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Ellen A. Skinner

All individuals need to feel that they are capable of producing desired and avoiding undesired events. This need gives perceived control its power to regulate behavior, emotion, and motivation under conditions of challenge. Based on this assumption, we formulated an integrative conceptualization of perceived control which distinguishes between individuals' beliefs about the causes of success and failure, or strategy beliefs, and beliefs about their own abilities to enact those strategies, or capacity beliefs. We examine the aspects of strategy and capacity beliefs which influence children's behavior and emotion, especially in stressful situations. Special emphasis is placed on development. We explore systematic changes in the mean level and organization of children's beliefs, as well as changes in the beliefs which influence motivation and coping at different ages and changes in the mechanisms through which these influences operate.

Why are individuals' beliefs about how much control they can exert over important events in their lives such a powerful force in human motivation and development? Why is self-efficacy one of the best predictors of effort exertion, persistence, and coping from infancy to old age (Bandura, 1977; Baltes & Baltes, 1986)? Why should robbing individuals of control result in helplessness, apathy, and even death (Seligman, 1975)? Why should children with low perceived control become unhappy, anxious, and eventually depressed (Nolen-Hoeksema, Girgis, & Seligman, 1986)? Why is uncontrollability one of the few experiences that researchers can agree upon as a category of major psychological stress (Weinberg & Levine, 1980)? These questions may explain the fascination which the study of perceived control has held for social scientists from a broad range of disciplines. One answer was offered by White in his seminal paper on effectance motivation (1959) and has been elaborated by motivational theorists (Connell & Wellborn, 1990; Deci & Ryan, 1985): Humans have a basic psychological need to be effective in their interactions with the world. This desire has been labelled the need for effectance or for competence.

According to motivational-needs theorists, from birth all people are intrinsically motivated to produce desired events and to prevent undesired events from occurring (Connell & Wellborn, 1990; Deci & Ryan, 1985). In support of this assertion, needs theories can muster evolutionary, empirical, and logical
arguments. The evolutionary value of such motivation can be imagined. If individuals innately desire to interact effectively with their environments, then they will continue attempting to manipulate physical and social events until they figure out how to reliably produce and reproduce desired outcomes. Learning of great adaptive value would accrue: about contingencies in the environment and about repertoires of one's own effective behaviors.

Empirical arguments in support of the need for competence as innate can be found in research with newborns. Researchers point out that the capacity to detect contingencies is present in the youngest ages we are able to tap empirically, and that infants express joy and satisfaction when their behaviors are followed contingently by effects (Watson, 1979). As one account of the mechanism by which the need for competence is "hardwired" at birth, a feedback system could be suggested in which experiences of effectance trigger positive emotions. White's (1959) article summarizes research from a wide variety of perspectives which supports the occurrence of such behaviors. Finally, as empirical evidence for the need for competence, theorists point to research documenting the devastating effects of loss of control on people from infancy to adulthood. Forms of loss of control include non-contingency, unpredictability, normlessness (unclear expectations), and inconsistency. The former two conditions have been studied as major forms of psychological (and immunological) stress and the latter two have been studied as developmentally detrimental aspects of parenting. A needs theory can explain why helplessness is so distressing: It represents a state in which a basic psychological need is violated.

The logical argument is that if the experience of control is a basic psychological need, then its study should represent a major theme in psychological theories and research. This is indeed the case. At least three major theories of perceived control have proved to be extremely useful in charting research in this area: Bandura's theory of self-efficacy (1977), Seligman's reformulated model of learned helplessness (Abramson, Seligman, & Teasdale, 1978), and Weiner's summary of his attribution theory (1979). These theories and the research they generate have enriched an already voluminous literature on locus of control, the most prominent childhood theory of which was proposed by the Crandalls (Connell, 1985; Crandall, Katkovsky, & Crandall, 1965). Perceived control constructs enjoy empirical success at predicting a wide range of behavior, emotion, and performance variables. Although most personality and attitude assessments have difficulty establishing any links whatsoever to behavior, in contrast, hundreds of studies per year have been published documenting the power of perceived control to predict performance in many domains.

