.16)	2 (1.45)	--	--		--
Part-time	67 (48.20)	82 (59.42)	-0.25, 0.02	1.69		.046
Unemployed	62 (45.07)	50 (36.23)	-0.07, 0.24	1.79		.037
Other	7 (5.04)	4 (2.90)	--	--		--

Note. 90% TOST represents the 90% confidence intervals for the two one-sided tests of

equivalence. A TOST *t*-value was calculated for tests of mean equivalence, and a TOST *z*-value

was calculated for tests of proportion equivalence. The 90% TOST CI for mean differences is displayed in raw units. The equivalence bounds $(-\delta, \delta)$ for age is (-1.64, 1.64) and time spent in Canada is (-3.13, 3.13) in raw units (d = -0.50 and 0.50 in standardized units). The equivalence bounds for proportions is (-0.25, 0.25). $p < .05$ signifies that the observed effect is statistically equivalent to zero. "--" signifies that the equivalence test was not conducted due to small sample sizes and therefore low power to detect the smallest meaningful effect.

Table 5E. *Two One-Sided Equivalence Tests Comparing Demographics by Condition in Study 2*

(Moderate *versus* High *Control*)

	Moderate (*n* = 145)	High (*n* = 138)	90% TOST CI	*t or z*	*df*	*p*
Age						
M	20.38	19.92				
SD	4.35	3.12	-1.20, 0.28	3.20	261.45	.001
Range	18 – 45	17 – 36				
Gender, *n* (%)						
Female	111 (77.08)	112 (81.16)	-0.05, 0.13	3.85		< .001
Male	33 (22.92)	26 (18.84)	-0.22, 0.13	1.97		.024
Gender Diverse	0	0	--	--		--
Born in Canada, *n* (%)						
Yes	68 (52.78)	87 (63.04)	-0.02, 0.23	1.91		.028
No	68 (46.58)	51 (36.96)	-0.25, 0.05	1.62		.052
Time spent in Canada						
M	9.00	7.66				
SD	6.99	6.88	-3.53, 0.85	1.61	104.08	.055
Range	0.5 – 38	0 – 26.5				
Place of birth, *n* (%)						
USA	2 (2.94)	2 (3.92)	--	--		--
Europe	4 (5.88)	2 (3.92)	--	--		--
Caribbean	3 (4.41)	1 (1.96)	--	--		--
South America	5 (7.35)	5 (9.80)	--	--		--
Africa	5 (7.35)	2 (3.92)	--	--		--
Asia	49 (72.06)	39 (76.47)	-0.11, 0.20	2.21		.014
Oceania	0	0	--	--		--
Pacific Islands	0	0	--	--		--
Year of study, *n* (%)						
First	84 (58.74)	76 (52.78)	-0.18, 0.08	2.52		.006
Second	39 (23.08)	38 (26.39)	-0.14, 0.20	2.12		.017
Third	20 (13.99)	21 (14.58)	--	--		--
Fourth +	6 (4.20)	9 (4.14)	--	--		--
Employment Status, *n* (%)						
Full-time	3 (4.17)	2 (1.45)	--	--		--
Part-time	70 (48.61)	82 (59.42)	-0.03, 0.24	1.76		.039
Unemployed	67 (45.89)	50 (36.23)	-0.25, 0.05	1.61		.054
Other	1 (0.69)	4 (2.90)	--	--		--

Note. 90% TOST represents the 90% confidence intervals for the two one-sided tests of equivalence. A TOST *t*-value was calculated for tests of mean equivalence, and a TOST *z*-value was calculated for tests of proportion equivalence. The 90% TOST CI for mean differences is displayed in raw units. The equivalence bounds (-δ, δ) for age is (-1.89, 1.89) and time spent in Canada is (-3.45, 3.45) in raw units (*d* = -0.50 and 0.50 in standardized units). The equivalence bounds for proportions is (-0.25, 0.25). *p* < .05 signifies that the observed effect is statistically equivalent to zero. "--" signifies that the equivalence test was not conducted due to small sample sizes and therefore low power to detect the smallest meaningful effect.

