

**Volition and Motivation: The Effect of Distracting Learning Conditions on
Students Differing in Action Control and Perceived Control**

by

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Partial Fulfillment of the Requirements for the
Degree of Doctor of Philosophy

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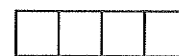
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**VOLITION AND MOTIVATION: THE EFFECT OF DISTRACTING LEARNING
CONDITIONS ON STUDENTS DIFFERING IN ACTION CONTROL
AND PERCEIVED CONTROL**

BY

VERENA H. MENEC

**A Thesis submitted to the Faculty of Graduate Studies of the University of Manitoba
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Abstract

The theory of action control developed by Julius Kuhl (1985, 1994b) describes the volitional control processes that enable people to carry out an intended action in the presence of distractions or competing action alternatives. According to the theory, the efficiency of invoking volitional strategies can be described in terms of a relatively stable individual difference, ranging from state orientation on the one hand to action orientation on the other. Individuals characterized by a state orientation have difficulty exerting volitional control and are therefore unable to deal effectively with distracting situations. In contrast, those having an action orientation should be buffered against such situations because of their ability to invoke action control. Besides their action control style, individuals' perceived ability to control events in their environment should also impact on their behavior. However, the combined effects of action control style and perceived control have not been examined to date. The purpose of present thesis was, therefore, to investigate the joint effect of state and action orientation and perceived control under distracting conditions.

Three studies were conducted using the same general experimental paradigm which required participants to read a fairly long text on the computer monitor and then write an achievement test on the material covered. In the first study, an external distraction was introduced while participants were reading the text by periodically presenting a tone. In Study 2, participants were exposed to noncontingent failure prior to engaging in the reading task. Study 3 extended the second study by including an intervention designed to minimize the negative consequences of the failure experience.

The results show that action control interacted with perceived control. That is, participants with a low sense of personal control performed similarly regardless of their action control style or the situational circumstances. In contrast, for individuals with high perceived control, a state orientation enhanced the performance under distracting conditions in Study 1, and decreased performance following failure in Study 2. In Study 3, the action

control intervention intended to assist students following failure increased performance only for action-oriented, low-control participants. Moreover, state-oriented individuals experienced more negative emotions following experimenter-induced failure than their action-oriented counterparts in both Study 2 and 3. The present findings are consistent with action control theory (Kuhl, 1994b) and the assumption that state orientation represents a potentially maladaptive characteristic under stressful conditions, although it can lead to performance increments under relaxed and supportive circumstances (Kuhl, 1994b). The results further contribute to the literature by showing that the impact of state and action orientation can be moderated by a person's perceived control.

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Volition and Motivation: The Effect of Distracting Learning Conditions on Students Differing in Action Control and Perceived Control

Current models of motivation and learning describe learning and achievement in terms of a complex interaction of motivational and self-regulatory factors (e.g., Ames, 1992; Pintrich, 1989; Zimmerman & Schunk, 1989). Besides emphasizing the importance of motivation, as exemplified by constructs like locus of control (Rotter, 1966), self-efficacy (Bandura, 1986), or need achievement (Atkinson, 1957), these models therefore also focus on the self-regulatory strategies that enable an individual to attain a goal. Self-regulation encompasses a wide range of strategies and processes, including concrete strategies like seeking help, cognitive strategies such as monitoring one's understanding of newly learned material, and the metacognitive processes of being aware of the importance of self-regulatory strategies (Zimmerman & Schunk, 1989).

One aspect of self-regulation that is gaining increasing attention in the social cognition literature is the notion of volition. The construct of volition has only recently been reintroduced into psychological theorizing and research, after being abandoned by mainstream psychology at the beginning of the century. In its current form, as conceptualized by individuals like Julius Kuhl (1985, 1994b), volition would appear to be a useful construct for understanding learning and achievement (Corno, 1986, 1989, 1993). However, the joint effect of individuals' volitional control and motivational variables has received little attention in the research literature. One important variable that is closely linked to motivation is perceived control, which has been shown to impact on people's adjustment and well-being in contexts like academic achievement (Perry, 1991), health (Thompson, Sobolew-Shubin, Galbraith, Schwankovski, & Cruzen, 1993), and aging (Schulz, 1980). The purpose of the present thesis was, therefore, to examine the combined effects of individuals' volitional style and their perceived control in an achievement context. Three studies were conducted, with Kuhl's theory of action control providing the theoretical framework for the research.

The general introduction to this thesis is divided into three major sections: First, a brief introduction to the topic of volition is provided; second, Kuhl's theory of action control is described, coupled with a review of relevant empirical research; and third, the concept of perceived personal control will be discussed. The introduction is followed by the three studies and a general discussion.

A Brief Overview of the History of Volition

The notion of volition is intimately tied to the study of human action. Eighteenth and nineteenth century philosophers considered volition, or the act of will, the cause of action or, conversely, action as the effect of volition (Care & Landesman, 1968). John Stuart Mill (1961), for example, put it this way: "Now what is an action? Not one thing, but a series of two things; the state of mind called a volition, followed by an effect" (p. 35). This "volitional theory" of action was accepted by both philosophers and psychologists until the 1920s, when a number of criticisms were put forth, which eventually led to its rejection (Care & Landesman, 1968). On the one hand, philosophers argued that volitional theory leads to an infinite regress (Care & Landesman, 1968), because it implies that volition itself is something that is caused, presumably by a second-order volition, which in turn would be caused by a third-order volition, etc. Volitional theory was also criticized by philosophers because of the proposed mental processes involved. The observation that people were not, and presumably could not be, aware of volition was taken as evidence to reject this construct (e.g., Taylor, 1966).

In psychology, the notion of the will was a legitimate topic of investigation at the beginning of the century, with William James (1908), for example, allocating an entire chapter to the topic of the will in his text "Psychology: A Briefer Course". For James, the existence of the will was presumed on an intuitive basis, rather than requiring lengthy arguments or definitions, as reflected by the following quote: "... wish, will, are states of mind that everyone knows, and which no definition can make plainer" (p. 415). With the rise of behaviorism, any investigation of such mental phenomena was of course effectively

stopped. Added to this was an increasing discomfort with the moralistic connotation of the "will" or "strength of character" associated with research in Germany (Danziger, 1990).

Given these criticisms, the notion of volition was discarded from psychology until about 1970. However, the construct has recently seen a revival in the social cognition literature. Given Germany's long history in will psychology (Ach, 1910), it is not surprising that this revival has been led by German psychologists, most notably Julius Kuhl and Heinz Heckhausen, although North-American researchers like Corno (1989, 1993) have expended considerable effort in introducing the issue to this continent. In the following section, one of these new conceptions of volition will be examined in some detail, namely Kuhl's (1983, 1985, 1994b) theory of action control.

Kuhl's Theory of Action Control

Action control theory describes the mechanisms that enable people to protect an intention from competing action alternatives and external distractions (Kuhl, 1985, 1994b). This mechanism is alternatively referred to as volition, self-regulation, or action control. As the definition of self-regulation varies in the literature (cf. Zimmerman, 1989), and Kuhl applies this term to a subcategory of volitional processes in his most recent writings (Kuhl, 1994b, 1995), the terms volition and action control will be used in the present paper to refer to this mechanism. It will be noted that "volition" is used quite differently than in the classical volitional theory described earlier. Instead of conceptualizing volition as the cause of behavior, it is now defined in terms of a process. Besides avoiding the problem of the infinite regress mentioned above, this new definition also avoids the danger of reifying the construct or postulating a homunculus who controls behavior.

Action control theory is based on three fundamental premises about human goals and behavior (Kuhl & Goschke, 1994). First, in any given situation people are likely to pursue a variety of goals. As only a few of these goals can be translated into action at any one time, the individual has to select one goal to be carried out. Second, most goals require some persistence to be attained. An intention therefore needs to be protected from

distractions and possible action alternatives that may arise. Third, individuals have to be able to shift from one action to another, depending on changing circumstances. For example, a student who intended to research an essay at the library and finds it closed may have to adjust his or her goals and instead study for an upcoming test. Thus, the three assumptions relate to the selection of a goal, persistence in carrying out actions to attain it, and flexibility when situational circumstances hinder its enactment.

According to action control theory, volitional mechanisms assist with persistence and flexibility by enabling an individual to protect a goal from competing action alternatives or distractions, and by promoting disengagement from goals that cannot be attained, coupled with the initiation of a new goal-directed action. Motivational factors, on the other hand, presumably help a person select a particular goal. For example, a sense of competence may provide the motivation for a student to want to study for an upcoming test. However, in order to actually start studying, the student may have to invoke volitional control strategies when faced with the alternative and more desirable possibility of spending time with friends. Similarly, a student who has failed a test may require volitional control in order to emotionally and cognitively disengage from that experience, allowing attention to be focused on future studying efforts.

A Systems Approach to Volition

A critical aspect of action control theory is that conflicts can arise between what a person intends to do and what she or he wants to do, thereby requiring volitional processes to be engaged. At an intuitive level, this assumption does not cause any great difficulty and is reflected in many everyday experiences. For instance, an individual who is trying to quit smoking may intend to change behavior patterns, such as immediately leaving the dinner table instead of reaching for a cigarette. Yet the strong urge (motivation) to light a cigarette is nevertheless still present and will compete with the intention to engage in an alternative activity.

From a theoretical view point, the differentiation between motivation and intention separates the theory from established motivation theories. Consider Weiner's (1986) attributional theory of motivation. The theory is based on the assumption that attributions about the cause of an event determine emotions and expectations. Emotions and expectations then jointly contribute to motivated behavior. Implicit in attribution theory are two basic assumptions. First, the theory focuses on the situation when only one attribution is dominant. A student who has performed poorly on a test may attribute this event to lack of effort, for example. Lack of effort attributions, by maintaining expectations of success and inducing feelings of guilt, should then contribute to increased persistence and achievement striving. Second, it is assumed that the motivation arising from a particular attribution will be sufficient not only to initiate, but also to maintain a behavior.