The Need for Competence and Motivation

A needs theory of motivation has been proposed (Connell & Wellborn, 1990; Deci & Ryan, 1985) which posits competence among its basic psychological needs (along with the need for self-determination and relatedness). According to
this model, individuals appraise the extent to which the context is meeting each of their psychological needs. These appraisals, called self-system processes, have been conceptualized and studied for the competence need under the rubric of perceived control. (The need for self-determination has been studied under the rubric of autonomy orientation and for relatedness under the rubric of internal working models for attachment figures.) Hence, individual differences in perceived control are thought to reflect variations in the extent to which individuals have experienced themselves as competent to produce desired and prevent undesired outcomes, based on their history of interactions with the environment.

Social context. According to this theory, the role of the social context is crucial in creating experiences of control (Connell & Wellborn, 1990; Skinner, 1990b). Important others in individuals' lives either directly provide or arrange for the amount and quality of structure in their environments. Structure refers to the amount of information in the environment available to individuals about the best strategies for reaching desired and preventing undesired outcomes, and about the self's capacity to enact those strategies. A context high in structure provides high contingencies between actions and outcomes, is consistent and predictable; it also encourages the development of actual capacities through the provision of opportunities for practice, help, support, and advice (Skinner, 1990b). The opposite of structure is chaos, in which contexts are non-contingent, inconsistent, or unpredictable, and at the same time provide challenges which are either under-stimulating or overwhelming. The effects of chaotic environments have been well-documented empirically. According to this theory, their consequences are played out through their impact on an individuals' perceived control.

Engagement versus disaffection. This motivational theory posits that when an individuals' basic psychological needs have been fulfilled, they will be energized to be enthusiastically involved with ongoing activities (Connell & Wellborn, 1990). The motivational construct that is the proximal outcome of having one's needs met is engagement versus disaffection. Engagement includes three components: behavior (e.g., initiation, effort, concentrated attention, persistence, and continued attempts in the face of difficulty or failure), emotion (enthusiasm, happiness, curiosity, interest), and orientation (toward the goal of understanding how to be effective). Likewise, disaffection includes behavior (e.g., avoidance, passivity, resistance, giving up, fleeing), emotion (boredom, anger, anxiety, fear), and orientation (away from the goal of understanding how to be effective, for example, toward trying to appear effective). The idea, central to many theories, is that individuals who believe they have more control will be more likely to engage actively, whereas those who feel powerless are more likely to be disaffected. In turn, an individual's engagement versus disaffection can influence long-term outcomes, such as level of performance, learning, and even development. According to motivational theories, the links established between perceived control and higher levels of performance and psychological functioning are largely mediated by engagement and disaffection.
In sum, perceived control can be seen as part of a larger system which, by motivating individuals to meet the need for competence, has the function of regulating an individual's interactions with the environment. The system is activated when the individual attempts to produce a desired effect. When the social context presents minor resistance, the individual will experience it as a challenge and will produce active behaviors and enthusiastic emotions in energized pursuit of the outcome (engagement). If these behaviors are ineffective or if the context mounts major obstacles, the system may show one last angry burst of energy (reactance) and then it will shut down, as evidenced in passivity and disinterest (disengagement). Disengagement is, of course, an adaptive reaction to excessive environmental challenge. It protects the individual from exhaustion in pursuit of impossible tasks; and it is the basis for learning effective strategies (and discarding ineffective ones) as well as calibrating one's own developing capacities and limitations. With prolonged exposure to ineffectiveness and chaos, however, the competence system may be severely impaired, as evidenced by its failure to reactivate under conditions of manageable challenge (disaffection). Different theories of perceived control have focused on different aspects of the competence system. For example, self-efficacy judgments function primarily to regulate engagement, whereas learned helplessness attributions influence disaffection.