Table 6E. *Two One-Sided Equivalence Tests Comparing Study Variables for Those Born and Not Born in Canada in Study 2*

	Born in Canada (*n* = 256)		Not born in Canada (*n* = 164)		90% TOST CI	*t*	*df*
	M	*SD*	*M*	*SD*			
Threat	4.20	0.72	4.15	0.70	-0.07, 0.17	4.31***	354.68
Anxiety	5.44	1.31	5.16	1.41	0.05, 0.51	2.94**	321.79
Depression	4.92	1.47	4.63	1.51	0.04, 0.54	3.04**	340.73
Anger	4.71	1.38	4.66	1.47	-0.19, 0.29	4.62***	331.47
Total Distress	5.02	1.29	4.81	1.41	-0.02, 0.44	3.41***	324.95
Self-Blame	4.87	0.89	4.84	0.96	-0.12, 0.18	4.64***	328.29
General Control	4.86	0.92	4.70	1.01	0.00, 0.32	3.35***	220.73
Subjective SES	6.12	1.56	6.34	1.54	-0.48, 0.04	3.59***	350.83

Note. 90% TOST represents the 90% confidence intervals for the two one-sided tests of equivalence. The 90% TOST CI for mean differences is displayed in raw units. (-δ, δ) represents the equivalence bounds, also displayed in raw units (d = -0.50 and 0.50 in standardized units). All variables displayed range from 1 to 7, except for subjective SES, which ranges from 1 to 10. p < .05 signifies that the observed effect is statistically equivalent to zero.

** p < .01, *** p < .001

Table 7E. *Two One-Sided Equivalence Tests Comparing Study Variables for Those with and without Employment*

	Unemployed (*n* = 178)		Employed (*n* = 241)		90% TOST CI	*t*	*df*
	M	*SD*	*M*	*SD*			
Threat	4.15	0.73	4.21	0.70	-0.18, 0.06	4.20***	372.38
Anxiety	5.38	1.39	5.29	1.36	-0.13, 0.31	4.39***	376.84
Depression	4.89	1.48	4.75	1.49	-0.10, 0.38	4.11***	382.93
Anger	4.73	1.40	4.66	1.43	-0.16, 0.30	4.57***	385.89
Total Distress	5.00	1.34	4.90	1.34	-0.12, 0.32	4.30***	381.52
Self-Blame	4.57	1.63	4.59	1.65	-0.29, 0.25	4.94***	384.06
General Control	4.84	0.91	4.87	0.93	-0.18, 0.12	4.74***	386.00
Subjective SES	6.30	1.57	6.16	1.54	-0.11, 0.39	4.14***	377.39

Note. 90% TOST represents the 90% confidence intervals for the two one-sided tests of equivalence. The 90% TOST CI for mean differences is displayed in raw units. $(-\delta, \delta)$ represents the equivalence bounds, also displayed in raw units (d = -0.50 and 0.50 in standardized units). All variables displayed range from 1 to 7, except for subjective SES, which ranges from 1 to 10. $p < .05$ signifies that the observed effect is statistically equivalent to zero.

*** $p < .001$

Table 8E. *Two One-Sided Equivalence Tests Correlating Study Variables with Time Spent in Canada in Study 2*

	Observed r	90% TOST CI	p
Threat	.12	-0.01, 0.25	.063
Anxiety	.11	-0.02, 0.24	.050
Depression	.13	-0.003, 0.26	.080
Anger	.17	.04, 0.30	.184
Total Distress	.14	.01, 0.27	.100
Self-Blame	.12	-0.01, 0.25	.063
General Control	.04	-0.09, 0.17	.006
Subjective SES	-.13	-0.26, 0.03	.080

Note. 90% TOST represents the 90% confidence intervals for the two one-sided tests of equivalence. The equivalence bounds for the correlation coefficients are -.24, .24. *p* < .05 signifies that the observed effect is statistically equivalent to zero.