While this model provides a parsimonious explanation of motivated behavior, real life is typically more complex. Over the course of day, we are all faced with multiple events that presumably lead to an attributional search. Which motivational tendency that arises from these multiple attributions will actually be carried out in any given situation is not specified by Weiner's model, thereby considerably reducing the theory's predictive power. The second assumption requires that the strongest motivational tendency, presumably the one associated with the highest expectations of success and strongest emotions (e.g., feelings of guilt), will simply be enacted. Successful completion of an action, such as reading a textbook chapter, would therefore necessitate that no other motivational tendency become dominant. Yet it is very plausible that this could occur. The student studying for a test may be interrupted by a friend's invitation to go for coffee, for instance. In this situation, the temptation to postpone studying in favor of a more attractive activity may not be easily overcome, despite high expectations and feelings of guilt. As the theory of action control takes such complex situations into account, it would appear to be better suited to explain the stream of everyday behavior than a purely motivational theory like Weiner's.

Kuhl describes the potential conflicts between motivation and intentions in terms of mental subsystems, or levels of control (Kuhl & Goschke, 1994; Kuhl & Kazen-Saad, 1987; Kuhl & Kraska, 1989). The assumption is that cognitive, emotional/motivational, and executional processing occurs in separate systems. In his more recent writings Kuhl (Kuhl & Goschke, 1994) classifies these systems in terms of a representational, evaluative, and procedural level of control. For the present purposes, the terms cognitive, emotional, and executional preferences will be used. It should be noted that these three preferences relate to what Kuhl refers to as "output" processing, that is processing of information regarding action alternatives. The reader is referred to Kuhl and Goschke (1994, pp. 96-102) for a discussion of the corresponding "input" processing, that is, processing of incoming information.

Cognitive preferences relate to intentions. An intention is defined as an activated, abstract representation of an action plan that is associated with a commitment to its execution (Kuhl & Goschke, 1994). Commitment, in turn, is a function of expectations that the goal can be attained, and some self-initiated decision process. Emotional preferences refer to the emotional evaluation of a specific action. This emotional evaluation is based on emotions experienced when engaging in the activity in the past. Executional preferences relate to the strength of activated action schemata. Such schemata represent the specific behavioral responses in a given situation and are closely linked to overt behavior.

"Errors" occur when the three systems are in conflict. "Errors of execution" (Kuhl & Kazen-Saad, 1987) exist when a behavior does not correspond to its intention. This type of error is reflected in action slips. Consider the individual who normally drives directly home from work, but one day decides to pick up some clothing at the dry cleaners. On arriving home, the individual realizes that he or she forgot to run the errand. Thus, the habitual, automatic behavior in that situation has overridden the current intention.

A second type of error occurs when the most strongly activated cognitive preference conflicts with the strongest executional preference. That such an error can occur is based

on the assumption that emotional preferences have a stronger effect on the executorial system than cognitive preferences. That is, given a discrepancy between what we like to do and what we think we should do, it is easier to carry out actions that we like. It is under these circumstances that volitional mechanisms are required. This situation is presented in Figure 1 in a highly simplified model. (See Kuhl & Kazen-Saad, 1991, and Kuhl & Kraska, 1989 for a more complete representation of the processes involved).

Figure 1 shows the example of a student whose intention to study is most strongly activated, indicated by enlarged letters. A second action alternative, going out to socialize, is present, but is less strongly activated, as represented in the Figure by smaller letters. At the same time, however, the individual has an emotional preferences preference for going out, because of the positive emotions associated with this activity in the past. This emotional preference leads to an executorial preference for going out. In order to actually carry out the intention of studying, the student would now have to invoke volitional strategies, such as emotion control or motivation control. These strategies are described in more detail in the next section.

In sum, volitional mechanisms are needed only when a conflict between mental systems occurs. Volitional control would be unnecessary when no action alternatives are competing with the current intention, or when such alternatives are less desirable than a current intention. For example, a student who is highly motivated to perform well in a psychology course should have little difficulty studying if there are no potential alternative activities competing with the intention. In this context, action alternatives like cleaning the apartment or studying for a less interesting course would also not present a problem as they are likely associated with weaker emotional preferences.

Volitional Strategies

Kuhl (1982a, 1985) describes six volitional strategies that may be used to maintain an intention (see also Kuhl & Goschke, 1994, for a discussion of the more basic processes that underlie these strategies): 1) selective control of attention, which involves focusing

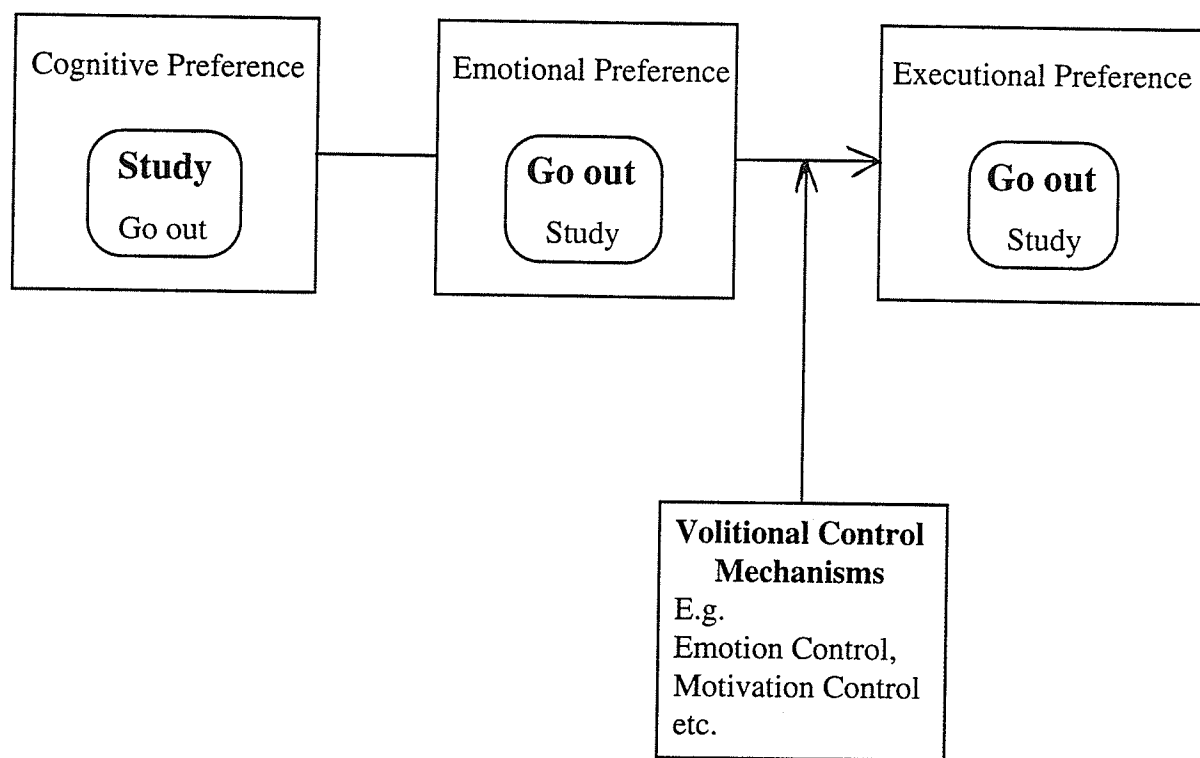


Figure 1: A systems model of action control (adapted from Kuhl & Kraska, 1989).

attention exclusively on information that is related to the current intention. 2) encoding control, which refers to the selective encoding of information that is related to the current intention; 3) economy of information processing, which relates to the stop rules for information processing. This strategy involves optimizing the length of information processing and preventing excessive prolongation of weighing action alternatives; 4) control of emotions, whereby emotions such as depression or worry that might interfere with enacting an intention are inhibited. Conversely, feelings that promote an action tendency are aroused.

A fifth strategy is motivation control. This involves strengthening the motivation that gave rise to the current intention. Instead of simply protecting a current intention, as in the case of the previous action control strategies, motivation control serves to increase the strength of an action tendency. This can be accomplished in a number of ways. For example, one may want to focus on the positive consequences of an intended action, such as the positive feeling one will have after completing a manuscript. Alternatively, one could focus on the negative consequences of not carrying out the action, such as imagining the failure to obtain a research grant if one fails to publish a sufficient number of articles.

The sixth and last strategy, environmental control, is adapted from writings by clinical psychologists who emphasize self-control strategies. Environmental control involves manipulating one's environment in a way that will facilitate executing an action. For example, an individual who wants to stop smoking should presumably not keep any cigarettes in the house. Similarly, a student who intends to study would be well advised to create a quiet work environment free from possible distractions from roommates or family members.

An individual may presumably invoke a number of these strategies to protect a current intention, given the circumstances. For example, consider the student who is trying to study for a test. The intention to study may be challenged by both external and internal distractions, requiring the use of action control strategies. External distractions may

involve loud music played by a roommate next door, whereas an example of an internal distraction would be daydreams about more pleasant activities, such as spending time with a friend. Given these obstacles to the intention to study, the student may now increase efforts to concentrate on the textbook while tuning out background noise (attention control). At the same time, the student may focus on the positive aspects of studying, such as the positive outcome of having learned some interesting facts, or performing well on a test (motivation control). If these strategies prove to be insufficient, the student may have to resort to telling the roommate to turn down the music or may, alternatively, decide to study at the library (environmental control).