Conceptualization of Perceived Control

If all individuals desire competence or control, and all individuals eventually construct appraisals of the self in relation to this need, then it follows that the variety of theories depicting the components of perceived control are all addressing the same psychological phenomenon: the self-system process associated with the need for competence or control. If this is indeed the case, then it should be possible to integrate theories as diverse as locus of control, self-efficacy, learned helplessness, and attribution theories. In fact, a new conceptualization of perceived control, aimed to do just that, was constructed at the crossroads of these theories.

Even if one does not share motivational assumptions, it may still be useful to distinguish and integrate key constructs from these multiple theoretical perspectives. It would allow the components to be assessed separately and then compared for their unique contributions and interactions in predicting behavior. The distinction, offered by Bandura, between response-outcome judgments and efficacy judgments seems pivotal in this regard. Whereas most theories focus on beliefs about "whether my responses produce outcomes," Bandura pointed out that this belief is irrelevant unless one also believes that "I can myself produce the required responses." This distinction, which can also be found in the sociological work of the Gurins (Gurin, Gurin, & Morrison, 1978), in learned helplessness research (Abramson et al., 1978), and in the developmental theories of Weisz (Weisz & Stipek, 1982), was the cornerstone for a new conceptualization and measure of perceived control.
On expanding the scope of the conceptualization to include multiple internal and external causal categories (based on the locus of control construct), three aspects of perceived control are distinguished: (a) strategy beliefs or generalized expectancies about the extent to which certain categories of potential causes are effective in producing desired outcomes (originally referred to as means-ends beliefs); (b) capacity beliefs or generalized expectancies about the extent to which the self possesses or has access to those potential means (originally referred to as agency beliefs); and (c) control beliefs or generalized expectancies about the extent to which the self can produce desired outcomes irrespective of the means involved (Skinner, Chapman, & Baltes, 1988a).

In a series of five studies completed at the Max Planck Institute with Michael Chapman and Paul Baltes, a questionnaire was developed which tapped these beliefs for children in the domain of school performance. For this domain and age group, five categories of means were considered: effort, ability, powerful others, luck, and unknown factors (Skinner et al., 1988a). The measurement studies showed that the factor structure of children’s responses to the questionnaire reflected the theoretical distinctions between beliefs, and that different aspects of beliefs could be mapped onto other constructs. The “final” version of the measure was refined using the creativity and measurement expertise of James Connell and James Wellborn (Student Perceptions of Control Questionnaire, SPOCQ; Wellborn, Connell, & Skinner, 1989) (see Appendix I). Like other psychologists interested in perceived control, we began by examining the connections between the construct and aspects of performance. Because the domain was school performance, the natural dependent variables were academic achievement, intelligence, and school grades. Not surprisingly, like so many generations of expectancy constructs before them, multiple robust relations with control, strategy, and capacity beliefs have been found (e.g., Chapman, Skinner, & Baltes, 1990; Skinner, Wellborn, & Connell, 1990).

Motivation and Perceived Control

According to the motivational perspective, the effects of perceived control on level of performance are mediated by the individual’s engagement versus disaffection with learning activities. A brief description of the results of a cross-sectional study (Skinner et al., 1990) and a recently completed short-term longitudinal study will be used in order to illustrate two issues about the links between beliefs and motivation: first, the importance of examining the unique and interactive effects of both strategy and capacity beliefs; and second, the importance of examining sets of beliefs which both promote and undermine motivation.

The cross-sectional and longitudinal studies involved 220 and 365 third to sixth graders, respectively, and their 12 and 14 teachers. Both school districts were suburban/rural with about 10% minority students. Engagement versus disaffection was assessed using 20-item teacher-reports of individual children’s active behavioral involvement and emotional tone in the classroom (Wellborn &
Connell, 1986). These scores were internally consistent (alpha = .82) and could range from -3 to +3, with higher scores indicating more engagement. As expected, level of engagement was a strong predictor of subsequent academic performance. For example, the cross-time correlations with grades was .40. Perceived control was measured using our new scale (Skinner et al., 1988a; Wellborn et al., 1989). Internal consistencies were satisfactory (Cronbach alphas ranged from .75 to .85 and averaged .79); most importantly, reliability did not differ appreciably across scales.