Table 9E. *Regression Model Predicting Distress for Those not Born in Canada in Study 2*

Predictors	Model 1 (N = 116)			Model 2 (N = 119)		
	b	*SE*	95% CI	*b*	*SE*	95% CI
Condition	0.23	0.25	-0.26, 0.72	0.22	0.25	-0.28, 0.72
General Control	-0.51***	0.13	-0.76, -0.26	-0.50***	0.13	-0.76, -0.23
Subjective SES	0.05	0.09	-0.13, 0.22	0.05	0.09	-0.14, 0.24
Years in Canada	0.04*	0.02	0.01, 0.08	0.05*	0.02	0.01, 0.08
Age	--	--	--	-0.02	0.03	-0.07, 0.08

Note. b represents the unstandardized regression coefficient. Condition contains only those in the *moderate* internal control condition and the *high* internal control condition. Generalized perceived control ranges from 1 to 7, subjective SES ranges from 1 to 10, Years in Canada is a self-report continuous variable that ranged from 0 to 38, and Age is a self-report continuous variable that ranged from 17 to 44. In Model 1, three outliers were identified via distance and leverage values, and they were removed. There were no outliers identified in Model 2.
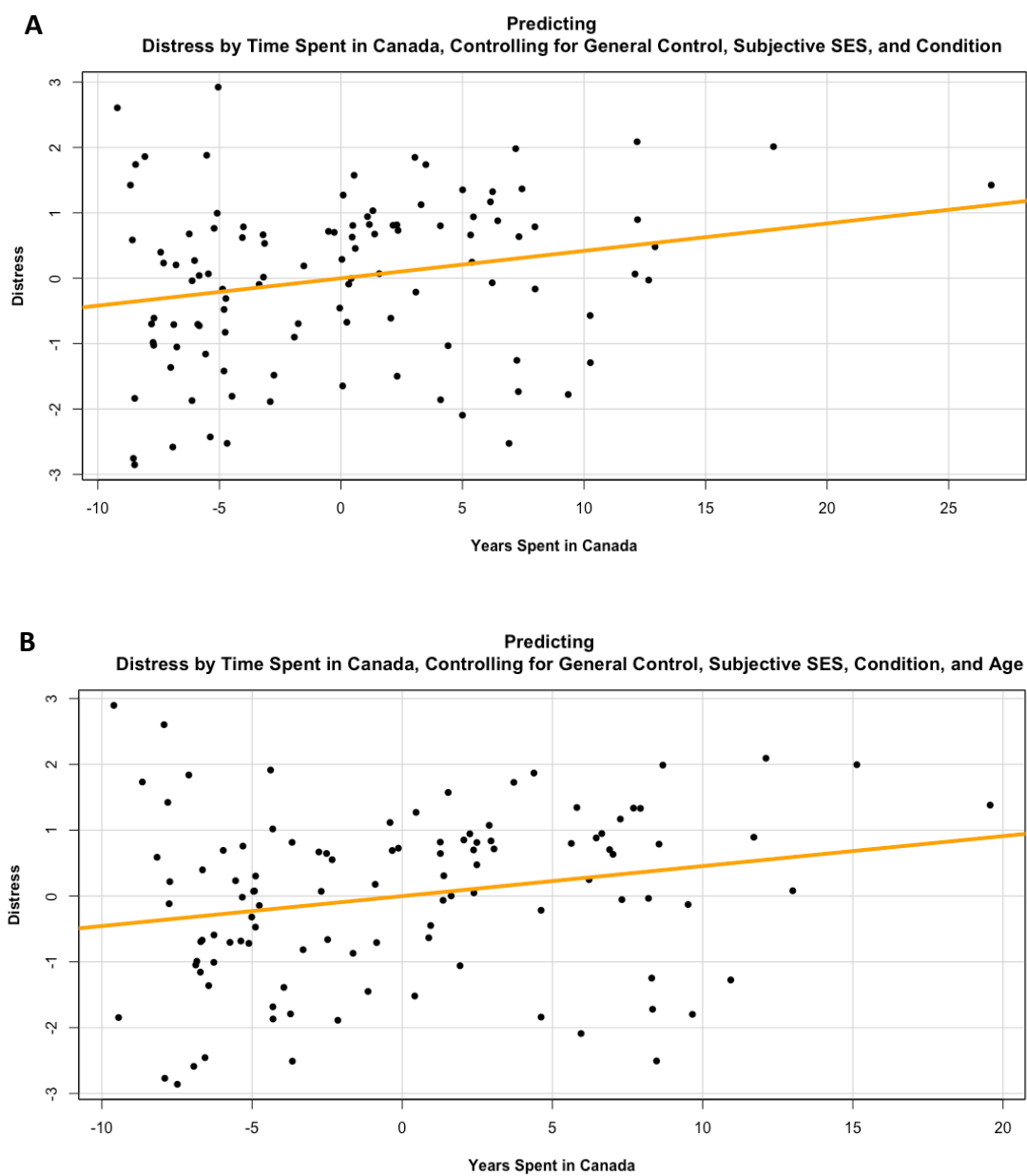
Figure 1E. Added variable plots predicting distress by (A) time spent in Canada in Study 2, controlling for generalized perceived control, subjective SES, and condition (*moderate* versus *high* internal control) and (B) time spent in Canada, controlling for generalized perceived control, subjective SES, condition (*moderate* versus *high* internal control) and age.