State versus Action Orientation

A major aspect of action control theory is the assumption that the ability to invoke volitional control and, consequently carry out a current intention, is influenced by two modes: state orientation versus action orientation. The present discussion will focus on this construct from the perspective of state orientation, as it represents a potentially debilitating characteristic that can interfere with achievement, physical and mental health, or decision-making. Action orientation can be conceptualized as the opposite of state orientation. If state orientation is characterized by an inefficiency of volitional control, an action orientation is associated with efficient functioning of volitional processes. The term action control style will be used here as a general label that subsumes both state orientation and action orientation.

In general terms, state orientation is characterized by an inability to control cognitions and emotions that are not related to a current intention and an inability to initiate a new action when exposed to stressful experiences. Thus, under challenging conditions, state-oriented individuals presumably have difficulty invoking the volitional strategies described above, such as attention control, motivation control, or environmental control. More specifically, Kuhl (1985, 1994a, 1994b) describes three types of state orientation: preoccupation, hesitation, and volatility. The preoccupation aspect of state orientation

relates to an excessive focus on a past, present, or future state, associated with intrusive, uncontrollable thoughts. For example, a student who has failed a test may ruminate excessively about this experience without considering how to bring about success in the future. These ruminations then interfere with enacting new intentions.

The hesitation component of state orientation relates to the inability to initiate intended actions. This failure in initiating activities is not due to interfering thoughts, as in the case of preoccupation, but rather results when the volitional control systems are not accessible. In this respect, Kuhl (1994b) argues that the longer behavior is under external control, the more difficult it becomes to invoke volitional mechanisms. Overly restrictive parents, for example, can therefore cause volitional deficits in their children. Lastly, the volatility component of state orientation refers to the inability to persist in pleasant activities without shifting to alternative activities. According to Kuhl (1994a), this may be caused by a person thinking too much about the goal of an action or considering action alternatives while engaging in an activity.

The three types of state orientation are therefore quite distinct and their effect should manifest itself in different situations. Preoccupation-related state orientation is particularly relevant to negative, stressful situations, as it relates to the inability to effectively deal with such events. Hesitation-related state orientation is relevant in a decision-making context because it describes individuals that have difficulty initiating actions. Lastly, volatility-related state-orientation is best examined in situations where people engage in pleasant activities. In the present thesis, state orientation was defined in terms of preoccupation with negative events, as the goal was to examine students' reactions under difficult and potentially stressful learning conditions.

Measuring State Orientation

Kuhl describes state orientation both as a relatively stable personal characteristic, as well as a situationally induced variable. According to Kuhl (1985, 1994b), the experience of uncontrollable failure is one specific situational characteristic that can induce state

orientation. Most research, however, has focused on state orientation as an individual difference variable as it interacts with situational circumstances.

A questionnaire has been developed to assess state orientation as an individual difference, the goal being to classify people as either state-oriented or action-oriented (Kuhl, 1985, 1994a). The Action Control Scale (ACS) consists of a forced-choice format and presents a series of situations, each of which is followed by two action alternatives, one reflecting a state-oriented, the other an action-oriented response. For example, one of the items relating to preoccupation involves the following scenario: "When I have lost something that is very valuable to me and I can't find it anywhere: a) I have a hard time concentrating on something else; b) I put it out of my mind after a little while. Response a) in this case would represent a state orientation, and response b) an action orientation.

The scale consists of three subscales assessing preoccupation-related, hesitation-related, and volatility-related state orientation, respectively Kuhl (1985, 1994a). Empirically, the preoccupation and hesitation types of state orientation are correlated quite significantly ($r = .43$, Kuhl, 1994a), whereas volatility has been found to be unrelated to these scales. This finding indicates that the volatility subscale captures quite a different type of state orientation than preoccupation and hesitation. The three subscales have shown adequate internal reliabilities across different studies and samples, with coefficients ranging from .70 to .77 for the preoccupation scale, and from .78 to .82 for the hesitation scale (Kanfer, Dugdale, & McDonald, 1994; Kuhl, 1994a). The volatility subscale displays considerably poorer internal reliability ranging from .48 to .74.

Moreover, the ACS shows adequate discriminant validity. Table 1 displays correlations between the ACS and other constructs. The Table is divided into two parts. The first half presents correlations reported by Kuhl (1984) and Kanfer et al. (1994). The second part provides correlations found in previous research at the University of Manitoba with students similar to those used in the present thesis. As only the preoccupation scale was included in this research, correlations for hesitation and volatility are not available. Of

particular interest is the correlation between state orientation and perceived control, as perceived control is the second major construct examined in the present thesis. The question that arises is to what extent the two constructs might overlap. The perceived control measure in this research involved two general questions asking how much control students thought they had over their performance in university. A second perceived control measure as conceptualized in terms of locus of control is also included in Table 1. Locus of control was measured with the Multidimensional-Multiattributational Causality Scale (MMCS) developed by Lefcourt, von Baeyer, Ware & Cox (1979), whereby higher scores reflect greater internality, or more personal control. Lastly, the correlations between state orientation and intrinsic motivation and optimism are reported, as the latter two concepts are linked to motivation. Intrinsic motivation refers to being interested in learning for the sake of learning, rather than for extrinsic reasons, such as parental approval. Lastly, as in Kanfer et al's (1994) research, optimism was assessed with the Life Orientation Scale developed by Scheier and Carver (1985).

Examination of Table 1 shows that there is considerable consistency between the Manitoba data and previous research. For example, the correlation of $-.22$ between preoccupation and achievement motivation reported by Kuhl (1984) is comparable to those for perceived control, locus of control, and intrinsic motivation, that is variables that are linked to motivation. Similarly, the correlations between preoccupation-related state orientation and optimism are very similar in the two sets of research. What is noteworthy is that none of the correlations are sufficiently high to conclude that state orientation is redundant with other constructs. Most importantly, state orientation is correlated only weakly with perceived control ($r = -.16$), with greater preoccupation-related state orientation being associated with a lower sense of control. Similarly, state orientation is only weakly correlated with locus of control ($r = -.22$). Thus, state orientation and perceived control clearly represent two distinct constructs.

Table 1: Discriminant Validity of the Three Action Control Subscales

	<u>Preoccupation</u>	<u>Hesitation</u>	<u>Volatility</u>
Internal reliability	.70 to .77	.78 to .82	.48 to .74
<u>Kanfer et al. (1994), Kuhl (1984)</u>			
Extraversion	-.07	.07	-.21
Self-Consciousness	.24	.22	-.15
Cognitive Complexity	-.09	.03	.14
Optimism	-.42	-.38	.14
Affective Intensity	.22	.13	-.33
Test Anxiety	.36	.33	.01
Achievement Motivation	-.22	-.29	-.11
 <u>University of Manitoba data</u>			
Perceived Control	-.16		
Locus of Control	-.22		
Intrinsic Motivation	-.12		
Self-esteem	-.35		
Optimism	-.41		

Note: The first set of correlations are taken from Kanfer, Dugdale, and McDonald (1994) and Kuhl (1984). The second set comes from data collected at the University of Manitoba with introductory psychology students.

Research also provides evidence for the construct validity of the ACS (see Kuhl, 1984 for a review of this literature). For example, Kuhl (1982b) had children rate their intention to engage in a variety of activities. The following day, they were then asked for how long they had actually engaged in these activities. The results show that for action-oriented children, intentions were correlated with their actually carrying out the activities. This was not the case for state-oriented children, however. These differential results are presumably due to the greater efficiency of action-oriented, or conversely, inefficiency of state-oriented, individuals in enacting intentions.

Research Evidence

As Action Control Theory is conceptualized as a general theory of action, it has been applied to and tested with a variety of tasks and populations. Some of this literature will be reviewed in the present section. Studies that are most relevant to the present thesis are summarized in Table 2. The Table does not include research that does not directly relate to the present thesis, such as the quite extensive literature examining state orientation in relation to depression or clinical populations (e.g., Kuhl & Helle, 1986; Rholes, Michas, & Shroff, 1989; Hartung & Schulte, 1994), sports (e.g., Heckhausen & Strang, 1988; Beckmann & Kazen, 1994), and other phenomena like alienation (Kuhl & Eisenbeiser, 1986) or activation of intentions (Goschke & Kuhl, 1993).

The literature in Table 2 is divided into four categories: learned helplessness, achievement-related basic research, achievement-related applied research, and decision making. In each of the four categories, studies are listed in chronological order. The categories are somewhat arbitrary, as they overlap in many ways. Studies involving a learned helplessness paradigm are in effect also achievement-related, but were classified separately because they have a research paradigm in common. This paradigm involves exposing subjects to noncontingent negative events, by providing false, failure feedback of participants' performance on a task. Following this noncontingency training task, subjects

are administered a second task, the test task. The assumption is that loss of control experienced on the training task will impair performance or strategy use on the test task.

Column 2 in the Table indicates which of the three subscales of the ACS was used in a particular study. It should be noted that the scales are labelled according to the latest ACS version (Kuhl, 1994a), even though the scales were known under different names in earlier versions of the scale. For example, the preoccupation scale was referred to as "failure" scale, and the volatility scale as "performance" scale (Kuhl, 1985). For consistency's sake, the terms preoccupation, hesitation, and volatility are used throughout the Table.

The studies differ considerably in terms of which subscale was used. Studies involving a learned helplessness paradigm almost exclusively used the preoccupation scale, whereas research focusing on achievement-related issues often included all three subscales, particularly in correlational studies. Experiments related to decision making included primarily the hesitation scale. This differential use of subscales makes sense because the research related to different aspects of state orientation. In the context of negative experiences such as noncontingent failure, the preoccupation scale would be most relevant, as it focuses on the tendency to be preoccupied with negative events. In contrast, experiencing difficulties deciding which action alternative to engage in, as measured by the hesitation scale, should have the greatest impact in a decision-making context.

