Proceedings of the National Conference
On Undergraduate Research (NCUR) 2013
University of Wisconsin La Crosse, WI
April 11 – 13, 2013

Perceived Control over Traumatic Events: A Study across Events

Jacqueline Caston
Department of Psychology
University of Minnesota
Minneapolis, MN 55455 USA

Faculty Advisor: Dr. Patricia Frazier

Abstract

Traumatic experiences can lead to a variety of positive and negative outcomes. Identifying factors underlying the emergence of these diverse effects serves to inform interventions which not only alleviate negative symptoms, but also promote growth and well-being. One potential factor is perceived control. Although research has typically explored control in general, the three types of perceived control identified by Frazier, Berman, and Steward (2001) have been found to relate differently to post-trauma outcomes. More specifically, past control has been related to greater distress and present control to less distress, whereas future control has had varying effects. This study aimed to further explore the relation between these distinct forms of perceived control and both positive and negative outcomes across traumatic events. Multiple regression analyses conducted on data from two combined samples (total $N = 637$), revealed that the duration of a participant's most distressing event (i.e. acute versus ongoing), and whether the event happened to the participant directly (e.g., one's own injury versus witnessing violence) did not significantly moderate the relationship between perceived control and post-traumatic outcomes. However, the objective controllability of an event did significantly moderate the relation between each of the three forms of perceived control and post-traumatic growth, as well as the relation between future control and distress. Implications for future research and interventions are discussed.

Keywords: Trauma, Perceived Control, Moderators

1. Introduction

Perceived control is a key construct in the understanding of stress and trauma. It could be argued that this is due to the role of control in coping, but it may also involve the effect of perceived control on the subjective experience of traumatic events. Suedfeld (1997) defined a traumatic event as "an experience that invalidates one's normal assumptions of order, predictability, safety, and identity, a very severe environmental challenge calling for the utmost energization of coping resources (p. 850)." When faced with an experience that threatens to overwhelm our resources, it makes sense that we may attempt to strengthen our sense of predictability or order, as a means of self-protection from the full force of the event. Macro-level crises involving threats to public safety illustrate on a larger scale some of the ways people strive to perceive greater control as a means of coping with trauma. When the Great Plague spread across Europe in the 14th century, for instance, the populace faced a terrifying threat. Without the knowledge of modern science, flagellants attributed the disease to the wrath of an angry God, and travelled the countryside, inflicting severe punishments onto their bodies, in hopes of appeasing that wrath. Although this likely contributed more to the spread of the plague than anything else, taking this action allowed these people to perceive some degree of control over what was happening around them. Another well-known historical example of this desire to perceive some degree of control over threatening events involves emergency drills during the Cold War. The risk of an air raid or bombing posed a continuous physical and psychological threat. Although climbing under their desks and covering their heads did nothing to increase children's actual control over their safety, it could be argued that people simply needed to feel some sense of control over their situation, even if a little irrational.

Although perceived control can often coincide with actual control, as in the case of students determining that they can affect the outcomes of their exam by studying, these historical examples highlight the difference between perceived and actual control. A majority of the research on trauma has focused on self-reported perceived control over events, or the degree to which one feels one has influence over the events and circumstances in one's life. Research has found general perceived control to be negatively associated with anxiety (e.g., Affleck, Tennen, Croog, & Levine, 1987; Hou & Wan, 2012; Ong, Bergeman, & Bisconti, 2005), depression (e.g., Hou & Wan, 2012), and hospital complications (e.g., Affleck et al., 1987). It has also been speculated that perceiving greater general control over one's circumstances could reduce sympathetic nervous system activation, thereby causing less strain on cardiovascular health (Affleck et al., 1987). Perceived control over academic stressors, in particular, has been found to be moderately related to lower anxiety and higher self-esteem, and mildly related to lower perceived stress, and improved physical and psychological health (Stupnisky, Perry, Renaud & Hladkyj, 2012).

However, different forms of control can relate differently to post-trauma outcomes (Frazier et al., 2011). Frazier, Berman, and Steward (2001) developed a temporal model of control, which breaks perceived control into three different types: past control (what one could have done in the past with regard to a stressful or traumatic event), present control (what one can do right now), and future control (what one can do in the future).