The basic question was whether the new conceptualization could provide a more differentiated picture of the aspects of children’s beliefs which predicted to their engagement. As would be predicted from other theories: engagement was promoted by control beliefs as well as capacity beliefs for effort and ability. Engagement was undermined by beliefs in the effectiveness of non-action means, including powerful others, luck, and unknown factors. Of greatest interest was the issue of the effects of both strategy and capacity beliefs in predicting to motivation. When considering matched pairs for each cause, unique contributions were made by both strategy (negative) and capacity (positive) beliefs for ability, powerful others, and luck. The interaction between strategy and capacity beliefs also provided new information. Highest levels of engagement were found for children who reported that effort was an effective means and that they had the capacity to exert effort (as would be predicted by self-efficacy theory). Lowest levels of engagement were found for children who endorsed high strategy beliefs for non-action causes (ability, powerful others and luck) and who at the same time reported that they did not have the capacity to enact those strategies. For example, lowest levels of engagement were found for children who said that luck is required for success in school and that they are unlucky (as would be predicted by attribution theories).

Finally, scores were constructed summarizing profiles of beliefs which would be predicted to promote and undermine motivation. Children who were high on the "Promote Profile" believed that they could control school success and failure, that effort was important and that they could exert it, that ability was not an important strategy but that they themselves nevertheless were smart, that they could influence powerful others, and that they were lucky. In contrast, children who scored high on the "Undermine Profile" saw themselves as unable to exert effort and not very smart, believed that although powerful others and luck are the keys to school performance, they could not get teachers to like them and were unlucky; finally, they did not know the strategies to achieve success and avoid failure. (Note that each score included strategy and capacity beliefs from each cause.) When these two profiles were pitted against each other in a path analysis, both accounted for significant unique variance in teacher-rated engagement. However, more of the variance was accounted for by beliefs which undermine motivation than by those which promote it (Skinner et al., 1990).

Taken together, these findings may have implications for major theories of perceived control. First, they indicate that internal locus of control may not be a
powerful positive predictor of motivation. Strategy beliefs about effort were uncorrelated with engagement and strategy beliefs about ability were negatively correlated. Instead, the predictive power seems to emanate from the external pole; strategy beliefs about non-action causes undermine motivation. Second, with respect to attribution theories such as the reformulated learned helplessness model, these findings suggest that attributions can be “unpacked” for their implications for both the effectiveness of causes and for one’s own capacities. For example, an attribution of failure to ability is detrimental to motivation because it implies both a belief about causes (ability is required to succeed) and about the self’s capacity (low ability). Third, for self-efficacy theory, these results point out the importance of other causes in addition to behavior (or responses). For this age group and in this domain, the most powerful predictors of engagement and performance involved ability, powerful others, luck, and unknown means.

Development of Perceived Control

The assumption that the self-system processes associated with the need for competence and control develop out of initially “hardwired” appraisals of the extent to which this need is challenged or threatened, implies that cognitive constructions of perceived control may change with age. Because perceived control is considered within an individual differences perspective, it is usually assumed that the key developmental questions in this area center on differential trajectories of change as antecedents of current differences in level. Indeed, research in this area has provided some interesting insights into the issue of age-graded changes in mean level of perceived control. However, other aspects of perceived control may develop as well, such as the organization or structure of perceived control, the aspects of perceived control which predict to motivation and performance, and the mechanisms which mediate between experiences of chaos/non-contingency and individuals’ actions (Skinner & Connell, 1986).

Development of mean level of perceived control. Assessments of perceived control have been conducted across the life-span, from the earliest ages at which children can reliably report their beliefs (about age 4) to research with the “old old” (age 85). A fairly consistent picture emerges (see Skinner & Connell, 1986, for a review). Very young children report extremely high potential control, which decreases sharply until about age 7 or 8, at which time it first correlates with actual performance levels. From middle childhood until early adulthood, perceived control increases gradually. It remains fairly stable across adulthood, decreasing slightly as old age is encountered. These general trends are products of differential trajectories of different kinds of control beliefs. For example, beliefs about the effectiveness of the self remain stable into old age; the net decrease in perceived control is accounted for by the fact that older adults increasingly believe that powerful others and chance play a bigger role as causal factors.