As Table 2 shows, state orientation was also measured as a dependent variable in some studies, (Stiensmeier, 1985a, 1985c; Stiensmeier-Pelster, 1991; Stiensmeier-Pelster & Schürmann, 1990). These studies are a first step in identifying situational factors that contribute to state orientation, and point to factors like the importance of an event and the urgency of an action. Moreover, Stiensmeier (1985a, 1985b) has examined the relation between self-concept and state-orientation. However, the major thrust of the research has been on using state orientation as a predictor or independent variable, by comparing state-oriented and action-oriented individuals' performance, emotions, strategy use, etc.

Table 2: Summary of Research Findings for State-Oriented Persons (SOP) and Action-Oriented Persons (AOP)

<u>Study</u>	<u>Type of Action Control Scale</u>	<u>Research Question/Method</u>	<u>Results</u>
<u>Learned Helplessness</u>			
Kuhl (1981) Study 1	SO and AO induced experimentally	Examined the effect of noncontingent failure and induced state vs. action orientation on an unsolvable discrimination task. SO was induced by having subjects think about their failure, report their emotions, etc.	Subjects in the SO-noncontingent failure condition performed more poorly on a subsequent concentration task than a control group receiving no contingency training and no SO/AO manipulation, and also reported expending more effort.
Study 2	Preoccupation	Examined the effect of implicit versus explicit hypothesis testing (i.e., verbalizing hypotheses on a problem solving task out loud) while receiving noncontingency feedback on SOP/AOP's performance on a subsequent concentration task.	SOP performed better on the concentration task with explicit compared to implicit hypothesis testing and a no contingency training control group. AOP performed better under implicit hypothesis testing than controls.
Kuhl & Koch (1984)	Preoccupation	Examined the effect of inducing motivation (vs. a no induced motivation control) on SOP/AOP's performance on a target shooting task on which they received noncontingent failure feedback.	SO in the no motivation control condition performed worse than the other three groups when receiving failure feedback. No differences between SOP and AOP were found for attributions, expectations, and motivation.
Brunstein & Olbrich (1985)	Preoccupation	Examined the effect of noncontingent failure while working on a discrimination task on SOP/AOP's strategy use, affect, etc.	SOP's problem solving strategies declined after the noncontingent failure experience. In contrast, AOP refined their strategies over successive trials on the discrimination task. SOP were less likely to use task modeling and self-instruction, but more likely to express negative affect and ability doubts than AOP. SOP were less likely to verbalize efficient, but more likely to verbalize inefficient strategies than AOP. Compared to an initial training phase, SOP reported less personal control and increased helplessness during the noncontingent failure phase.

Kuhl & Wassiljew (1985)	Volatility	Examined the effect of noncontingent failure while working on a discrimination task on SOP/AOP's reactions on a subsequent problem solving task (Kalah game).	AOP in the no training control group made fewer goal-free decisions, and had a higher number of instrumental goals than all the other groups when playing the subsequent Kalah game. For the no training control, SOP had lower expectations of success than AOP. SOP were less motivated to play the game and reported being less immersed in the game than AOP.
Stiensmeier (1985a, Study 2)	State-oriented thoughts measured, e.g., thoughts regarding performance.	Examined the antecedents of state orientation by combining self-concept (low, high) and explicit vs. implicit hypothesis testing while receiving noncontingent failure feedback.	Subjects with low self-concept reported more state-oriented thoughts than those with high self-concept, particularly in the explicit hypothesis testing condition.
Brunstein (1989)	Preoccupation	Examined the effect of noncontingent failure and state orientation on a problem solving task administered either immediately after the contingency training (immediate condition) or 24 hours later (delayed condition).	During contingency training, SOP used less efficient strategies and less self-instruction than AOP, felt more out of control, and made fewer ability comments. No differences were found for attributions and emotions. In the delayed condition, SOP performed more poorly on the problem solving task than AOP. AOP performed better and felt more confident in the delayed than the immediate condition.
Schellhas & Walschburger (1989)	Preoccupation	Examined the effect of state orientation under two noncontingent failure conditions (physical vs psychological standardization of failure experience).	Under psychological standardization (i.e., failure rate adjusted for each subject), SOP had a lower heart rate than AOP initially, but a higher heart rate during later tasks. No differences between SOP and AOP were found for feelings of helplessness and motivation.
Stiensmeier-Pelster & Schürmann (1990)	State-oriented thoughts measured, e.g., thoughts about their performance.	Examined the role of noncontingent failure, combined with attributions, in inducing state orientation.	Increased state orientation was found under noncontingent failure conditions for subjects who attributed their performance to internal-global-stable attributions.

Mayr & Walschburger (1991)	Preoccupation	Examined the effect of noncontingent failure and low vs. high pressure (i.e. low vs high density of trials). Noncontingent failure was induced on a perceptual speed task and SOP/AOP's responses on a subsequent problem solving task examined.	Under high pressure, SOP reported being tenser than AOP and felt they had less energy. They were also slower on the subsequent problem solving task. SOP also reported more self-doubt, lower expectations, and greater discomfort than AOP after repeated failure and high pressure. Under low pressure, SOP felt less tense and worked faster than AOP. No differences between the groups were found on physiological measures.
Stiensmeier-Pelster (1991)	State-oriented thoughts measured, e.g., thoughts about causes of performance.	Examined the role of noncontingent failure in inducing state orientation.	Subjects receiving noncontingent failure reported more state-oriented thoughts than a success group immediately after the contingency task. For these subjects, state-oriented thoughts decreased from assessment immediately after noncontingent failure to the second assessment. No difference was found between groups receiving 1 vs 3 failure experiences..
Kuhl & Weiss (1994)	Preoccupation	Examined the effect of three experimental conditions: noncontingent failure-no intervention, noncontingent failure explicit hypothesis testing, noncontingent failure-expected failure. SOP/AOP's reactions were measured both during the contingency training task and a subsequent anagram task.	During the training task, the performance of SOP in all three noncontingent failure condition deteriorated, compared to a success group, from the first to the fourth trial. They also reported more thought interference than the success group. On the subsequent anagram task, SOP in the noncontingent failure-no intervention condition solved fewer anagrams than controls, were more likely to think about task-irrelevant issues, and were less likely to concentrate on the task.
Schmalt (1994)	Preoccupation	Examined the effect of four noncontingent failure conditions on a subsequent concentration task: Self-focus, general action focus, specific action focus, and no-intervention control. The data was analyzed separately for subjects differing in motivation and action control.	Under self-focus, AOP made more mistakes on the concentration task than AOP in the action-focus conditions. No differences in performance were found for SOP. SOP in the action-focus conditions felt more helpless than AOP. No differences were found for feelings of optimism and aggression.

Achievement-Related - Basic Research

Beckmann (1989)	Preoccupation	Examined the facilitation/inhibition effects of loss of incentive (i.e., subjects told they would not get paid for participating in experiment) and difficulty of task (low, high) on SOP/AOP's performance on a word identification task.	With incentive loss, SOP rated the experiment as less interesting than AOP. They were also less willing to participate in another experiment without payment than AOP, and reported greater concentration loss than SOP in the control condition. On the easy task, AOP performed better in the incentive loss than the control condition. On the difficult task, SOP performed better in the incentive loss than the control condition and better than AOP in the incentive loss condition.
Schweflinghaus, Kiesswetter, Schmidt, & Rutenfranz (1989)	Hesitation	Examined SOP/AOP's reaction time to an auditory signal under feedback (yes, no) and type of stimulus interval (constant, variable) conditions.	No effect was found for state orientation on reaction time and heart rate. However, SOP felt less alert than AOP prior to starting the experimental task.
Beckmann (1990)	Preoccupation	Examined the facilitation/inhibition effects of loss of incentive (i.e., subjects told they would not get paid for participating in experiment) vs. no incentive loss on SOP/AOPs' performance on a word identification task.	SOP thought they had learned less in the experiment when the incentive was removed than those in the control condition. In the incentive loss condition, SOP perceived the experiment as less important than AOP. SOP performed better on the second set of trials under incentive loss, compared to control conditions. Incentive loss had no effect on AOP.
Beckmann & Strang (1992)	Hesitation	Examined the facilitation/inhibition effects of the presence of an observer (yes, no) on SOP/AOP' performance on a complex (recall task) versus simple (strength) task.	State orientation had no effect on the simple task. On the complex task (recall), subjects' performance deteriorated from the first to the second set of trials, except for SOP in the observer condition who maintained their performance. In the presence of an observer, SOP performed better than AOP on the second set of trials.

Doll & Mentz (1992)	Preoccupation, Volatility	Examined the effect of type of task (speed-oriented game vs. problem solving game) and difficulty of the game (low, high) on SOP/AOP.	No significant effects were found for the Volatility scale. The following results all relate to the preoccupation scale: For both games, SOP felt less confident and less competent in the difficult than the easy condition. No differences were found for performance on either game. However, SOP took more time answering questions than AOP.
Stiensmeier-Pelster, Schneider, Schürmann, & Möllmann (1989) reported in Stiensmeier-Pelster & Schürmann (1994)			
Study 1	Volatility	Examined SOP/AOP's reaction time in the presence of a distractor (i.e., a word presented on the screen while subjects performed a simple reaction time task) Distractors were categorized by subjects as either low or high emotion-arousing.	With high emotion-arousing distractors, SOP had longer reaction times than AOP. Their reaction times also increased from the no distractor to the low emotion-arousing to the high emotion-arousing distractor condition.
Study 2	Hesitation	Examined SOP/AOP's reaction time in the presence of a distractor. Unlike in Study 1, the distractor words were a priori categorized as neutral or emotional.	No difference was found between SOP and AOP in the no distractor and neutral distractor condition. However, SOP had longer reaction times than AOP with emotional distractors.