The positive effects of present control have been very consistent in the literature. Generally, greater present control was related to less distress and better adjustment across events (Frazier et al., 2011, 2012; Frazier, Steward, & Mortensen, 2004; Walsh & Bruce, 2011). It was also negatively related to social withdrawal in victims of sexual assault (Frazier, Mortensen, & Steward, 2005) and negatively related to PTSD symptoms in victims of sexual harassment (Larsen & Fitzgerald, 2011).

Past control, on the other hand, has been found to be unassociated with or associated with increased distress (Frazier et al., 2002, 2011, 2012; Walsh & Bruce, 2011), as well as increased self-blame and hostility (Frazier, 2000) and PTSD symptoms (Walsh & Bruce, 2011). However, some researchers have suggested that past control may relate to positive outcomes in certain circumstances related to future planning. For instance, past control may be effective as a "catalyst" for the decision to leave an abusive relationship (O'Neill & Kerig, 2000). Researchers have also found behavioral self-blame to have positive effects in patients with neck cancer who chose to quit smoking (Christensen et al., 1999). Perhaps, then, when past control is combined with future control, it may relate to post-trauma outcomes differently.

Future control has been associated with better adjustment (Frazier et al., 2002) and negatively related to depression and hopelessness (Clements, Sabourin, & Spiby, 2004). However, in a study of victims of sexual harassment, perceiving greater future control was also related to greater PTSD symptoms (Larsen & Fitzgerald, 2011). Variability in the relation between future control and distress was also found when comparing the relation between control and adjustment across sexual assault and bereavement. Whereas present control was related to better adjustment across the two samples, researchers found that future control was associated with better adjustment only after a sexual assault (Frazier et al., 2004).

One factor which may explain these mixed results is the traumatic event itself. A majority of the literature on perceived control and trauma has focused on relatively homogenous trauma groups (e.g., a group of participants who have all recently been hospitalized after a motor vehicle accident, or a group of female students who have all experienced a sexual assault). Though different traumatic events have been found to relate differently to outcomes (Krupnick et al., 2004), little perceived control research has been conducted across events. One purpose of this study therefore was to explore the potential moderating effects of event characteristics, such as the actual controllability of these events, on the relation between perceived control types and trauma outcomes. Given that so little research has been conducted in this area, this study also explored two other characteristics typically varying across events (i.e. whether an event was in the past or ongoing, and whether the event happened to the participant or to another), to determine whether such dimensions may also moderate the relation between perceived control and adjustment.

Furthermore, this study will also explore the relations between perceived control and self-reported post-traumatic growth. Although traumatic events can lead to a wide spectrum of outcomes, including resilience and growth or improvement in functioning (Bonanno, 2004; Bonanno & Mancini, 2012), the literature has traditionally focused solely on pathology. Whereas stress and trauma can be the sources of great distress, these situations also offer an opportunity for growth. After the New York City terrorist attacks, for instance, the nation saw mass increases in donations and volunteering (Penner, Brannick, Webb, & Connell, 2005). There was also an increase in perceived connectedness to salient groups as well as a shared national identity (Moskalenko, McCauley, & Rozin, 2006). It is important not only to understand pathological responses to trauma, but to better understand the potential for increases in factors such as social support, connectedness, prosocial behavior, and religiosity. After all, in developing interventions, we should aim not only to alleviate negative symptoms, but to facilitate positive growth or adjustment. This study will address that gap by including perceived growth as an exploratory outcome variable.

In performing these moderator analyses, I posited four hypotheses. First, past control will be more strongly related to negative outcomes when the event itself is less controllable and less strongly related to negative outcomes when the event is more controllable. Second, present control will be consistently related to less negative and greater positive outcomes across events. Third, future control will be negatively related to distress and pathological outcomes for more controllable events, and positively related to distress and pathological outcomes for less controllable events. Finally, the relationship between past control and distress will be moderated by future control, such that experiencing greater past control should be related to greater negative outcomes and fewer positive outcomes when alone, than when combined with greater future control.

2. Method

2.1Participants

A total of 637 participants from two studies (n = 436 and n = 201) at a large Midwestern University completed online surveys in exchange for extra credit for their psychology classes. Of the participants who reported their sex, 463 (72.7%) identified as female, and 164 (27.7%) identified as male. Additionally, 75% of the sample identified as European/White, 10.7% as Asian American, 2.7% as African or Black, 2.5% as Multiracial, 1.9% as Hispanic or Latino, 1.3% as Middle Eastern or Arab, 0.5% as Native American, and 1.3% as Other. A majority (68%) of the participants were between the ages of 18 and 21, 15.9% between 22 and 30, 2.5% over 30, and 1.6% under 18.

measures

Participants were asked to report a lifetime stressful event. The follow up open-ended response item requested that they "Please briefly describe this most distressing event or situation."

