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EFFECTS OF PREDICTABILITY, ACTUAL CONTROLLABILITY, AND AWARENESS OF CHOICE ON PERCEPTIONS OF CONTROL

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ABSTRACT

The present study investigated the role of Actual Control, Predicted Outcome, and Awareness of Choice on perceptions of control, influence, responsibility, helplessness, and frustration. Participants determined whether they worked on a boring motor task for either a short (desired) or long (undesired) period of time based on their blind choice of two options: either one of two formats of birth year (2-digit vs. 4-digit). For participants with Actual Control, their choice of options made a difference in the time period received; participants with No Actual Control did not. Some participants were aware they were making a choice to determine their time period; others were not. After choosing between options, some participants knew they received the short period (predicted success), others the long period (predicted failure), still others did not learn their time period (unpredict). Results confirmed the hypothesis that regardless of both Awareness of Choice and Predicted Outcome, participants' whose choice made a difference in the time period perceived more control and responsibility over the time period they received, even if they did not know what it was. Findings are discussed in the context of separating the unique effects of actual control, prediction, and awareness of choice.

INTRODUCTION

Most people admit they would like more control over their own lives. That we can control important outcomes is instrumental in the development of self-esteem, fulfillment of personal goals, and reduction of stress (Baker & Stephenson, 2000a, 2000b; Elliott, Trief, & Stein, 1986; Harchik, Sherman, Sheldon, & Bannerman, 1993; Langlois, Cramer, & Mohagen, 2002; Matheny & Cupp, 1983; Mineka & Henderson, 1985; Mineka & Kihlstrom, 1978; Thompson, 1981). Conversely, the absence of control increases the likelihood of learned helplessness and general physical illness (Lin & Peterson, 1990; Peterson, Maier, & Seligman, 1993; Seligman, 1975). The present study examines the relative role of (a) outcomes we predict, (b) outcomes we actually control, and (c) outcomes we choose with regards to our perceptions of control, responsibility, influence, helplessness, and frustration with respect to those outcomes.

Traditional Definition of Actual Control

Despite volumes of research espousing the benefits of greater control, debate still surrounds its definition and conceptualization. Traditional researchers (Alloy & Abramson, 1979; Peterson, 1993; Peterson et al., 1993; Seligman, 1975) indicate that actual control exists as a difference of contingencies, specifically when an outcome is more likely to occur given one response versus an alternative response. For example, we can reduce the likelihood of having a car accident by occasionally checking our rear-view mirror rather than our watch -- based on the response chosen, we can influence the likelihood of having an accident. Alloy and Abramson (1979) tested this conceptualization by varying how much control (0%, 25%, 50%, or 75%) participants had over the onset of a light by pressing or not pressing a button. As expected, participants perceived more control if they actually had more control over light onset. Mikulincer, Gerber, and Weisenberg (1992), Tang and Critelli (1990), and Vázquez (1987; see also Alloy & Abramson, 1988) report similar findings.

Confounding Actual Control with Prediction

Despite its widespread acceptance, other researchers indicate that the traditional conceptualization of actual control "is confounded by predictability in that having control over a stimulus also means that it is predictable" (Schulz, 1976, p. 564). That is, individuals may perceive control over an outcome not simply because they affect the likelihood of that outcome, but because they can predict or anticipate the likelihood of that outcome (Cramer, Nickels, & Gural, 1997; Craske, Glover, & DeCola, 1995; DeCola, Rosellini, & Warren, 1988; Mineka & Henderson, 1985; Mineka & Kihlstrom, 1978; Matute, 1994; Nickels, Cramer, & Gural, 1992; Perreault, 2005; Rosellini, Warren, & DeCola, 1987; Veltman, van Zijderveld, van Dyck, Bakker, 1998; Vogeltanz & Hecker, 1999). For example, Alloy and Abramson's (1979) participants may have felt control not because pressing or not pressing a button influenced whether the light came on (i.e., actual control), but because they anticipated – through feedback – whether the light came on (i.e., prediction). Even the traditionalists recognize the existence of the prediction-control confound, indicating "these two variables are very hard to separate, for when control is present, prediction is as well" (Seligman, 1975, p. 124). Specifically, the controversy lies in the case of predictionless control, wherein people do not know the outcome of an event after they determine that event; in fact, no example can be conceptualized by the

traditional camp. As Tiggemann and Winefield (1987, p. 254) write, "it is not at all easy to arrange outcomes that are controllable yet unpredictable. And even if they could be arranged, it is hard to see how one could convince people that they were controlling outcomes they were unable to predict."