Achievement-related - Applied Research

Bossong & von Saldern (1984)	Preoccupation, Hesitation, Volatility (the scales were combined into one score).	Examined the relation between state orientation, the worry component of test anxiety and emotionality using a path analysis.	State orientation was associated with more worrying in testing situations, which in turn was predictive of greater emotionality.
Stiensmeier (1985b)	Preoccupation, Hesitation	Examined the relation between state orientation, ability concept, importance assigned to life events, and evaluation anxiety.	Both state orientation scales were negatively related to ability self-concept, and positively to evaluation anxiety and importance assigned to negative life events.

Stiensmeier (1985a, Study 1)	Preoccupation, Hesitation, Volatility	Examined the relation between state orientation and self-concept in academic and affiliation contexts.	All three state orientation scales correlated negatively with academic and affiliation self-concept.
Stiensmeier (1985c) Study 1	Preoccupation, Hesitation, Volatility	Examined the relation between state orientation and the importance assigned to life events.	Positive correlations were found between preoccupation and volatility state orientation and the importance assigned to negative life events.
Study 2	State-oriented reactions measured as dependent variable.	Examined the effect of the importance of a hypothetical event (important, unimportant) and type of scenario (failure, success, decision-related) in inducing state orientation.	For failure and success-related scenarios, important events elicited more state-oriented reactions than unimportant events.
Study 3	State-oriented reactions measured as dependent variable (e.g., wanting to think about the situation instead of making a quick decision).	Examined the effect of the importance of an event and the urgency of the action in inducing state orientation.	For highly urgent actions, important events evoked greater state orientation than unimportant events. In the low urgent condition, the importance of the event induced state orientation for one of three scenarios only.
Bossong, Klassen-Edinger, & von Saldern (1988)	Preoccupation, Hesitation, Volatility (the three scales were combined into one score)	Examined the relation between state orientation, test anxiety (worry), health, and stress.	State orientation was positively related to the worry component of test anxiety, health symptoms, and illness.
Erwin & Marcus-Mendoza (1988)	Preoccupation, Hesitation, Volatility (the scales were used as dependent measures)	Examined the relation between leadership skills, career goals and state orientation.	Students with low leadership skills were more state-oriented (preoccupation, hesitation, volatility) than those with greater skills. Students planning to pursue a bachelor's degree were more state-oriented (preoccupation) than those planning a doctoral degree.
Sack & Witte (1989)	Preoccupation, Hesitation, Volatility	Examined the relation between state orientation and productivity in a sample of sales persons.	None of the scales correlated with productivity.

Geyer & Lilli (1992)	Preoccupation, Hesitation, Volatility (authors own version focusing on achievement events).	Examined the effect of state orientation on job-related goals/decisions with a latent variable causal model.	Greater state orientation (a latent variable based on all three scales) was associated with more decision difficulties (i.e. more thoughts regarding job search, greater difficulty deciding which field to choose, and less concrete job goals).
Boekaerts & Otten (1993)			
Study 1	Preoccupation, Hesitation, Volatility	Examined the relation between state orientation and intended and actual effort expended with a sample of children.	None of the effects involving state orientation were statistically significant.
Study 2	Preoccupation, Hesitation, Volatility	Examined the relation between state orientation and intended and actual effort expended with a sample of children.	Hesitation and volatility-related state orientation was negatively related to intended effort and actual effort put into a reading comprehension task. Preoccupation-related state orientation was <u>positively</u> related to intended and actual effort.
Beswick & Mann (1994)	Hesitation	Examined the relation between state orientation, procrastination, absenteeism, and course grades.	State orientation was positively correlated with procrastination, absenteeism, missing deadlines, and negatively related to course grades.
Fuhrer (1994)	Hesitation	Examined students' help seeking in a library under low (one person present) versus high (12 persons present) social density.	Under high social density, SOP asked fewer questions than AOP. They also asked fewer questions than SOP in the low density condition. State orientation had no effect on the time spent in the library.
Menec & Schonwetter (1994)	Preoccupation	Examined the relation between state orientation, emotionality and the cognitive interference aspect of test anxiety.	State orientation was positively related to emotionality and cognitive interference during test taking.
Menec, Struthers, & Perry (1995)	Preoccupation	Examined the relation between state orientation, stress, health symptoms, and course grades using a path model.	State orientation was predictive of more stress, which in turn led to more health symptoms. State orientation had little effect on course grades, however.

Menec, Perry, & Struthers (in press)	Preoccupation (modified 7-item version focusing on achievement-related situations)	Examined the effect of teaching effectiveness (low vs. high expressive) and perceived performance (failure, success) on subsequent performance on an achievement test, emotions, and attributions.	SOP performed better on the achievement test than AOP under low expressive, failure conditions. SOP also expressed the most negative emotions of all the groups. No difference was found for attributions.
Struthers, Menec, Schonwetter, & Perry (under review)	Preoccupation (modified 7-item version focusing on achievement-related situations)	Examined the effect of SO/AO, attributions (stable, unstable), and creativity (low, high) on course grades.	For students who made unstable attributions for failure and were highly creative, SOP performed more poorly in a course than AOP.

Decision Making

Kuhl & Beckmann (1983)	Hesitation	Compared SOP and AOP's strategy use on a game of dice	SOP preferred a more complex (expectancy x value) strategy, AOP a more simple (expectancy) strategy.
Beckmann & Kuhl (1984)	Hesitation, Preoccupation	Examined SOP/AOP's decision making in the context of an "apartment hunting" task.	SOP were less able to bolster their decision than AOP, i.e., they showed less divergence between a chosen and a rejected alternative than AOP. AOP increased the divergence between the chosen and rejected alternatives from the first to the second assessment. These effects were found only for the Hesitation, but not the Preoccupation scale.
Niederberger, Engemann, & Radtke (1987)	Hesitation	Examined SOP/AOP's decision making under low (decision-related information remained on computer screen) vs. high memory load (decision-related information did not remain on computer screen) .	SOP accessed more information during decision making than AOP. Under high load, the options considered decreased rapidly, but SO vs. AO had no differential impact.
Stiensmeier & Schnier (1988)	Hesitation	Examined the effect of SO/AO on decisions as to what activity to engage in with a sample of seniors	SOP seniors planned fewer activities than AOP. Their planned activities were more "other-determined" and routine than those of AOP. When given a list of possible activities, SOP were less likely to choose social activities than AOP, but more likely to prefer "doing nothing". State orientation also correlated positively with decision time and perceived difficulty of the decision.

Stiensmeier-Pelster,
John, Stulik, &
Schürmann (1989)

Study 1

Hesitation

Examined the effect of strategy use (use of expectancy strategy vs. expectancy x value strategy) under time pressure vs. no time pressure.

Under time pressure, SOP relied less on simple (expectancy) strategies, and more on complex (expectancy x value) strategies than AOP.

Study 2

Hesitation

A questionnaire regarding fear of making mistakes, preference for quick decisions, etc. administered to SOP vs AOP.

SOP were more afraid of making wrong decision, indicated they had problems deciding, were less likely to prefer quick decisions, etc. than AOP.

Stiensmeier-Pelster,
Schürmann, John, &
Stulik (1991)

Study 1

Hesitation

Examined the effect of state orientation on strategy use under time pressure vs. no time pressure.

Subjects used less complex strategies under time pressure than no time pressure, particularly AOP. Under time pressure, SOP were more confident about their decision than AOP.

Study 2

Hesitation

Examined the effect of the importance of a decision (low, medium, high) and SO/AO on strategy use.

In the low importance condition, SOP chose more complex strategies than AOP. They were also more confident and spent more time than AOP. As the importance of the decision increased, AOP used more complex strategies, became more confident of their decision, and spent more time. The importance of the decision had no effect on SOP.

Note: Studies are listed in chronological order in each of the four categories.

Negative effects of state orientation. Considering that state orientation involves intrusive thoughts and an inability to initiate new actions in stressful situations, it seems only plausible to assume that its consequences are mostly negative. The research literature bears out this assumption. In learned helplessness studies, which involve exposing research participants to uncontrollable failure, state-oriented individuals generally use less efficient strategies than action-oriented individuals, exhibit more negative affect, and show performance deficits. This literature will be discussed in more detail in the context of Study 2.

Studies classified here into the achievement-related basic research category are less consistent and present a more complex picture as to the circumstances under which state orientation has negative consequences. State orientation often has no effect on performance on simple tasks, such as reaction time tasks (Schwefflinghaus, Kiesswetter, Schmidt, & Rutenfranz, 1989), and speed-oriented games (Doll & Mentz, 1992), and in one instance even a more complex problem solving game (Doll & Mentz, 1992). Interestingly, while state-oriented persons exhibited no performance deficits in these studies, their subjective responses differed from those of action-oriented individuals.

Subjects in Schwefflinghaus et al.'s (1989) study, for example, were presented with a simple reaction time task that required them to press a key as quickly as possibly after hearing an auditory signal. The signals were presented at either constant or variable intervals. Half of the participants also received feedback on their performance during a series of training trials, whereas the remaining participants received no feedback. Reaction times did not differ between state-oriented and action-oriented participants in any of the conditions, although state-oriented individuals felt less alert than action-oriented subjects.

The finding that state orientation had no detrimental impact on reaction times is not inconsistent with action control theory. That is, state-oriented persons should have difficulties only under conditions that require volitional control, as when they are faced with a distraction. This assumption was examined by Stiensmeier-Pelster, Schneider,

Schürmann, and Möllmann. (1989, reported in Stiensmeier-Pelster & Schürmann, 1994) who introduced a distractor while subjects performed a reaction time task. The task in this case involved pressing the X or Y key as quickly as possible when an X or Y was displayed on the computer monitor. Periodically, a distractor word was displayed on the monitor in conjunction with the X or Y. At the end of the experiment, participants classified the distractor words in terms of their emotion-arousing quality (low vs. high emotion-arousing).