The distinction between past and ongoing events was assessed through a single item following the event description. It read, "Did this event occur in the past, or is it currently ongoing? For example, a breakup or a death would be in the past whereas an illness might be either past or ongoing."

The Perceived Control over Stressful Events Scale (PCOSES) was used to assess the degree to which participants experienced each of the three types of perceived control with regards to the event described earlier. The measure consists of 18 items assessing past, present, and future control over an event, using a 4-point Likert scale where 1 = *strongly disagree*, and 4 = *strongly agree* (Frazier et al., 2011). Scores on each of the three subscales were found to have high internal reliability, with alpha coefficients of 0.89, 0.86, and 0.90, and 3-week test-retest reliability, with coefficients of 0.80, 0.59, and 0.79 for past, present, and future subscales, respectively (Frazier et al., 2011). Similar levels of internal consistency were found in this study, with alphas of 0.888, 0.801, and 0.880 for past, present, and future control scales, respectively.

The Impact of Event Scale (IES) was administered to assess subjective stress, and particularly, intrusive thoughts and behavioral avoidance, surrounding the stressful life event described by the participant. The measure consists of 15 items on a 4-point scale, where 1 = *not at all* and 4 = *often*. It has a high total score split-half reliability (r = 0.86) and an overall test-retest reliability of 0.87 after one week (Horowitz, Wilner, & Alvarez, 1979). A high internal consistency was found in this study as well, with a Cronbach's alpha of 0.928.

Participants completed a brief, 19-item version of the Stress-Related Growth Scale (SRGS), with regard to their most distressing event as well. The total SRGS score has high internal reliability, with a Cronbach's alpha of 0.94, and test-retest r of 0.81 (Park, Cohen, & Murch, 1996). The brief version used in this study was found to have high internal consistency as well, with an alpha of 0.905.

Finally, participants completed the Brief Symptom Inventory (BSI), to determine their overall distress levels. This scale consists of 53 items rated on a 5-point Likert scale, ranging from 0 = *not at all* to 4 = *extremely*. It has been found to have a high 2-week test-retest reliability of 0.9 for total distress, as well as high internal consistency, with alpha coefficients ranging from 0.71 to 0.85, for individual dimensions (Derogatis & Melisaratos, 1983). Previous studies have found similar results, with overall distress score alphas ranging from 0.89 to 0.94 across time points (Frazier, Berman & Steward, 2005). This consistency was confirmed in the present study, with an alpha of 0.923.

coding procedures

Two raters in the Frazier lab read participants' event descriptions and classified each event, as one happening directly to the participant ("self"), or one happening to another person ("other"). This study used the single code agreed upon by those two raters for each event.

For event controllability, two raters read the participants' descriptions of their most distressing event, and independently rated each event on a 5-point scale of controllability (ranging from 0 = *no control* to 4 = *complete*

control). Inter-rater reliability was moderate, with Kappa = 0.577 ($p < 0.000$). The average score of those two ratings became the objective controllability score for the participant's stressful life event or trauma.

2.2 Statistical Methods

As suggested by Frazier, Tix, and Barron (2004) when performing moderator analyses, the objective controllability scores were standardized into z-scores and the categorical variables (self/other, past/ongoing) were coded into dichotomous variables with values of -1 and 1. I performed a separate linear regression analysis for each interaction combination, and then plotted all significant interactions to allow for interpretation.

3. Results

Participants experienced a variety of events, including the loss of a loved one, life-threatening illness, motor vehicle accidents, academic and financial stress, breakups and other interpersonal conflict. Multiple regression analyses were conducted to determine whether certain dimensions along which these events differed appeared to have a significant moderating effect on the relations between past, present, and future control and post-trauma outcomes.

It was found that whether the event occurred in the past or was ongoing, and whether an event was experienced directly by the participant ("self") or another person, such as a close friend, partner, or family member ("other"), did not significantly interact with perceived control in these analyses. In other words, neither of these event factors appeared to have a significant moderating effect on the relationships between perceived control and outcomes (see Table 1). Although these interactions did not reach significance, several main effects did. Past control and present control were significantly related to post-traumatic stress, for instance, independent of the interactions, as were the self/other and past/ongoing event dimensions (see Table 1). In other words, although these event characteristics may affect post-trauma outcomes, they did not significantly affect the relation between perceived control types and post-trauma outcomes.