As a result, empirical investigations have ignored the impossible condition of predictionless control or additional confounds have clouded the interpretation (Cramer et al., 1997; Nickels et al., 1992). For instance, in the assessment of participants' ability to terminate noise, Tiggemann and Winefield (1987) assigned participants to one of four groups: Control/Predict, No-Control/Predict, No-Control/No-Predict, and No-Treatment. Whereas No-Control/No-Predict participants performed significantly worse than the others, the researchers failed to include a condition of Control/No-Predict because it was impossible to conceptualize. Although Burger and Arkin (1980) tried to cross prediction and control in a 2 x 2 design, participants in their Controllable-Unpredictable condition were led to believe that if they solved an anagram problem correctly, the duration of the subsequent noise blasts would be cut in half. In fact, this group received noise blasts at random intervals and durations, regardless of anagram solution; as a result, the design was not fully crossed and remains beset by equivocal interpretation of its findings. Finally, to determine the receipt of a prize, either the participant or experimenter chose one of two coloured marbles (Wortman, 1975). Though some participants knew (before choosing) which colour of marble gave a prize, all participants knew whether or not they would receive a prize before the assessment of perceived control, again confounding actual control with prediction. Indeed, Geer and Maisel (1972) and Solomon, Holmes, and McCall (1980) also excluded the condition of predictionless control due to conceptual impossibility.

Whereas many researchers have recognized the control-prediction confound, few have offered suggestions as to its solution. In fact, some have admitted the two concepts are hopelessly intertwined (Peterson et al., 1993, p. 58): "It is not at all clear, however, that [actual] control can be reduced to prediction. Nevertheless, there are many potential interactions between [actual] control and prediction, and they will not be easy to separate." Seligman (1975, p. 128) concurred: "The problem of disentangling the effects of [actual] controllability from predictability may be next to logically impossible." However, what researchers have consistently overlooked amidst this confound is the uncertainty in explaining participants' ratings of perceived control: Is it a function of their level of actual control, their level of outcome predictability, or some combination of the two? Under the traditional conceptualization, one cannot know which.

Redefinition of Actual Control

To investigate their unique effects, Nickels et al. (1992) reconceptualized control as independent from prediction: "[Actual] control is defined as making a difference in outcomes rather than as having a predictive regulation over outcomes" (p. 160). In other words, one's characteristic actions or aspects completely determine (make a difference in) the outcome received, which may or may not be realized. For example, if a child can choose either of two hands in hopes of uncovering the hand that conceals a candy, there is actual control because the child will get a different outcome (candy or no-candy) depending upon the hand chosen. Conversely, there is no actual control if both hands conceal a candy (or both conceal no candy), because the child will

get the same outcome (candy or no candy, respectively), regardless of the hand chosen. Alternatively, "prediction refers to knowing which outcome will likely occur before it occurs" (Nickels et al., 1992, p. 159). To use the above example, if the child learns the outcome of his/her choice, then there is prediction because the child can anticipate the receipt of a candy. Under the reconceptualization, the traditionally impossible condition of predictionless control becomes possible. Specifically, predictionless control exists if one hand conceals a candy and (after choosing either hand) the child does not learn the result of that choice until after the assessment of perceived control.

The following examples of predictionless control help illustrate the reconceptualization. If one orders a meal from a foreign language menu one does not understand, then one has actual control (i.e., one's choice makes a difference in the type of food that will arrive), but no prediction (i.e., one cannot anticipate exactly what food will arrive). Furthermore, suppose the buttons of a television remote have worn clean from extensive use. Although one knows that some button will change the volume and another button will change the channel, one does not know which is which (no-prediction); but one's choice of button will completely determine (actual control) the change in either the volume (desired) or the channel (undesired). Finally, suppose a student enrolls in a course taught in equivalent time slots and buildings by either an excellent or incapable professor, but does not know which professor will teach which section because the registrar's office has not yet released that information. Whereas the registrar's office knows which professor will instruct which section (prediction), the student does not (no-prediction), yet the student's choice of section completely determines the quality of course instruction received (actual control). Of course, situations of predictionless control remain uncommon because individuals typically prefer predictable to unpredictable circumstances.