The hypothesis was that the high emotion-arousing words would be particularly distracting and cause state-oriented individuals to lose concentration, as reflected in higher reaction times. The results are consistent with this hypothesis. State-oriented and action-oriented subjects' reaction times did not differ in the no distraction condition. This finding is therefore consistent with Schwefflinghaus et al.'s (1989) results. However, state-oriented participants had longer reaction times than their action-oriented counterparts with high emotion-arousing distractors. The difference between state-oriented and action-oriented subjects was less pronounced with low emotion-arousing distractors.

Thus, this study lends support to the assumption that state orientation is associated with deficits in attention control under distracting conditions. Besides examining the effect of state orientation on such basic cognitive processes, action control theory has also been tested in more applied domains. This literature is listed in Table 2 under the heading "Achievement-related, applied research". This field research shows that state orientation is associated with test anxiety (Bossong, Klassen-Edinger, & von Saldern, 1988; Bossong & von Saldern, 1984; Menec and Schonwetter, 1994), procrastination (Beswick & Mann, 1994), higher stress levels (Menec, Struthers, & Perry, 1995), poorer health ((Bossong et al., 1988; Menec et al., 1995), less help seeking (Fuhrer, 1994), and fewer career goals (Geyer & Lilli, 1992).

Besides this field research, an experimental study conducted by Menec, Perry, and Struthers (in press) was designed to more closely examine the effect of state orientation

under controlled experimental conditions that simulated a learning episode. In this experiment, university students who had been classified as action-oriented or state-oriented were exposed to two challenges, namely academic failure and low-expressive teaching. A test similar to the Graduate Record Examination (GRE) was used to create failure in some students, with subjects being categorized into failure and success groups based on their perceived performance on the test. Following the GRE-like test, they viewed a videotaped lecture, presented in either a low- or high-expressive teaching style. After the lecture, subjects wrote a 30-item multiple-choice test based on the lecture content. Emotions and attributions were also assessed both immediately after the GRE-like test and again after the achievement test.

The low-expressive teaching style is typically perceived as boring by students, with research indicating that performance on the postlecture achievement test is poorer following low- than high-expressive instruction (e.g., Perry & Dickens, 1984; 1987; Perry & Magnusson, 1987). In terms of action control theory, such a lecture style should make it difficult for students to maintain their intention to attend to the lecture, necessitating the use of volitional strategies. State-oriented students should therefore be at a disadvantage in this situation. Similarly, they should experience intrusive thoughts after academic failure, which would interfere with their concentration during the lecture. The results of the study are consistent with this assumption. It was found that state-oriented students scored lower on the achievement test than their action-oriented counterparts under conditions of failure and low-expressive teaching. In contrast, no significant differences between state-oriented and action-oriented students were obtained in the high-expressive condition. This makes sense, since students' attention would presumably not be taxed under these circumstances and action control strategies would not be required.

Moreover state-oriented failure students expressed the most negative emotions of all the groups. This effect was obtained not only after the GRE-like test, but also after the achievement test. This suggests that state-oriented students were less able to control their

emotions than their more action-oriented counterparts, consistent with action control theory. These emotions would then interfere with their concentration and efforts on subsequent tasks.

Thus, the literature supports the assumption that being state-oriented can be maladaptive in an achievement context. Only one study produced findings that do not support this general conclusion. This study was conducted by Boekaerts and Otten (1993) and assessed children's intentions to study and their actual effort expended in several courses. Consistent with previous research, both hesitation-related and volatility-related state orientation were negatively related to intentions to expend effort and actual effort across a number of courses. However, preoccupation-related state orientation was predictive of higher intentions to study and greater effort expended. As Boekaerts and Otten point out, this finding highlights the need for more research on the relation between the three types of state orientation. Moreover, it points to potential developmental differences in the effects of state orientation, as Boekaerts and Otten's study included children, in contrast to the other studies listed in Table 2 that involved adults, primarily college students.

The final section in Table 2 summarizes studies that relate to decision-making. Again, state-oriented persons were shown to respond in a less adaptive fashion than action-oriented individuals. Unlike their action-oriented counterparts, state-oriented persons seem to be unable to modify their strategies depending on situational circumstances. That is, while action oriented research participants simplify their approach under time pressure and when a decision is of low importance (Stiensmeier-Pelster, John, Stulik, & Schürmann, 1989; Stiensmeier-Pelster, Schürmann, John, & Stulik, 1991), state-oriented individuals do not change their strategies. As Dibbelt and Kuhl (1994) aptly put it, state-oriented persons approach any decision as if it involved managing a nuclear power plant, even if they only have to choose between drinking apple juice and mineral water.

Positive effects of state orientation. Thus far, the focus has been on the detrimental consequences of a state orientation. However, state orientation may have positive consequences under certain circumstances (Kuhl & Beckmann, 1994; Kuhl, 1994b). Herrmann and Wortman (1985), for example, have speculated that a state orientation may be beneficial in adjusting to traumatic life events, such as chronic illness, loss of a loved one, or criminal victimization. Under these circumstances, a period of considering the causes of these events or trying to find meaning in them may help the person cope in the long run, even though it may impede action in the short term. Similarly, Kuhl (Kuhl & Beckmann, 1994) has argued that state-oriented individuals are likely to be at an advantage over action-oriented persons under relaxed and supportive conditions.

As Table 2 shows, the possibility that state orientation can be superior to action orientation has been demonstrated in several studies (Beckmann, 1989, 1990; Beckmann & Strang, 1992). This research is reported in Table 2 under the category of "achievement-related, basic research". In one study (Beckmann, 1989), subjects who were about to start working on the experimental task (a work identification task) were told that they would not be paid. Besides this incentive loss condition, a control group was included that experienced no incentive loss. Interestingly, loss of incentive enhanced the performance of state-oriented individuals, relative to their action-oriented counterparts and state-oriented participants in the control group. This finding is intriguing because state-oriented individuals rated the experiment as less interesting under incentive loss than action-oriented persons. Similar facilitation effects were found in a replication study involving the same incentive loss manipulation (Beckmann, 1990) and a study in which an observer was present while subjects performed the experimental task (Beckmann & Strang, 1992).

In order to account for the enhanced performance in state-oriented persons, Beckmann (1990, 1994) proposed a two-level model of action control which differentiates between low-level (autonomous) volitional mechanisms and the high-level volitional strategies described earlier, such as motivation control, environmental control, etc.

According to this model, low-level processes are invoked without conscious awareness when an obstacle is encountered while engaging in an activity. In contrast to high-level strategies, which make considerable demands on limited cognitive resources, low-level action control processes do not interfere with ongoing mental activities. For example, an individual may increase the attention focused on a task, enabling him or her to tune out any distractions, such as the presence of an observer (Beckmann & Strang, 1992). Once the distraction is removed, however, the low-level processes remain activated for a period of time. The surplus energy available should now lead to performance increments, at least for a short period of time. Finally, Beckmann (1990, 1994) predicts, exhaustion sets in, resulting in performance decrements.

Beckmann further argues that state-oriented individuals are more likely to rely on low-level action control than action-oriented persons, because higher-level strategies are more easily impaired by repetitive, intrusive thoughts. Facilitation effects would therefore occur for state-oriented, but not action-oriented people. Research supports this assumption, in that facilitation effects were found only for state-oriented subjects (Beckmann, 1989, 1990; Beckmann & Strang, 1992).

An important question is what specific circumstances are conducive to facilitation effects and which lead to performance decrements. In general, it would appear that state-oriented individuals have difficulties under stressful or aversive conditions, but perform well under relaxed conditions (Kuhl & Beckmann, 1994). Relatively unobtrusive distractions that increase individuals' motivation to perform well, as in the case of the observer in Beckmann and Strang's (1992) study, would therefore translate into enhanced performance for state-oriented individuals when the situational circumstances are sufficiently relaxing or supportive. However, as research has focused primarily on the effect of stressful events on state-oriented individuals, it is not entirely clear what specific conditions are conducive to facilitation effects. For example, while the presence of an unobtrusive observer may increase state-oriented individuals' performance, the presence of

a group of observers may create a sufficiently stressful environment that could seriously interfere with state-oriented persons' processing of information, therefore leading to performance decrements.

Critical Issues

Action control theory is a complex model of the processes that enable people to maintain actions and initiate new ones. Accumulating evidence supports the theory and indicates that it is useful for explaining human action in fields as varied as academic achievement, sports, and health. The literature on state orientation displays considerable consistency (see Table 2) and describes state-oriented individuals as being easily distracted, as being absorbed with self-doubts or other repetitive thoughts, and as lacking flexibility in their decision making, particularly when confronted with challenging conditions.

It may be useful at this point to contrast state orientation with other constructs to which it bears some resemblance. Test anxiety is one such concept. Test anxiety consists of several components including cognitive interference, physiological arousal, and worrying during test taking (Sarason, 1975). The critical aspect of test anxiety is that it occurs in testing situations. In contrast, the impact of state orientation is not restricted to taking tests, but can be felt in everyday situations, such as getting oneself out of bed in the morning even if one would rather stay in bed, starting an exercise program, or selecting a restaurant for dinner. A similar argument can be made for the apparent resemblance between action control processes and coping (e.g., Folkman & Lazarus, 1980). Again, coping models are more narrow in focus than action control theory by dealing with one situation only, namely stress.

Action control theory also overlaps to some extent with models of self-regulation proposed in the education domain (Pintrich, 1989; Zimmerman, 1989). Pintrich (1989), for example, describes a variety of self-regulatory strategies conducive to learning and achievement, such as self-monitoring, creating a quiet study environment, etc. Because these models are empirically derived in the context of student learning and achievement,

they are also restricted to that domain. Moreover, they lack the theoretical underpinnings of action control theory.