The objectively rated controllability of an event significantly moderated the relation between future control and general distress. Event controllability also moderated the relationship between past, present, and future control and self-reported growth (see Table 1). When these relationships were plotted at one standard deviation above and below the mean, it was found that the moderator affected the direction of the relation between future control and outcomes (see Figures 1 and 2), and the strength of the relationships between past and present perceived control and growth (see Figures 3 and 4). In other words, whereas past and present control appear to consistently relate to outcomes across events, future control may relate to more positive outcomes or more negative outcomes, depending upon the event. Event controllability did not moderate the relationship between perceived control and post-traumatic stress. Although past and present control had significant main effects on post-traumatic stress, future control and event controllability were not significantly related to this outcome (see Table 1).

Lastly, future control was found to significantly moderate the relations between past control and distress, as well as past control and growth (see Table 2). When plotted, it was found that future control weakened the positive relation between past control and distress (see Figure 5), and the inverse relation between past control and growth (see Figure 6). In other words, perceiving greater past control is related to more distress and less growth when alone, than when combined with future control. Future control did not moderate the relation between past control and post-traumatic stress, yet, past control alone did have a significant main effect on that relation (see Table 2).

Table 1. Summary of Multiple Regression Analyses for Event-Related Moderators of Perceived Control

	Distress			Post-traumatic Stress			Stress-Related Growth		
Variable	β	t	Sig. (p)	β	t	Sig. (p)	β	t	Sig. (p)
Past Control	.036	.693	.488	.120	2.349	.019	-.104	-1.950	.052
Self/Other	.127	2.537	.011	.132	2.680	.008	-.127	-2.484	.013
Past x Self/Other	-.067	-1.571	.117	-.022	-.535	.593	.043	.988	.324
Past Control	.060	1.413	.158	.175	4.236	.000	-.159	-3.741	.000
Past/Ongoing	.117	2.912	.004	.140	3.543	.000	-.072	-1.787	.074
Past x Past/Ongoing	-.065	-1.552	.121	-.011	-.264	.792	.001	.030	.976
Past Control	.073	1.522	.128	.128	2.720	.007	-.156	-3.225	.001
Controllability	.074	1.318	.188	.145	2.627	.009	-.047	-.835	.404
Past x Controllability	-.092	-1.896	.058	-.070	-1.465	.143	**.107**	**2.199**	**.028**
Present Control	-.371	-9.563	.000	-.450	-12.190	.000	.343	8.714	.000
Self/Other	.144	3.701	.000	.211	5.690	.000	-.178	-4.502	.000
Present x Self/Other	-.040	-.988	.323	.004	.099	.921	.038	.914	.361
Present Control	-.382	-9.981	.000	-.440	-11.961	.000	.359	9.120	.000
Past/Ongoing	.084	2.138	.033	.130	3.439	.001	-.058	-1.432	.153
Present x Past/Ongoing	-.036	-.886	.376	-.016	-.418	.676	.029	.702	.483
Present Control	-.384	-10.157	.000	-.447	-12.417	.000	.342	8.880	.000
Controllability	.080	2.045	.041	.193	5.160	.000	-.041	-1.003	.316
Present x Controllability	.034	.858	.391	.037	.992	.322	**.100**	**2.465**	**.014**
Future Control	-.052	-1.088	.277	.005	.113	.910	.062	1.279	.201
Self/Other	.173	3.557	.000	.198	4.109	.000	-.207	-4.214	.000
Future x Self/Other	-.031	-.764	.445	-.012	-.306	.760	.079	1.923	.055
Future Control	.022	.498	.619	.072	1.667	.096	-.033	-.742	.459
Past/Ongoing	.113	2.827	.005	.145	3.674	.000	-.083	-2.040	.042
Future x Past/Ongoing	-.020	-.451	.652	-.060	-1.397	.163	.055	1.258	.209
Future Control	-.009	-.194	.846	.025	.517	.605	.024	.495	.621
Controllability	.094	1.934	.054	.187	3.911	.000	-.131	-2.639	.009
Future x Controllability	**-.103**	**-2.263**	**.024**	-.085	-1.894	.059	**.170**	**3.658**	**.000**

Table 2. Summary of Multiple Regression Analyses for Interactions between Past and Future Control