Of most interest to theorists of perceived control has been the process by which trajectories of control are constructed. Research which indicates that
perceived control influences behavior and that performance outcomes influence perceived control suggest that a cyclic process may be at work (Seligman, 1975; Skinner, 1990b). Children who believe that they can exert control may initiate more attempts and sustain more effort, leading to more successful outcomes, and thereby boosting perceptions of control. In contrast, children who believe that they have no control may subsequently approach the world in ways (passive, apathetic, depressed) which forfeit any chance for exerting control. If these cycles continue unabated, individual differences in perceived control will be consolidated and then magnified over time. The result would be relative stability of mean levels in the context of increasingly divergent individual developmental trajectories (Skinner, 1990b).

Development of the organization of perceived control. According to our research, children’s beliefs about the effectiveness of causes (strategy beliefs) become more differentiated from each other in terms of mean level across middle childhood. (This pattern has been replicated in German and American samples; Skinner, Chapman, & Baltes, 1988b.) Following this lead, we investigated age differences in the factor structure of children’s causal beliefs (Skinner, 1990a). From these findings (also replicated), it appears that the dimensionalization of perceived control in the academic domain does change with age: At age 7 to 8, the key dimensions are known versus unknown causes; at ages 9 to 10, three dimensions are present: “internal,” “external,” and unknown factors; and at ages 11 to 12, four dimensions emerge: effort, ability, “external,” and unknown means.

Development of the functions of perceived control. Corresponding to age differences in the dimensionalization of perceived control, the primary predictors of school performance change with age. Although at all ages unknown source of control is a significant (negative) predictor, it is the only predictor at ages 7 to 8; at ages 9 to 10, “external” causes are added; and by ages 11 to 12, strategy beliefs for ability are the central (again negative) correlate (Skinner, 1990a). A review of the few studies in which age differences in the correlations between aspects of perceived control and engagement or performance were calculated reveals convergent evidence for this position (Skinner, 1990b). Correlations between behavior or performance and locus of control (Findley & Cooper, 1983) and classical learned helplessness (Fincham, Hokoda, & Sanders, 1989; Rholes, Blackwell, Jordan, & Walters, 1980) emerge at ages 9 to 10; correlations with attributions of failure to ability (Miller, 1985) and capacity for ability are strongest at ages 11 to 12 (Chapman et al., 1990).

It is tempting to conclude that different theories of perceived control are most useful at different ages. Perhaps, the known versus unknown distinction as proposed by Connell portrays the critical dimension when children first begin school. In contrast, for children a bit older, the distinction between internal versus external causes begins to play a role as proposed by locus of control theorists, with the external pole playing the bigger part, as predicted by classical learned helplessness theory. Only after age 11 do beliefs suggested by self-efficacy and attributional theorists begin to regulate performance, namely,
organized around ability causes. Some recent research indicates that changes in the dimensionalization of perceived control can be accounted for by progressive differentiation of children's concepts of effort, noncontingency, luck, and ability (Miller, 1985; Nicholls & Miller, 1984). It may be that these changes "activate" individual differences in beliefs to begin regulating and interpreting behavior and performance (Chapman & Skinner, 1989). A recently completed longitudinal study will allow us to follow up on these issues empirically.

Development of the mechanisms of perceived control. Taken together, these age changes imply that the mechanisms by which the competence system functions change with development. In other words, although people (like infra-human species) react to uncontrollability from birth to death, the mediators of these reactions change with age. At some ages (e.g., infancy), mechanisms may not even include beliefs about control. At other ages, simpler forms of perceived control, such as expectations, may operate. At all ages, multiple potential mediators are likely to be the rule rather than the exception. Although the issue of mechanisms is at the heart of any discussion of perceived control, the issue of multiple and changing mechanisms has received little empirical attention.