Thus, action control theory provides a richness of ideas not found in other theories. By drawing on constructs and theories from cognitive psychology, it affords a very detailed, process view of human action. Let us now turn to some critical issues highlighted by a review of the literature. These relate to the experimental tasks, manipulation of obstacles or distractions, and the inclusion of motivational variables in combination with state orientation.

Experimental tasks. Many studies on state orientation involve relatively simple concentration or problem solving tasks. For example, Kuhl (1981) used a concentration task that required subjects to check all the letter "ds" with two apostrophes from a list of ds. Other studies have used reaction time tasks (Schwefflinghaus et al., 1989; Stiensmeier-Pelster et al., 1989), recall tasks (Beckmann & Strang, 1992); tachistoscopic word identification tasks (Beckmann, 1989, 1990), "video games" that required participants to hit a target displayed on the monitor (Doll & Mentz, 1992; Kuhl & Koch, 1984), and anagram tasks (Kuhl & Weiss, 1994).

More complex tasks were used primarily in the area of decision-making (e.g., Stiensmeier-Pelster et al., 1991; Niederberger et al., 1987). Stiensmeier-Pelster et al. (1991), for example, administered a "financial investment" task that required participants to calculate the possible value of bonds, depending on a fluctuating exchange rate for the U.S. dollar. Such complex tasks have been used less frequently in the domains classified in Table 2 as learned helplessness and achievement-related research. Exceptions are studies by Brunstein (1989), Doll and Mentz (1992), Mayr and Walschburger (1991), and Menec et al. (in press). Brunstein (1989) used a "beetle breeding" task that involved breeding a beetle with certain specific characteristics, starting with an initial beetle. To accomplish this, ten types of rays were available, each of which changed the genetic code for one characteristic. The goal of the task was to breed the target beetle with the fewest number of

interventions. Doll and Mentz's (1992) task involved reconstructing a complex figure, and Mayr and Walschburger (1991) had participants run a taylor shop in the most profitable way. Lastly, Menec et al.'s study involved writing an achievement test based on a lecture that participants viewed during the experimental session.

Interestingly, while state-oriented and action-oriented participants differed in these studies in terms of their subjective experiences, such as their feelings of confidence, their actual performance was affected differentially only in Brunstein's (1989) and Menec al's studies, whereas Doll and Mentz (1992) found no differences, and Mayr and Walschburger (1991) did not examine subjects' performance.

Thus, performance differences between state-oriented and action-oriented individuals have been demonstrated primarily on simple tasks, whereas the results with more complex tasks is more equivocal. More research is therefore required that includes complex tasks. While simple tasks such as those listed above measure basic cognitive processes, particularly attention and concentration, complex tasks also require higher-level problem solving skills. Consider the task of learning subject matter from a textbook. Although the ability to concentrate on the text is undoubtedly a critical contributor to students' learning, other factors may be equally important. For example, one student may attempt to learn the material by rote memorization, an approach that would provide only superficial knowledge of the subject matter. In contrast, a second student may process the text more deeply by trying to relate the material to already known information or by applying the material to everyday life. As a result, his or her understanding of the material should be much more thorough than that of the former student. How state orientation would impact on students' approach to such a complex task has not been examined extensively.

Related to this is the issue of how much structure and time pressure is imposed on research participants. Under time pressure, an approach like rote memorization may lead to learning deficits, for example. Given sufficient time, however, the negative consequences

of this approach may be less evident because individuals have time to memorize the critical information. A few studies show that state-oriented persons spend more time on a task than action-oriented individuals (Doll & Mentz, 1992; Stiensmeier & Schnier, 1988). By doing so, they may in fact compensate for any difficulties they have in maintaining concentration on the task. These two issues, the complexity of the task and time constraints were incorporated into the present thesis by using a fairly long reading comprehension task without imposing any strict time limits.

Manipulation of obstacles or distractions. As mentioned previously, volitional processes are required only when an individual encounters an obstacle to an intention, either because of the presence of an alternative action tendency or some external distraction (Kuhl, 1994b). The range of obstacles examined in the research literature is somewhat limited, however. A major emphasis has been exposure to uncontrollable failure in the context of the learned helplessness paradigm. In fact, 13 of the 46 studies presented in Table 2 involve this manipulation. Other studies have included manipulations of time pressure (Stiensmeier-Pelster et al., 1989, 1991, Experiment 1), the importance of a decision (Stiensmeier-Pelster et al., 1991, Experiment 2), and memory load (Niederberger et al., 1987). Apart from the learned helplessness paradigm, only two other studies have focused on external distractions (Beckmann & Strang, 1992; Stiensmeier-Pelster et al., 1989). While Beckmann and Strang (1992) examined the effect of an observer on state-oriented and action-oriented individuals, Stiensmeier-Pelster et al. (1989, reported in Stiensmeier-Pelster & Schürmann, 1994) exposed participants to distractor words while they were performing a simple reaction time task. These studies have produced conflicting results, with the former study showing performance increments and the latter performance decrements.

A common distraction whose impact has not yet been investigated is background interference. Such interference can range from the highly distracting, such as having to deal with loud construction noise when one is trying to read, to the more innocuous, as in

the case of a student who is exposed to paper shuffling while trying to study at the library. Such interference is virtually omnipresent and would presumably require some volitional processes in order to maintain concentration on the task. The processes may be the lower-level ones described by Beckmann (1987) that are activated without conscious awareness. Thus, our student who is studying in the library may not even become consciously aware of the paper-shuffling neighbor and simply narrow his or her attention focus. Higher-level volitional strategies would be necessary under more aversive conditions, as in the example of the construction noise. The impact of a relatively minor, external distraction on state-oriented and action-oriented individuals was examined in the first study of this thesis.

Motivation versus volition. Although the focus in the present discussion has been on volition, this does not imply that motivation is unimportant to human action. On the contrary, motivation is critical to forming an intention. Motivation can be conceptualized as an individual difference variable, as exemplified by constructs like locus of control (Rotter, 1966), self-efficacy (Bandura, 1986), or intrinsic motivation (Deci & Ryan, 1980). Common to these constructs is the assumption that people differ in motivation because of relatively stable self-perceptions or task-perceptions. Alternatively, motivation can be described as a process variable, being the result of attributions, for example, and consequent expectations and emotions (Weiner, 1986).

Research on action control theory has only rarely combined state orientation with other personal variables, including motivational variables. An exception is Kuhl and Koch's (1984) study in which motivation was induced experimentally in one group of participants, whereas a control group's motivation was not enhanced. All subjects subsequently performed a computer-mediated task that required them to shoot "submarines". Everybody received noncontingent failure feedback on the first series of trials, followed by a phase of veridical feedback. The results indicate that state-oriented individuals in the control condition performed more poorly than the three other groups when receiving noncontingent failure feedback. This finding suggests that high motivation

may buffer state-oriented individuals against the negative consequences of noncontingent failure, perhaps because being motivated minimizes intrusive thoughts.

Stiensmeier (1985a, 1985b) further examined the relation between state orientation and self-concept. Although this research shows that having a low self-concept is correlated with state oriented cognitions, Stiensmeier did not examine the combined effect of self-concept and state orientation. Similarly, Schmalt (1994) examined the effect of noncontingent failure on participants differing in motivation and state orientation. However, motivation and action control style were examined separately. The study therefore provides no evidence for an interaction between the two variables.

In sum, there is a paucity of research on the joint effects of action control style and other individual differences. One such personal characteristic is perceived control, which has been researched extensively in areas like academic achievement (Perry, 1991), health (Thompson et al., 1993), and aging (Schulz, 1980). To date, the combined effects of perceived control and action control style has not yet been examined. One of the main purposes of the present thesis was therefore to investigate the possible interaction between state orientation and perceived control.

Perceived Control

The construct of perceived control has a long history in psychology and is associated with labels like learned helplessness (Seligman, 1975), mastery orientation (Dweck, 1975), locus of control (Rotter, 1966), and self-efficacy (Bandura, 1986). In general terms, perceived control can be defined as the perceived ability to have an impact on events in one's life. The positive consequences of feeling in control have been documented in a variety of domains, with high perceived control leading to enhanced academic achievement (Stipek & Weisz, 1981), successful coping with physical illness (Taylor, Helgeson, Reed, & Skokan, 1991), effective adjustment to the aging process (Schulz, 1980), etc. Two of the more prominent conceptions of perceived control will be briefly discussed next: learned helplessness and locus of control.

Learned Helplessness

Learned helplessness is the summary term applied to the cognitive, affective, and motivational deficits resulting from exposure to noncontingent negative events. According to learned helplessness theory (Seligman, 1975; Abramson, Seligman, & Teasdale, 1978), being exposed to noncontingent negative events, such as uncontrollable shock, noise, or crowding, results in the expectation that events will be uncontrollable in the future. This expectation, in turn, leads to learned helplessness symptoms. In a reformulation of Seligman's (1975) original theory, Abramson et al. (1978) further proposed that attributions about the noncontingent event are critical in determining the severity of learned helplessness deficits, whether deficits persist over time, and whether they generalize to other situations. However, as in the original learned helplessness theory, the reformulated model predicts that it is the expectation of noncontingency that determines learned helplessness deficits.

Learned helplessness theory has been extensively researched with both animals and humans. This research shows that exposing humans to noncontingent failure produces negative affect, such as frustration, hostility, or dissatisfaction (Noel & Lisan, 1980; Sedek, Kofta, & Tyszka, 1993; Tuffin, Hesketh, & Podd, 1985, or see Miller & Norman, 1979 for a review of this literature) and behavioral deficits, as exemplified by poor task performance, lack of persistence, or apathy (Miller & Norman, 1979; Perry & Dickens, 1984; 1987; Perry & Magnusson, 1987; Perry, Magnusson, Parsonson, & Dickens, 1986; Perry & Tunna, 1988). The paradigm used by Perry and his associates for studying achievement motivation and performance will serve to illustrate the learned helplessness paradigm.