	Distress			Post-traumatic Stress			Stress-Related Growth		
Variable	β	t	Sig. (p)	β	t	Sig. (p)	β	t	Sig. (p)
Past Control	.202	6.827	.000	.236	4.331	.000	-.262	-4.709	.000
Future Control	-.116	-3.977	.000	-.052	-.944	.346	.125	2.240	.025
Past x Future	-.067	-2.752	.006	-.063	-1.559	.119	.100	2.433	.015

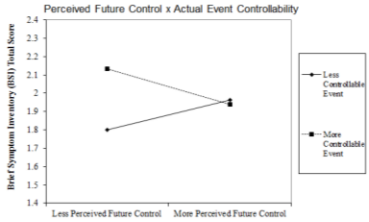

Figure 1. The moderating effect of event controllability on the relation between future control and distress.

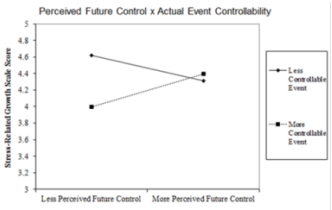

Figure 2. The moderating effect of the event controllability on the relation between future control and growth.

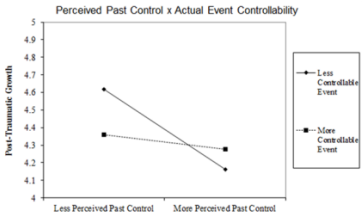

Figure 3. The moderating effect of event controllability on the relation between past control and growth.

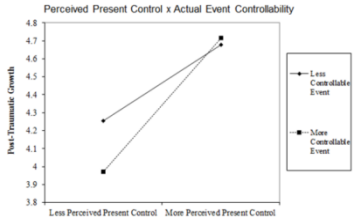

Figure 4. The moderating effect of event controllability on the relation between present control and growth.

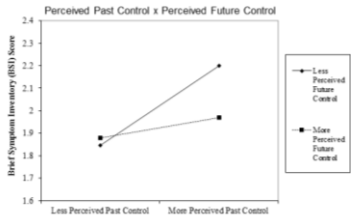

Figure 5. The moderating effect of future control on the relation between past control and distress.

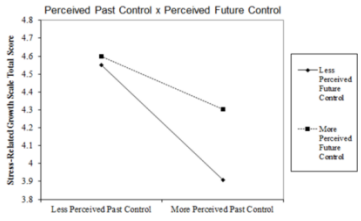

Figure 6. The moderating effect of future control on the relation between past control and growth.

4. Discussion

The purpose of this study was to explore the potential moderating effects on the relations between perceived control types and outcomes. I will briefly discuss the results of this study, followed by limitations and future research directions. Whether an event was acute or ongoing (e.g., a sexual assault versus ongoing sexual abuse), and whether an event happened directly to the person or to someone close to them (e.g., own life threatening illness versus life threatening illness of a parent), were not found to significantly moderate the relationships between different types of perceived control and outcomes. These results suggest that the relations between different types of perceived control and outcomes are consistent across characteristics such as the duration and victim of an event.

The objectively-rated controllability of an event, in contrast, did have significant moderating effects over certain relationships in this study. For pathological outcomes, event controllability only significantly moderated the relationship between perceived control and general distress. Specifically, greater future control was related to greater distress if the event was less controllable and less distress if the event is more controllable. Attempting to prevent or exert future control over an event that one cannot actually control (e.g., loss of loved ones to illness or age) was related to greater distress, perhaps because it simply is not helpful to attempt to control something that you cannot realistically control. Additionally, perceiving less future control over an event that is actually more controllable (e.g., a motor vehicle accident due to the decision to drive while intoxicated) was related to greater distress. These results are consistent with my hypothesis, and could explain the mixed results for future control in the literature. They also demonstrate the importance of further examining potential moderators of these relations between future control and distress. These results are significant not only because they demonstrate the importance of considering potential moderators such as event characteristics, but because they may inform perceived control interventions and thought regulation strategies. Depending on the degree to which a client's experience was realistically within their control, a therapist may approach the use of future control statements and thought strategies differently.

For other forms of control and distress or post-traumatic stress, however, the event controllability was not a significant moderating factor. This is consistent with my hypothesis regarding the consistency of the inverse relationship between present control and negative post-trauma outcomes. It would also suggest that current present control interventions being developed (e.g., Frazier et al., 2013) should be effective across the three event dimensions included in this study. It also supports current trends in trauma and stress research supporting the benefits of present control thought strategies.