Appendix F:

Welch's *t*-tests on Ranked Distress in Study 2

In order to examine if those in the *moderate* internal control condition had the lowest

levels of distress, and that those in the *low* internal control condition had the greatest levels of

distress, a series of pairwise *t*-tests were conducted. Prior to any analyses, the assumptions of

normality and homogeneity of variance in the data were evaluated. Visualizing the distributions

of the distress scores by condition to evaluate the assumption of normality indicated that the

distributions were negatively skewed in all three conditions, which was further supported by

statistically significant Shapiro-Wilk tests of normality, $W_{\text{low internal control}} = 0.97$, $p = .004$; W

$_{\text{moderate internal control}} = 0.95$, $p < .001$; $W_{\text{high internal control}} = 0.97$, $p = .006$. However, the data met the

homogeneity of variance assumption, which was also supported by non-significant Levene's test

for homogeneity of variance, $F(1, 287)_{\text{low vs. moderate}} = 0.35$, $p = .553$; $F(1, 284)_{\text{low vs. high}} = 0.19$, p

$= .659$; $F(1, 289)_{\text{moderate vs. high}} = 1.05$, $p = .307$. Therefore, taking into account that all

distributions were negatively skewed but had equal variances, Welch's *t*-tests on the ranked

distress variable were conducted. Welch's *t*-test on the ranked data was conducted because

simulation studies suggest that the Welch's *t*-test on ranked data maintains low Type I and Type

II error rates when the distributions are skewed but variances are equal (Cribbie et al., 2007).

Contrary to Hypothesis 1, those in the *moderate* internal control condition did not have

significantly lower levels of distress ($M_{\text{ranked}} = 145.20$, $SD_{\text{ranked}} = 84.53$) than those in the *high*

internal control condition ($M_{\text{ranked}} = 138.64$, $SD_{\text{ranked}} = 79.08$), $t(280.92) = 0.67$, $p = .501$, $d =$

0.08, 95% CI [-0.15, 0.31]. Furthermore, those in the *moderate* internal control condition did not

have significantly lower levels of distress ($M_{\text{ranked}} = 143.75$, $SD_{\text{ranked}} = 82.55$) than those in the

low internal control condition ($M_{\text{ranked}} = 141.19$, $SD_{\text{ranked}} = 81.96$), $t(281.65) = -0.26$, $p = .794$, d

= -0.03, 95% CI [-0.26, 0.20]. Additionally, those in the *low* internal control condition did not have significantly greater levels of distress (*M* ranked = 140.38, *SD* ranked = 81.94) than those in the *high* internal control condition (*M* ranked = 137.61, *SD* ranked = 78.48), *t*(274.65) = 0.29, *p* = .774, *d* = 0.03, 95% CI [-0.20, 0.27]. Therefore, no evidence was found to support the causal and curvilinear relationship between internal control over one's job prospects and distress during economic threat (see Tables 1F, 2F, and 3F).