During infancy, activation of motivation (behavior, emotion, and orientation) in the face of challenge, as well as de-activation of motivation when the system is overwhelmed, is probably accomplished by neuro-endocrinal mechanisms (Gunnar, 1980). The concurrent generalization of the effects of exposure to non-contingency, although empirically demonstrated (e.g., Watson, 1979), follows very specific time- and modality-limited parameters. The competence system appears to be relatively plastic during infancy, in that the motivational effects of exposure to uncontrollability seem to be easily reversible. However, these early experiences may leave neurological traces which could have cumulative effects when the competence system is challenged in the future.

With the onset of representational capacities, an additional mechanism seems to be added, namely, performance expectations. These expectations are usually very task- and context-specific and take the general form of "I can produce outcome X." These are the rudiments of generalized beliefs about control and have been studied extensively during the preschool years by the Crandalls (Crandall et al., 1965). These performance expectations provide anticipatory regulation of action (Crandall & Linn, 1989). When operating adaptively, they lead children to engage in optimally challenging activities.

When problem-solving and strategy-testing skills emerge, an additional mechanism can be suggested: "mental exhaustion" (Kofta & Sedek, 1989). According to this perspective, exposure to non-contingency results in prolonged activation of problem-solving activity, resulting in a depletion of mental resources. This theory can explain two interesting phenomena which are puzzling to reformulated learned helplessness theory. First, it explains why non-contingency leads to greater subsequent helplessness deficits than failure. Failure deactivates the system sooner and so does not exhaust it. Second, it explains the effects of positive non-contingency, in which subjects show helplessness deficits
even when they are told (non-contingently) that they are succeeding. Despite reported high levels of perceived control, exhaustion would undermine subsequent motivation.

All of these mechanisms are probably still operating when full-blown belief systems emerge at about age 7 or 8 (at least in the academic domain). As described in the previous section, the mechanisms by which perceived control regulates motivation and interprets performance continue to develop across middle childhood, perhaps from beliefs about unknown control, to an understanding of “conceptual” (as opposed to empirical) non-contingency, to the development of beliefs about the stable and unchanging self. These developments are of both conceptual and pragmatic interest. As these systems of perceived control become organized, they also become less plastic and less open to disconfirming information from interactions with the context (Skinner, 1990b). Taken together with the notion that levels of perceived control may also be responsible for producing actual confirming experiences, either positive or negative (e.g., Skinner, 1985), the importance of thoroughly understanding the development of mechanisms of perceived control is highlighted.

Coping and Perceived Control

From a motivational perspective, perceived control should support children’s active engagement both in ongoing activities and under conditions of challenge. Conceptualizations of how children’s perceived control makes them more vulnerable or resistant to the effects of stressful encounters typically fall under the study of stress and coping (Garmezy & Rutter, 1983). The motivational perspective described above can be used to set the stage for questions about the mechanisms through which perceived control ameliorates or exacerbates the effects of stress (Skinner & Wellborn, in press). For the psychological need competence, the objective psychological stress involved would be loss of control, in all its variations. Hence, the stresses against which perceived control should offer protection can be subsumed under the label chaos. Any encounters with non-contingency, inconsistency, unpredictability, failure, and ineffectiveness would qualify as objectively impinging on the need for competence. Children who have high perceived control should be able to maintain their functioning under these conditions and children with low perceived control should not. Of course, the study of childhood helplessness is prototypic in its research of just this phenomenon (Dweck & Wortman, 1982). The objective stressor is failure or non-contingency; the aspect of perceived control is beliefs about the efficacy of effort versus ability; and the stress-related outcomes are mastery (strategizing, persistence, and effort) versus helplessness (passivity, anxiety, and self-derogation).

A recently developed theory of coping attempts to unpack the components of stressful encounters and to discover the mechanisms by which loss of control can have an impact on motivation and performance. This framework posits four conceptually distinct aspects of the coping process. First, appraisal: Following an
encounter with an event involving loss of control (e.g., failure), the child appraises whether this event has implications for his/her experience of competence. This appraisal is intuitive, non-rational, and almost instantaneous. 
Second, a distress reaction follows. If the child experiences the failure as threatening his/her competence, he/she will react with psychological distress, which includes anxiety and a desire to withdraw from the situation. If on the other hand, the event is experienced as a challenge to competence, the child will react with energy and a desire for behavioral involvement.