But would individuals presented with controllable but unpredictable outcomes recognize it as control (Tiggemann & Winefield, 1978)? To test this hypothesis, Nickels et al. (1992, Experiment 1) instructed participants to insert one of two identical-looking plugs into a device which cycled downward to zero. Participants listened to aversive noise for the remainder of time on the cycling device. One plug produced fast cycling, the other slow cycling, and they did not know which plug produced which cycling speed. Participants were randomly assigned to one of four conditions: *Prediction/Control* participants observed the change in cycling speed after they blindly selected a plug; *Prediction/No-Control* participants observed the change in cycling speed after an experimenter-flipped coin selected a plug; *No-Prediction/Control* participants could not observe the change in cycling speed after they blindly selected a plug; *No-Prediction/No-Control* participants could not observe the change in cycling speed after an experimenter-flipped coin selected a plug. Results showed that (1) regardless of who selected the plug (i.e., actual control), participants who knew the plug cycling speed (i.e., prediction) felt more confident about the amount of time they would listen to aversive noise than participants who did not know the cycling speed (i.e., no-prediction); and (2) regardless of their knowledge of the cycling speed (i.e., prediction), participants who blindly selected the plug (i.e., control) perceived more influence over the amount of time they would listen to aversive noise than participants whose plug was selected by a coin flip (i.e., no control). Nickels et al. (1992, Experiment 2) confirmed these findings with identical experimental groups and measures of perceived control, influence, responsibility, and lack of helplessness.

Confounding Actual Control with Choice

Despite theoretically and empirically separating the effects of control and prediction (Nickels et al., 1992), their manipulation of actual control was still confounded with choice, whereby participants with actual control made a choice of plug, but participants with no actual control made no choice of plug. Thus, it is unclear whether enhanced perceptions of control are due to the level of actual control (i.e., influence of cycling speed) or choice (i.e., plug selection). Illusion of control advocates (Langer, 1975; Wortman, 1975) challenge that the higher ratings of perceived controllability in actual control participants are illusory, produced by the act of choosing the plug. More recent studies support the notion that regardless of actual control, participants given a choice show better coping and personal adjustment (Burleson, Kegeles, & Lund, 1990; Harchik et al., 1993).

Furthermore, Paterson and Neufeld (1995) suggest that this confound is not simply between actual control and choice, nor between actual control and prediction, but among all three – choice influences the amount of perceived control one feels in anticipation of a stressful event. By manipulating the availability of information (prediction) about coping options in a fictitious stressful event, they examined the effects of anticipated stress and actual controllability in the selection or choice of these coping options. Results showed that choice among coping options substantially increased perceived control and reduced stress when the information about coping options was available, suggesting the simple provision of nonproductive choice leads to neither increased perceptions of control nor reduced perceptions of threat. Rather, it was the rational anticipation of the effects on situation outcome that governed participants' perceptions.

Cramer et al. (1997) tried to resolve the three-variable confound by manipulating prediction and actual control, but holding choice constant – all participants made the same number of choices. Participants were told they would listen to aversive noise for a time period determined by the positioning of cards into a card-reader. All participants chose the positioning of 24 cards into a device that briefly cycled faster (reducing the aversive noise listening time) if it detected a white (not black) square directly in front of the reader. For cards with either two white or two black squares, the choice of card position made no difference in the receipt of a time reduction (choice, but no actual control). But for cards with one white and one black square, the choice of card position indeed made a difference in the receipt of a time reduction (choice and actual control). Thus, all participants made 24 card-positioning choices.

The researcher randomly assigned participants to one of four levels of Actual Control, and one of three levels of Predicted Outcome. Actual Control was manipulated to levels of 0%, 25%, 50%, or 75%, depending upon what proportion of the 24 cards consisted of one white and one black square. Predicted Outcome was manipulated to levels of Predict/Success (participants knew they received many time reductions), Predict/Failure (participants knew they received few time reductions), or Unpredict (participants did not know how many time reductions they received). Results showed that regardless of prediction and with choice held constant, participants with no actual control (0%) reported less perceived control, responsibility, and influence, and perceived more helplessness than participants with any actual control (25%, 50%, or 75%), whose estimates did not significantly differ. In short, with the number of choices held constant, Cramer

et al. could at least rule out the possibility that differential number of choices led to differences in perceived control and helplessness.