Table 1F. *Welch's* t-*tests on Ranked Distress Comparing Those in the* Moderate *and* High *Internal Control Conditions in Study 2*

	Moderate Control (*n* = 145)		High Control (*n* = 138)						
	M	*SD*	*M*	*SD*	*t*	*df*	95% CI	*d*	95% CI of *d*
Anxiety	142.06	83.97	141.94	79.52	0.01	280.99	[-19.01, 19.25]	0.00	[-0.23, 0.24]
Depression	146.18	83.55	137.61	79.98	0.88	280.99	[-10.56, 27.71]	0.10	[-0.13, 0.34]
Anger	146.55	83.88	137.22	79.56	0.96	281.00	[-9.80, 28.45]	0.11	[-0.12, 0.35]
Distress	145.20	84.53	138.64	79.08	0.67	280.92	[-12.59, 25.70]	0.08	[-0.15, 0.31]
Self-Blame	145.75	81.56	138.07	81.55	0.79	280.31	[-11.41, 26.77]	0.09	[-0.14, 0.33]

Note: M = mean, *SD* = standard deviation, *CI* = confidence interval, *d* = Cohen's *d*.

Table 2F. *Welch's* t-*tests on Ranked Distress Comparing Those in the* Low *and* Moderate *Internal Control Conditions in Study 2*

| | Low Control (*n* = 139) | | Moderate Control (*n* = 145) | | | | | | |
	M	*SD*	*M*	*SD*	*t*	*df*	95% CI	*d*	95% CI of *d*
Anxiety	141.02	80.99	143.92	83.11	-0.30	281.92	[-22.07, 16.27]	0.04	[-0.27, 0.20]
Depression	140.90	82.05	144.03	82.33	-0.32	281.57	[-22.33, 16.08]	0.04	[-0.27, 0.20]
Anger	141.71	81.93	143.26	82.48	-0.16	281.64	[-20.75, 17.66]	0.02	[-0.25, 0.21]
Distress	141.19	81.96	143.75	82.55	-0.26	281.65	[-27.28, 16.66]	0.03	[-0.26, 0.20]
Self-Blame	143.78	82.62	141.27	81.15	0.26	280.98	[-16.62, 21.65]	0.03	[-0.20, 0.26]

Note: M = mean, *SD* = standard deviation, *CI* = confidence interval, *d* = Cohen's *d*.

Table 3F. *Welch's* t-*tests on Ranked Distress Comparing Those in the* Low *and* High *Internal Control Conditions in Study 2*

| | Low Control (*n* = 139) | | High Control (*n* = 138) | | | | | | |
	M	SD	M	SD	*t*	*df*	95% CI	*d*	95% CI of *d*
Anxiety	136.72	81.29	141.30	78.79	-0.48	274.84	[-23.52, 14.35]	0.06	[-0.29, 0.18]
Depression	141.30	81.91	136.68	78.37	0.48	274.63	[-14.34, 23.58]	0.06	[-0.18, 0.29]
Anger	142.33	81.32	135.64	78.90	0.70	274.86	[-12.26, 25.65]	0.08	[-0.15, 0.32]
Distress	140.38	81.94	137.61	78.48	0.29	274.65	[-16.20, 21.75]	0.03	[-0.20, 0.27]
Self-Blame	144.08	80.63	133.88	78.82	1.06	274.93	[-8.66, 29.06]	0.13	[-0.11, 0.36]

Note: M = mean, *SD* = standard deviation, *CI* = confidence interval, *d* = Cohen's *d*.