The consistency of past control in relation to distress differs from my hypothesis, in that the relations were not significantly stronger or weaker across event characteristics. There were significant main effects between past control and post-traumatic stress and growth outcomes, which support that this form of subjective control may be consistently related to greater distress and inhibited growth. This research may be especially important in informing interventions and awareness campaigns for certain trauma groups. In addressing sexual assault for instance, societal trends towards victim blaming and past control thought strategies (e.g., asking a friend who was sexually assaulted how much he/she drank that night) could be identified as potentially harmful to a victim's healing process.

Each relation between perceived control with growth, however, was moderated by the controllability of the event. This is particularly interesting because of how little has been studied in this area. These results indicate that past control is most strongly negatively related to growth when the event is objectively less controllable. In other words, when attempting to facilitate growth, past control tends to be unhelpful across events, but is particularly harmful to growth when an event is less controllable. Thus, victims of sexual assault, rape, and other interpersonal crimes (which are less controllable); who perceive greater past control and self-blame will likely experience even less growth. Present control, on the other hand, is positively related to growth across events of various levels of controllability. However, when an event is more controllable, greater present control has an even stronger positive relation with growth. In other words, perceiving greater present control after undergoing a more controllable event tends to be associated with the greatest amount of growth. Perceiving less present control over a more controllable event was also related to the least growth. Thus, whereas present control would appear to be helpful across traumas, it is especially useful for clients who have experienced more controllable events. Finally, future control and growth was moderated by controllability as well. As with future control and distress, this moderation actually affected the direction of the relationship. Greater future control was related to increased growth for a more controllable event, and decreased growth for a less controllable event. Interestingly, the greatest amount of growth was experienced by participants who perceived less future control over a less controllable event. This could suggest that, whereas future control may be related to increased growth in some circumstances, it may be helpful to discourage a focus on future control or thoughts about prevention for less controllable events. Although this could suggest that growth is related to accepting when one cannot control something in the future, this could instead be interpreted to simply mean that adopting present control at the expense of future control thought strategies may be related to more growth. Further research is needed to illuminate the workings of this relationship.

Lastly, as predicted, the perception of future control was found to moderate the relationship between past control and distress, as well as between past control and growth. Although past control is still consistently related to more distress and less growth, greater future control appears to weaken those relationships. In other words, past control alone is related to greater distress than past control when combined with future control. Similarly, past control alone is associated with significantly less growth than past control when combined with future control. These results may support the idea that past control could be less harmful when channeled into future or planful coping. However, further research is needed to better understand this relation. Either way, though, these results could contribute to the development of effective perceived control interventions. In clients perceiving greater past control (such as self-blame or rumination), it may be helpful to encourage cognitive restructuring in the form of shifting those thoughts towards future control for instance, to lessen the negative effects of those past control thought habits. In other words, the combination of accepting past powerlessness, or letting go of thoughts of what could have been done in the past, and making a positive shift toward the future should facilitate client growth. This should be especially true for more controllable events, for which future control should be a means of alleviating distress and increasing growth.

Overall, these results demonstrate that the controllability of a client's traumatic experience may determine the effectiveness of certain types of perceived control in comparison to others. These past and future control results not only suggest the need for further research into other potential moderators, given that the event does play a role in these relationships, but they may help us to better tailor our interventions toward our clients. The support these results offer toward the consistent effectiveness of perceived present control is also important, especially now, at a time when present control interventions are just being developed. Given these findings, we should expect such interventions to be helpful across events.

These results address mixed findings in the literature, and shed light onto a potential moderating factor, yet, there were still several limitations worth noting. In terms of methodology, the outcome variables were somewhat coarse in

relation to the predictor variables (Frazier et al., 2004). Future studies using may consider formatting outcome scales with a spectrum on which participants could make a tick mark, for example, to allow for greater precision in their dependent variables and thereby increase the power of the analyses. In addition, inter-coder reliability for the event controllability variable was moderate, but not particularly strong. The purpose of these rating was to quantify the controllability of each event from the perspective of an outside, and supposedly more objective, viewpoint. However, due to the inherently subjective nature of these experiences, and the many nuances that could be factored into this rating, it may be helpful to involve more raters and perhaps a key with clear guidelines or illustrative examples in future studies, to increase the reliability of such ratings. Further, including additional items in the questionnaire which explore specific aspects of a trauma with more depth than participant descriptions may offer, may improve upon the validity of such ratings as a means of estimating actual event controllability.