In a series of studies, Langlois et al. (2002) partially separated actual control from choice. Participants performed a boring proofreading task for either a short time period (2 minutes) or long time period (20 minutes) determined by the contents of one of two envelopes, selected by themselves (choice) or by an experimenter-flipped coin (no-choice). Inside each envelope was a card upon which was written either different time periods (actual control) or the same time period (no-control). Following card selection but before learning their proofreading time, participants with both choice and actual control gave significantly higher ratings of perceived control, responsibility, and influence than participants with (a) choice but no actual control, and (b) neither choice nor actual control (whose ratings did not differ). In other words, merely giving participants a choice among options was insufficient to render significant ratings of perceived control; rather, choices must matter.

It is noteworthy that all studies ensured participants knew that a choice would render some outcome, but not which particular outcome. That is, participants were always aware of the choice made. However, one final study deserves mention because it directly challenged the idea of awareness of choice in the actual control-prediction confound. Nickels and Cramer (2005) evaluated perceptions of control in the case where participants were asked to choose between two and five options. In any given scenario, participants were given a set of letters (As, Bs, or some combination) that each represented a different length of time to perform a boring repetitive motor task. If the letters were all identical (e.g., AA, BBB), then the choice of letter made no difference in the time period received; they would get the same outcome regardless of their choice. If the letters were different (e.g., AB, BAA, AABBB), then their choice of letter made a difference in the time period received. However, whereas some participants completed the dependent measures *after* making their choice of letter (as is typically done in this research), other participants completed the dependent measures *before* making their choice of letter. Choice was consistent across groups (since all participants made one), however measures assessed *before* the choice effectively eliminated that element from perceived control ratings. As expected, results showed that (a) participants given a choice among different letters reported significantly higher perceived control than participants given a choice among identical letters, and (b) assessing perceived control either before or after participants selected their letter had no significant effect on ratings. Consequently, we are left to wonder whether individuals need to be mindful of the choices they are making to perceive control and responsibility (Langer, 1989; Langer, Blank, & Chanowitz, 1978). Granted that people's choices should be meaningful (Langlois et al., 2002), need they be fully aware they are making those choices to yield the benefits of actual control?

Present Study and Hypotheses

At this point, we are prepared to ask whether a choice is required to perceive any control; presently, we aimed to vary the awareness of the ramifications of a given choice. Whereas individuals make various choices throughout their day, often this is without much regard to their outcome or even that they have made those choices (e.g., walking to the left or right around a coffee table; Langer, 1978, 1989). That is, having made a blind choice among options relatively

mindlessly, will the present participants report enhanced feelings of perceived control, influence, responsibility, and helplessness? Based on Cramer et al. (1997), Langlois et al. (2002), and Nickels et al. (1992), we proposed two hypotheses. First, we hypothesized that (1) regardless of both the predicted outcome and awareness of choice, perceptions of control, influence, responsibility, and a lack of helplessness and frustration will be higher for individuals whose choice among options make a difference in the time period received. Secondly, participants were divided according to their awareness that a choice between options may influence the outcome of an important event. Based on this manipulation, we hypothesized that (2) perceptions of control, influence, responsibility, helplessness, and frustration will not vary by participants' awareness that their selection of options is related to the time period received.

METHOD

Participants and Overview

Seventy one male and 214 female undergraduates from a University of Windsor psychology class volunteered to participate for partial course credit. The average age was 21.0 years (*SD* = 4.2). To decide how long they would complete a boring motor (cross-out) task, we asked participants to choose between two formats in indication of their birth year: either a 2-digit format (e.g., *'83*) or 4-digit (e.g., *'1983'*) format. Some participants knew their choice of birth year format would be relevant for their resulting time period; some participants knew that the two birth year formats would lead to different (albeit undisclosed) time periods. After making their selection, participants with prediction completed the dependent measures questionnaire after learning they would work on the motor task for a short or long time period; participants without prediction completed the questionnaire not knowing their time period.

Materials

Each participant received a consent form and a 6-page 8½" x 11" instruction and questionnaire booklet. The booklet contained an academic survey consisting of the following questions in this order: 1. Gender, 2. Year of birth, 3. Academic major, 4. Year in university, 5. Years remaining, 6. Number of science courses taken to date, and 7. Number of humanities courses taken to date. The five final items, while not important to the study, were included so as to disguise the relevance of the first two items.