Third, the child copes with the event and his/her distress reaction to it. Coping refers to how children regulate their engagement, specifically, their behavior, emotion, and orientation under conditions of psychological distress, or how they fail to do so. A number of regulatory processes can be energized by perceived threats to the competence need and directed by the specific self-system processes of perceived control. Finally, coping responses produce their effects on engagement versus disaffection, resulting in behavior that is either active or passive, emotion that is either positive or negative, and an orientation that is either toward or away from the activity. These hypotheses were used as the basis for a recently completed study of children's coping and perceived control (Skinner & Wellborn, 1991). High strategy and capacity beliefs about effort were hypothesized to result in coping characterized by strategizing and persistence; beliefs organized around ability should produce avoidance when ability capacity beliefs are low; beliefs organized around powerful others should lead to delegation if children believe they can influence those others and to projection if they believe that they cannot; and finally, the higher children's unknown control, the less children will regulate their behavior and emotion, resulting in impulsivity and confusion.

These constructs were assessed in the academic domain in a sample of 246 children, ages 8 to 15. A description of the coping categories, sample items, and their internal consistencies are reported in Appendix II. As can be seen, several of the scales with only four items had reliabilities that were less than .65. Hence, the results of the study should be viewed as exploratory. Examination of mean levels revealed the extent to which the categories were endorsed in this sample. The coping responses most likely to be used were the more adaptive ones, namely, strategizing and perseverence. Of the less adaptive coping responses, avoidance was the most often endorsed, followed by confusion and impulsivity; delegation and projection were least often used. The correlations between children's coping responses and the emotional and behavioral components of their engagement in the classroom revealed that coping responses predicted to both emotion (especially anxiety) and to behavioral engagement (both ongoing and following failure). Projection and confusion seemed to have the most negative implications for emotion, predicting to anger and anxiety respectively. And, strategizing and impulsivity seemed to be the strongest positive and negative predictors of behavioral involvement, both ongoing and in response to failure.

Coping responses showed multiple robust relations to perceived control, but not always in the predicted pattern. Consistent with predictions, strategizing and
perseverance coping responses were most closely related to beliefs about the efficacy of effort; and confusion was closely related to unknown control. For delegation and projection, the close relations predicted to beliefs about powerful others were found for strategy beliefs only. Contrary to predictions, avoidance was not most closely related to beliefs about ability. Instead, avoidance was predicted most strongly by unknown strategy beliefs.

In order to examine the unique effects of the five categories of means on coping, a series of multiple regressions were performed. Using the coping categories as dependent variables, the independent variables were “interaction” scores calculated for each cause by multiplying the respective strategy beliefs by its capacity beliefs (e.g., the effort interaction score was the effort strategy beliefs score multiplied times the effort capacity beliefs score). As hypothesized, effort beliefs were the highest unique predictors for both strategizing and perseverance. Contrary to predictions, effort (not ability) beliefs also made the highest unique contribution to avoidance (unknown strategy beliefs also predicted uniquely to avoidance). Ability beliefs contributed uniquely to delegation coping. As predicted, powerful others made unique contributions to both delegation and projection coping. Finally, the highest unique predictors of confusion were luck and unknown beliefs; and the only unique predictor of impulsivity was luck beliefs.

In sum, children with high effort and ability beliefs were more likely, in the face of challenges, to strategize and persevere, and less likely to attempt to get others to solve their problems for them (delegation). On the other hand, children who endorsed powerful others, luck, and unknown strategy beliefs were more likely to react to challenges impulsively and with confusion, to blame others (projection), and to avoid the situation. These results provide encouragement for the continued study of coping and control in children.