There were also several potential confounds which may have affected our results. First, our measures focused on traumas or stressors that the participants identified as their most distressing events. However, the total number of traumas participants had experienced was not controlled for. This is worth noting as a potential confound, given previous research showing that early trauma may affect later perceived control over traumatic events (Bak et al., 2005). It is also possible that the effect was confounded by variation in the severity of these events, as previous research has found differences in outcomes across trauma severity in abuse victims (O'Neill & Kerig, 2000).

Finally, this study by no means achieved an exhaustive exploration of the many potential moderators of the relation between perceived control and outcomes. As these events varied along many dimensions, any number of characteristics may have had some effect in this sample. In addition, this sample consisted largely of psychology students. The data are therefore limited to a subset of the population of people who have been exposed to stress and trauma. It would be interesting to see further research involving more diverse samples, especially given that some researchers have found that factors such as the number of traumas experienced vary across race, SES, and age (Norris, 1992). Lastly, the exploratory analysis of positive outcomes in this study was limited to stress-related growth. However, perceived growth is not necessarily consistent with actual improvement in functioning. Some researchers have suggested that people can interpret growth and greater life meaning as a self-protection mechanism for dealing with the greater salience of mortality, which means that it may coincide with actual positive changes in some, but reflect exaggeration or self-deception in others (Davis & McKearney, 2003). Previous research has explored the relations between perceived control and outcomes such as social connectedness (e.g., Hou & Wan, 2012), life satisfaction (e.g., Anke & Fugel-Meyer, 2003; Hou & Wan, 2012; Stupnisky et al., 2012), and changes in faith or meaning (e.g., Infurna et al., 2011; Carmil & Breznitz, 1991). It would be interesting to explore those outcomes in addition to perceived growth, to better understand which aspects of growth are being affected.

5. Acknowledgements

The author wishes to express her appreciation to Dr. Patricia Frazier, for her insight, guidance, and support as a research mentor and professor. Her expertise and feedback throughout this thesis project were invaluable at every stage. Thank you also to Dr. Klimes-Dougan and Dr. Shannon, who volunteered their time to read and provide feedback on this manuscript, as well as the graduate students who have contributed to data collection, entry, and coding, so that we could have this rich collection of data at our fingertips, and the University of Minnesota Psychology Department, which provides a supportive research environment to undergraduate students.

6. References

Affleck, G., Tennen, H., Croog, S., & Levine, S. (1987). Casual attribution, perceived control, and recovery from a heart attack. *Journal of Social and Clinical Psychology, 5(3)*: 339-355.

Anke, A. G. W., & Fugl-Meyer, A. R. (2003). Life satisfaction several years after severe multiple trauma: A retrospective investigation. *Clinical Rehabilitation, 17*: 431-442.

Bak, M., Krabbendam, L., Janssen, I., de Graaf, R., Vollebergh, W., & van Os, J. (2005). Early trauma may increase the risk for psychotic experiences by impacting on emotional response and perception of control. *Acta Psychiatr Scand, 112*: 360-366.

Bonanno, G. A. (2004). Loss, trauma, and human resilience: Have we underestimated the human capacity to thrive after extremely aversive events? *American Psychologist, 59(1)*: 20-28.

Bonanno, G. A., & Mancini, A. D. (2012). Beyond resilience and PTSD: Mapping the heterogeneity of responses to potential trauma. *Psychological Trauma, 4*: 74-83.

Carmil, D., & Breznitz, S. (1991). Personal trauma and world view-Are extremely stressful experiences related to political attitudes, religious beliefs, and future orientation? *Journal of Traumatic Stress, 4(3)*: 393-405.

Christensen, A. J., Moran, P. J., Ehlers, S. L., Raichle, K., Karnell, L., & Funk, G. (1999). Smoking and drinking behavior in patients with head and neck cancer: Effects of behavioral self-blame and perceived control. Journal of Behavioral Medicine, 22(5): 407-418.

Davis, C., & McKearney, J. M. (2003). How do people grow from their experience with trauma or loss? *Journal of Social and Clinical Psychology, 22(5)*: 477-492.

Frazier, P. (2000). The role of attribution and perceived control in recovery from rape. *Journal of Personal and Interpersonal Loss, 5*: 203-225.