Experimental Design

Based on three independent variables, we randomly assigned participants to one of 12 groups in a 2 x 2 x 3 fully randomized between-subjects factorial design. The first 2-level independent variable, *Actual Control* (Actual Control vs. No Actual Control), denoted whether participants' choice of birth year format made a difference in how long they performed the motor task. Participants with Actual Control would know their choice would make a difference in whether they worked at the motor task for a short or long period of time; participants with No Actual Control would know their choice would not make a difference in the time period they receive. The second 2-level independent variable, *Awareness of Choice*, denoted whether participants were told before or after selecting a birth year format that this choice was relevant to the amount

of time they would perform the motor task. The third 3-level independent variable, *Predicted Outcome* (Predicted Success, Predicted Failure, Unpredict), denoted whether participants knew they would work at the motor task for a short time period (Predicted Success), for a long time period (Predicted Failure), or they did not know their time period (Unpredict).

Dependent Measures Questionnaire

The questionnaire included five dependent variables which tested the experimental hypotheses (Appendix A). As tested in previous studies (Cramer et al., 1997; Langlois et al., 2002; Nickels et al., 1992), a 7-point Likert format from 1= "not at all" to 7 = "to a great extent" assessed measures of perceived control, responsibility, influence, helplessness, and frustration (see Appendix). Past research reveals these measures to be moderately to highly intercorrelated, and offer a reasonable substitute for a global measure of perceived controllability.

Procedure

Seated in a large classroom, participants each received a consent form and instruction booklet. Participants then completed a general academic survey. Participants without *Awareness of Choice* indicated their birth year using either a 2- or 4-digit format; before indicating their birth year, we told participants with *Awareness of Choice* that this choice was relevant for the motor task time period. We told participants with *Actual Control* that their choice would make a difference in the time period they receive; we informed participants without *Actual Control* that their choice would make no difference. In Predicted Success or Predicted Failure conditions we told participants about their time period before they completed the questionnaire. Participants in the Unpredict condition learned their time period after completing the questionnaire. At the conclusion of the study, we debriefed all participants about the hypotheses, procedures, and expected findings.

RESULTS

We discarded participants from analysis if they failed to correctly answer any of the following three manipulation checks: 1. Were you told that birth year format *was important* in determining your time period before choosing the format? ("yes" or "no"); 2. Did your choice of birth year format *make a difference* in the time period received? ("yes" or "no"); 3. Were you *told how long* you would complete the crossout task? ("Yes, short period"; "Yes, long period"; "No, I was not told"). We discarded ten participants from across all conditions for at least one incorrect check. Following a Bonferroni correction to prevent Type I error inflation, we used a family-wise significance level of .05 to evaluate the experimental hypotheses. Table 1 shows the overall means, standard deviations, and dependent measure intercorrelations; Table 2 divides the means by experimental condition.

Table 1: Dependent Measure Means (Standard Deviations) and Intercorrelations

Dependent Measure	Mean	(SD)	Control	Respbl	Infl	Helpln	Frustr
Perceived Control	3.16	(1.92)	1.000				
Responsibility	3.42	(2.23)	.464*	1.000			
Influence	3.81	(4.35)	.170*	.354*	1.000		
Helplessness	4.45	(2.24)	-.182*	-.187*	-.163*	1.000	
Frustration	3.26	(2.07)	.100	.060	-.004	.231*	1.000

Note. *denotes correlations significant at $p < .01$ ($N = 285$).

Because the dependent measures (perceived control, responsibility, influence, helplessness, and frustration) were moderately intercorrelated, we conducted a between-subjects factorial multivariate analysis of variance with *Actual Control, Awareness of Choice, and Predicted Outcome* as fully crossed independent variables, and. The only significant multivariate effect occurred for *Actual Control*: F (5, 269) = 3.467, $p = .005$, Wilks' Lambda = .939. In support of the first hypothesis, follow-up univariate analyses of variance for the *Actual Control* main effect found significant mean differences for (a) perceived control: F (1, 273) = 12.18, $p < .001$, $MSE = 3.578$, Omega squared = .043 – whereby participants whose choice made a difference in time period felt more control than participants whose choice made no difference (Ms = 3.55 and 2.78, SDs = 1.97 and 1.80, respectively); and for (b) perceived responsibility, F (1, 273) = 11.64, $p < .001$, $MSE = 4.842$, Omega squared = .041 – whereby participants whose choice made a difference in time period felt more responsibility than participants whose choice made no difference (Ms = 3.89 and 2.97, SDs = 2.23 and 2.16, respectively).