Summary

Far from closing the book on research on perceived control, a motivational perspective opens up new directions for this line of research. First, it points out the importance of examining more closely different profiles of beliefs. Loss of control due to lack of self-efficacy may have different emotional and behavioral consequences than loss of control due to interference by powerful others. In this regard, it may be important to note the relatively greater power of beliefs to undermine as opposed to promote motivation. It is possible that lack of control (whatever its source) may be sufficient to put a halt to action, but that full sustained engagement may require additional self-system supports, such as perceived autonomy or feelings of connectedness to important others in the social context. The motivational model should be helpful in guiding an exploration of these issues (Connell & Wellborn, 1990; Deci & Ryan, 1985).

Second, it may be interesting to follow some of the leads uncovered in the developmental research. Answers to the question: “Which control-related beliefs are good news and which are bad news?” may be different depending on
the age of the target population. More research is needed to determine whether developmental differentiation of children’s causal concepts “activate” individual differences in the power of beliefs about the effectiveness of those causes to regulate and interpret performance. If they do, then such findings would have implications for the developmental appropriateness of the targets and methods for interventions designed to optimize children’s perceived control.

Third, if the need for competence is innate and pervasive, then its presence should be felt in domains outside academics. The domains of parent-child relations and friendships seem to be arenas in which children may be likely to develop self-system processes about control. To follow up on these questions will require a discovery of the important causal categories in these domains as well as research about their developmental course. If these beliefs predict children’s engagement in friendships and how they cope with challenges and setbacks in their social relationships, then perhaps the investment will be worthwhile.

Finally, it seems important to use some of these theories and research to rethink intervention attempts. Because research links perceived control to so many aspects of psychological functioning, many intervention efforts have been aimed at strengthening children’s perceptions of control. The current program of research highlights the notion that interventions should be developmentally appropriate as well as taking into consideration how the context creates experiences for children which undermine or promote their perceived control. Assessing the effects of changes in beliefs on subsequent coping, behavior, emotion, and motivation may provide a more complete picture of the effectiveness of these important intervention efforts.

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Perceived Control


**Author Notes**

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**APPENDIX I**


**Control Beliefs**

If I decide to learn something hard, I can. (+)

I can’t get good grades, no matter what I do. (-)
Strategy Beliefs

Effort: For me to do well in school, all I have to do is work hard. If I get bad grades, it’s because I don’t work hard enough.

Ability: I have to be smart to get good grades in school. If I’m not smart, I can’t get good grades.

Powerful: If I want to get good grades, I have to get along with my teacher.

Others: If my teacher doesn’t like me, I won’t do well in that class.

Luck: For me, getting good grades is a matter of luck. If I get bad grades, it’s because I’m unlucky.

Unknown: When I do well in school, I usually can’t figure out why. I don’t know how to keep myself from getting bad grades.

Capacity Beliefs

Effort: When I’m in class, I can work hard. (+)

I can’t seem to try very hard in school. (-)

Ability: I think I’m pretty smart in school. (+)

I don’t have the brains to do well in school. (-)

Powerful: I can get my teacher to like me. (+)

Others: I just can’t get along with my teacher. (-)

Luck: I am lucky in school. (+)

When it comes to grades, I’m unlucky. (-)

APPENDIX II

SAMPLE ITEMS AND PSYCHOMETRIC PROPERTIES FOR THE COPING CATEGORIES (From Skinner & Wellborn, 1991)

When something bad happens to me in school (like not doing well on a test or not being able to answer an important question in class)...

Strategizing (5 items, alpha = .68):

I try to see what I did wrong.

I slow down and think carefully.

Perseverance (5 items, alpha = .73):

I go over the problem again and again.

I can’t go on until I’ve solved it.

Avoidance (5 items, alpha = .62):

I try not to think about it.

I put it out of my mind.

Delegation (5 items, alpha = .63):

I get the teacher to solve the problem.

I want the teacher to tell me the answer.

Projection (5 items, alpha = .66):

I get real mad at other people.

I say the teacher didn’t cover the things on the test.

Confusion (5 items, alpha = .60):

my mind goes blank.

I get all confused.

Impulsivity (6 items, alpha = .68):

I just say the first thing that comes into my head.

I just do anything.