Frazier, P., Berman, M., & Steward, J. (2002). Perceived control and posttraumatic stress: A temporal model. *Applied and Preventative Psychology, 10*: 207-223.

Frazier, P. A., Mortensen, H., & Steward, J. (2005). Coping strategies as mediators of the relations among perceived control and distress in sexual assault survivors. *Journal of Counseling Psychology, 52 (3)*: 267-278.

Frazier, P. A., Tix, A. P., & Barron, K. E. (2004). Testing moderator and mediator effects in counseling psychology research. *Journal of Counseling Psychology, 51(1)*: 115-134.

Frazier, P., Keenan, N., Anders, S., Perera, S., Shallcross, S., & Hintz, S. (2011). Perceived past, present, and future control and adjustment to stressful life events. *Journal of Personality and Social Psychology, 100(4)*: 749-765.

Frazier, P., Steward, J., & Mortensen, H. (2004). Perceived control and adjustment to trauma: A comparison across events. *Journal of Social and Clinical Psychology, 23*: 303-324.

Hou, W. K., & Wan, J. H. Y. (2012). Perceived control mediated the prospective impact of relationship quality in the year after colorectal cancer diagnosis. *Ann. Behav. Med., 43*: 129-138.

Infurna, F. J., Gerstorf, D., Ram, N., Schupp, J., & Wagner, G. G. (2011). Long-term antecedents and outcomes of perceived control. *Psychology and Aging, 26(3)*: 559-575.

Krupnick, J. L., Green, B. L., Stockton, P., Goodman, L., Corcoran, C., & Petty, R. (2004). Mental health effects of adolescent trauma exposure in a female college sample: Exploring differential outcomes based on experiences of unique trauma types and dimensions. Psychiatry, 67(3): 264-279.

Larsen, S. E., & Fitzgerald, L. F. (2011). PTSD symptoms and sexual harassment: The role of attributions of perceived control. *Journal of Interpersonal Violence, 26(13)*: 2555-2567.

Manne, S., & Glassman, M. (2000). Perceived control, coping efficacy, and avoidance coping as mediators between spouses' unsupportive behaviors and cancer patients' psychological distress. *Health Psychology, 19(2)*: 155-164.

Moskalenko, S., McCauley, C., & Rozin, P. (2006). Group identification under conditions of threat: College students' attachment to country, family, ethnicity, religion, and university before and after September 11, 2001. Political Psychology, 27(1): 77-97.

Norris, F. H. (1992). Epidemiology of trauma: Frequency and impact of different potentially traumatic events on different demographic groups. *Journal of Consulting and Clinical Psychology, 60(3)*: 409-418.

O'Neill, M. L., & Kerig, P. K. (2000). Attributions of self-blame and perceived control as moderators of adjustment in battered women. *Journal of Interpersonal Violence, 15*: 1036-1049.

Ong, A. D., Bergeman, C. S., & Bisconti, T. L. (2005). Unique effects of daily perceived control on anxiety symptomatology during conjugal bereavement. *Personality and Individual Differences, 38*: 1057-1067.

Park, C. L., Cohen, L. H., & Murch, R. L. (1996). Assessment and prediction of stress-related growth. *Journal of Personality, 64(1)*: 71-105.

Penner, L., Brannick, M., Webb, S., & Connell, P. (2005). Effects of volunteering of the September 11, 2001, attacks: An archival analysis. Journal of Applied Social Psychology, 35(7): 1333-1360.

Stupnisky, R. H., Perry, R. P., Renaud, R. D., & Hladkyj, S. (2012). Looking beyond grades: Comparing self-esteem and perceived academic control as predictors of first-year college students' well-being. *Learning and Individual Differences*, (in press), doi: 10.1016/j.lindif.201207.008

Suedfeld, P. (1997). Reactions to societal trauma: Distress and/or eustress. *Political Psychology, 18(4)*: 849-861.

Vaughn, A. A., Roesch, S. C., & Aldridge, A. A. (2008). Stress-related growth in racial/ethnic minority adolescents: Measurement structure and validity. *Educational and Psychological Measurement*, published online before print May 23, 2008 doi: 10.1177/0013164408318775

Walsh, R. M., & Bruce, S. E. (2011). The relationships between perceived levels of control, psychological distress, and legal system variables in a sample of sexual assault survivors. *Violence Against Women, 17(5)*: 603-618.