In support of the second hypothesis, the dependent measures did not vary significantly by *Awareness of Choice* (either alone or as an interaction with other factors) at either the multivariate level ($p = .414$) or univariate level ($.679 > p$s $> .211$). As a more stringent test of the null hypothesis, we utilized an equivalency test (Rogers, Howard, & Vessey, 1993), which determines whether two means are merely trivially different. Since the difference between two means is likely never to be exactly zero, a region of equivalency is created around the mean difference based on an experimenter-set equivalency interval. Two z-tests are conducted to see if the difference falls either to the left of the lower boundary or to the right of the upper boundary. Only the larger (more stringent) of the two z-tests is reported. Rejection of both z-tests indicates the mean difference falls within this equivalency region; that is, simultaneously to the right of the lower boundary and to the left of the upper boundary – in short, the two means are deemed only trivially different from each other and declared equivalent. Using an equivalency interval of 20%, results showed that for each of the dependent measures, the mean difference fell within the equivalency boundary ($3.81 > z$s > 2.60, ps $< .05$). In other words, in support of the second hypothesis, the comparison of dependent measure means for those with and without *Awareness of Choice* yielded only trivial differences.

Table 2: Dependent Measure Means (Standard Deviations) by Condition

Aware Of Choice	Actual Control	Predict/ Success	Sample Size	Control	Respbl	Infl	Helpln	Frustr
Aware	Control	Success	21	3.24 (1.95)	3.43 (2.31)	4.19 (3.76)	4.52 (2.11)	3.48 (2.09)
Aware	Control	Failure	24	4.00 (1.62)	4.04 (2.35)	4.38 (1.81)	4.13 (2.07)	3.54 (1.86)
Aware	Control	Unpredict	22	3.64 (2.32)	3.41 (2.02)	3.68 (1.78)	4.41 (2.42)	3.09 (2.14)
Aware	No Control	Success	25	2.56 (1.73)	2.56 (2.12)	2.48 (1.61)	5.08 (2.18)	3.64 (2.06)
Aware	No Control	Failure	25	3.36 (2.06)	3.44 (2.06)	4.00 (2.33)	4.92 (2.02)	2.76 (2.05)
Aware	No Control	Unpredict	25	2.80 (1.80)	2.64 (2.04)	2.40 (1.96)	4.00 (2.43)	3.44 (1.89)
Unaware	Control	Success	22	3.77 (2.07)	4.18 (2.30)	4.82 (2.06)	4.32 (2.21)	3.73 (2.27)
Unaware	Control	Failure	27	3.04 (2.14)	4.41 (2.21)	3.89 (2.10)	4.19 (2.35)	2.41 (1.80)
Unaware	Control	Unpredict	24	3.67 (1.66)	3.71 (2.20)	3.12 (1.85)	3.88 (2.29)	3.33 (1.93)
Unaware	No Control	Success	25	2.64 (1.73)	3.24 (2.59)	4.00 (2.60)	4.76 (2.47)	2.92 (2.20)
Unaware	No Control	Failure	23	2.70 (1.74)	3.17 (2.17)	3.74 (3.45)	4.48 (2.23)	3.04 (2.10)
Unaware	No Control	Unpredict	22	2.59 (1.76)	2.77 (1.95)	5.36 (1.76)	4.68 (2.23)	3.91 (2.39)

DISCUSSION

Using a fully randomized design, the present study found support for both experimental hypotheses, with findings consistent with past investigations into Nickels' reconceptualization of actual control. We do caution the reader to appreciate that although the statistical effects are notably small (contributed in part by the sample size), they are consistent and remain typical of research in this domain. Specifically, as with Langlois et al. (2002), results showed that choices are important in yielding perceptions of control and responsibility only when they make a difference in the outcome (even if that outcome is unpredictable). That is, regardless of learning the outcome of one's choice, simply making a choice (or being aware that an important choice is being made) is insufficient. Rather, individuals must make a choice that matters in order to reap the benefits of those choices (see also Cramer et al., 1997; Langlois et al., 2002; Nickels et al., 1992; Nickels & Cramer, 2005; Perreault, 2005). Furthermore, one's awareness of choice appears to be less important than making a meaningful choice for control-related perceptions. It is curious that comparable results were not observed for perceived influence, helplessness, and frustration, although inconsistencies in the performance of these particular measures are not uncommon. Consistent patterns of results are more typical with respect to perceived control and

responsibility. Indeed, these findings are further corroborated by Paterson and Neufeld (1995), who examined the effects of actual control and choice when coping with a stressful event. Participants who made a choice among several options had higher ratings of perceived control and reduced stress than participants who made a choice among several options but had no information. This suggests that being provided with non-productive choices will neither increase perceptions of control nor decrease perceptions of threat. Rodin et al. (1980) also report that individuals feel inadequate when they are given choices that are not meaningful. In fact, having no choice at all may be more beneficial than being presented with a meaningless choice.

In addition, despite the knowledge gained by specifically investigating the questions pertaining to awareness of choice, the fact remains that both the actual control and awareness of choice factors are still not entirely unconfounded because a choiceless control condition has yet to be examined. With choice nested in actual control, it remains impossible to determine whether actual control can exist without any choice. In response to this difficulty, it may be important to develop a model which systematically crosses two levels of actual control (i.e., actual control, and no actual control) with various levels of choice. In permitting the complete separation of choice from actual control, this type of model could serve in determining the feasibility of a choiceless control condition.

Past findings suggest the importance of considering choice as separate from actual control. For example, Cramer et al. (1997) and Langlois et al. (2002) manipulated actual control and predicted outcome while holding choice constant. Regardless of having a choice, participants without actual control felt less perceived control, responsibility, and influence; and more helplessness than those with actual control. Nickels and Cramer (2005) also manipulated actual control but held both choice and predicted outcome constant. Overall, these findings show that choice is less important than actual control in determining control-related perceptions. Nevertheless, the elusiveness of a choiceless control condition makes it impossible to know exactly how much more important actual control is compared to choice. Is choice required in order for individuals to perceive any control over the outcomes they experience? Until the unique effects of actual control and choice are completely unconfounded, the answer to this question will remain unknown (Perreault, 2005).

Future research should also consider choice variables in combination with both actual control and prediction variables. For instance, how might conditions of predictability (or unpredictability) affect individuals' feelings of control, influence, responsibility, and helplessness over different outcomes that are determined by unchosen characteristics such as gender, age, height, or ethnicity? For example, a female interviewing for a male-dominated job position may predict that she will not get the job because of her gender (Langlois et al., 2002). Similarly, a 5-foot tall athlete who tries out for a professional basketball franchise may predict that he will not make the team because of his short stature. Likewise, a horribly disfigured individual can accurately anticipate the curious stares of others. In cases such as these, it is involuntary and intrinsically-based characteristics that influence the outcome received. Indeed, many situations of choiceless control seem to be characterized by states of being (i.e., involuntarily making choices based on intrinsically-based factors) rather than conditions of doing (i.e., voluntarily making choices between extrinsically-based factors). For this reason, it seems crucial to examine the exact conditions under which choice determines our perceptions of

control over the situations we experience. Specifically, what types of choices facilitate positive control-related perceptions? Further investigation is clearly warranted.

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APPENDIX A

1. To what extent did you <u>control</u> how long you perform the crossout task? (Circle one of the numbers below)

Not at all | 1 2 3 4 5 6 7 | To a great extent

2. To what extent were you <u>responsible</u> for how long you perform the crossout task? (Circle one of the numbers below)

Not at all | 1 2 3 4 5 6 7 | To a great extent

3. To what extent did you <u>influence</u> how long you perform the crossout task? (Circle one of the numbers below)

Not at all | 1 2 3 4 5 6 7 | To a great extent

4. To what extent were you helpless in determining how long you perform the crossout task? (Circle one of the numbers below)

Not at all | 1 2 3 4 5 6 7 | To a great extent

5. To what extent did you feel frustrated in determining how long you perform the crossout task? (Circle one of the numbers below)

Not at all | 1 2 3 4 5 6 7 | To a great extent

6. Were you told that birth year format was important in determining your time period before choosing the format? (Circle either 'yes' or 'no')

Yes No

7. Did your choice of birth year format make a difference in the time period received. (Circle either 'yes' or 'no')

Yes No

8. Were you told how long you would complete the crossout task? (Circle one of the options below)

Yes, short period Yes, long period No, I wasn't told

AUTHORS' NOTE

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