Noncontingent failure in these studies (Perry & Dickens, 1984, 1987; Perry & Magnusson, 1987; Perry, et al., 1986; Perry & Penner, 1991; Perry & Tunna, 1988) was manipulated with a multiple-choice, Graduate Record Exam (GRE)-like test. Subjects in the noncontingent failure and contingent performance conditions received immediate

feedback as to whether they answered a question correctly by using a "magic marker" on an specially prepared answer sheet. The answers on the sheet were written in invisible ink that could be made visible with the marker, with a "C" indicating correct and an "X" incorrect responses. In the contingent feedback condition, the response alternatives were labelled correctly. In the noncontingent feedback condition, however, all response alternatives on a predetermined number of questions were labelled with X. As such, it did not matter which alternative a participant chose, since the answer would always be false. On the remaining questions, all responses were labelled "C", which ensured positive feedback regardless of the response alternative chosen.

After completing the GRE-like test, participants viewed a videotaped lecture, presented by either an effective or ineffective instructor. Lastly, students wrote an achievement test based on the lecture content. The results are consistent across several studies. A high density of noncontingent failure, whereby subjects received failure feedback on at least 40% of the questions, induced loss of control. Loss of control was associated with an attributional profile reflecting an external locus. That is, following noncontingent failure, participants were less likely to take responsibility for their performance as compared to subjects in the contingent or no feedback conditions. Moreover, loss of control was found to lead to poor performance on the lecture-based achievement test. Interestingly, while students who felt in control performed better with an effective than an ineffective instructor, those who had been exposed to noncontingent failure performed equally poorly with effective and ineffective instruction. This finding suggests that noncontingent failure produces quite severe attention deficits that cannot easily be compensated for, even with an enriched learning environment, that is, effective instruction.

Although the finding that noncontingent negative events induces various deficits is well supported, a number of researchers have taken issue with the proposed mediating role of expectations in inducing learned helplessness (Coyne, Metalsky, & Lavelle, 1980; Kuhl,

1981; Mikulincer, 1989; Sedek & Kofta, 1990). According to these researchers, noncontingent negative events lead to learned helplessness because they induce task-irrelevant cognitions, which then interfere with subsequent actions. In terms of action control theory, the argument is that noncontingent events induce state orientation (Kuhl, 1981). Kuhl (1981) coined the term functional helplessness to differentiate this type of helplessness from the motivational helplessness described by Seligman, which is mediated by expectations of noncontingency.

Locus of Control

In contrast to learned helplessness which is caused by situational factors, locus of control is conceptualized as a trait-like individual difference reflecting a person's sense of control. First described by Rotter (1966), locus of control refers to generalized expectations of the connection between actions and/or personal characteristics and outcomes. As such, Rotter (1966) differentiates between two types of individuals, those who believe that outcomes are determined by factors beyond their control, such as luck or chance, versus those who believe that events are contingent upon their actions or personal characteristics. These contrasting perceptions have been labelled external versus internal locus of control. An external locus of control is, therefore, similar to learned helplessness in that it reflects a low sense of control. Like the situationally induced learned helplessness, an external locus of control has a variety of negative consequences. In the achievement context, reviews of the literature involving children (Stipek & Weisz, 1981) and adults (Findley & Cooper, 1983) show that an external locus of control is negatively related to achievement, persistence, information seeking, and reflectivity.

A problem arises, however, in the definition of locus of control. Rotter only differentiates between beliefs, or attributions, that differ on an internality-externality continuum. Attributions to fate or chance are considered external, attributions to one's behavior or relatively stable personal characteristics as internal. However, as Weiner (1986) has noted, this discrimination is inadequate, as internal attributions such as effort

and ability also differ in terms of their stability over time and controllability. Attributing an outcome to lack of effort, an internal-unstable-controllable cause, should therefore have very different consequences than a lack of ability attribution, which is typically perceived as internal, stable, and uncontrollable.

Given these differing views of attributions, the operational definition of locus of control varies widely in the research literature. Researchers following Rotter differentiate only between internal and external attributions for events, such as blaming negative events on factors outside the person versus taking personal responsibility for failure (e.g. Crandall, Katkovksy, & Crandall, 1965; Stipek & Weisz, 1981). Researchers influenced by Weiner, on the other hand, take both the internality and stability of an attribution into account (Lefcourt et al., 1979). As such, Lefcourt et al. (1979) developed the Multidimensional-Multiattributinal Causality Scale (MMCS) that assesses individuals' tendency to attribute positive and negative events to ability, effort, context, and chance, respectively. Even so, the problem of how to define locus of control is not solved. For example, using the MMCS one might focus only on the internality-externality dimension and differentiate between internals and externals using the formula $(\text{ability} + \text{effort}) - (\text{context} + \text{chance})$ (Lefcourt, Martin, & Ware, 1984). Alternatively, following Weiner (1986), an internal locus could be defined by subtracting ability attributions from effort ascriptions, that is, as the tendency to attribute events to unstable, controllable factors (Perry & Penner, 1990).

Matters are further complicated as scales like the MMCS do not assess people's actual perceptions of ability, effort, context, and chance attributions. For example, even though Lefcourt et al. (1979) conceptualize attributions to ability as stable, a person may perceive it as varying and potentially increasing over time. Similarly, chance is not always perceived as unstable, but may be considered stable, as reflected in the statement "I am lucky person". Without directly assessing people's perceptions of the four attributions, the

researcher will have to rely on an a priori categorization that may in fact not correspond to a person's views (Weiner, 1983).

Related to the problem of categorizing attributions in an a priori fashion is the issue of associating particular attributions with a low sense of control. In Rotter's model, the individual who attributes events to fate or chance would be considered as having an external locus of control, that is, as being out of control. However, the individual may feel very much in control if she or he perceives fate in a religious or philosophical context in terms of a larger, nonrandom pattern that shapes human life. The possibility that people can feel in control even though they attribute events to external factors like fate has been described by Rothbaum, Weisz and Snyder (1982) and labelled secondary control. Thus, secondary control refers to accepting existing realities and trying to fit into the environment. Secondary control is contrasted with traditional views of control which relate to being able to exert influence over one's environment, as reflected by constructs like learned helplessness and locus of control.

In sum, the locus of control construct is associated with several methodological and conceptual problems. The theoretical model a researcher happens to adhere to, as well as an a priori classification of attributions may both contribute to misclassifying an individual as being out of control. Moreover, researchers have failed to consider that an individual classified as external may retain a sense of control, albeit secondary control.

An Alternative View of Perceived Control

Given the problems with the locus of control construct outlined above, it makes sense to consider an alternative view of perceived control as an individual difference. In effect, problems arise with locus of control because it has become so closely tied to attributions. Conceptually, it makes sense to differentiate between perceptions of control and attributions. Returning to the definition provided at the beginning of this section, perceived control refers to the perceived ability to influence events in one's environment. This definition is not linked to attributions, although it seems reasonable to assume that

one's sense of control may impact on attributions under certain circumstances, as when an individual is exposed to a negative event (Weiner, 1986).

Methodologically, separating perceptions of control from attributions simplifies matters considerably. Rather than inferring a person's sense of control from attributions, one can ask directly whether the individual feels in control over events in his or her life. It seems ironic that the voluminous literature on locus of control is based entirely on an indirect method of assessing control, and relies on researchers' inferences as to whether participants are out of control or in control. Moreover, a direct measure of individuals' perceived control minimizes the problem of misclassifying people as being out of control when in fact they retain a sense of secondary control.

Ultimately, the question of whether a trait-like perceived control construct can be defined in a general way without resorting to attributions is an empirical one. Some encouraging evidence for the usefulness of such a general perceived control measure comes from research conducted by the Manitoba research group (Menec & Perry, 1994; Perry & Menec, 1994). This research shows that a measure of how much control people think they have over events in their lives displays considerable stability over time, with a test-retest reliability of .52 in a sample of college students (Menec & Perry, 1994), and a reliability of .48 in a national sample of American faculty members (Perry & Menec, 1994). That responses are quite stable over time is even more encouraging as the second assessment in these studies occurred six months after the first one for the student sample, and one year later for faculty.

A general perceived control measure has also been shown to be an important predictor of course grades (Menec & Perry, 1994). In this research, university students' perceived control was measured during the first academic term. At the beginning of the second term, attributions, motivation, and emotions were assessed. Finally, course grades were obtained at the end of the academic year. Entered into a path model, perceived control was predictive of more internal attributions, greater motivation, and more positive

emotions. Emotions and motivation, in turn, contributed positively to course grades. The variables in the model accounted for 32% of the variance in course grades. Perceived control was assessed with a similar general measure in a study of newly hired faculty's adjustment to their new job (Perry & Menec, 1994). Again, perceived control had positive consequences in that faculty with a high sense of control were more satisfied with their job, experienced less stress, and had more positive emotions than those with a low sense of control.

In sum, a general perceived control measure appears to have considerable promise for predicting achievement and adjustment. In the present thesis, perceived control was assessed in terms of such a global measure. Perceived control was conceptualized as a relatively stable individual difference that would affect people's adaptation in a variety of domains. A high sense of control should therefore be associated with a motivational profile conducive to success.

Study 1

Study 1 was designed to examine the effect of external distractions on individuals differing in action control and perceived control. Research participants were therefore exposed to a tone that was presented periodically, while they were engaged in the experimental task. In practical terms, an attempt was made to simulate the distractions people are routinely exposed to in their lives. In the case of students, such distractions may include classmates who talk during a lecture, music played by a roommate, or the sounds in a study room or library resulting from doors opening and closing, turning of pages, and peers walking by the study area.

Sufficiently intrusive distractions should make it difficult for individuals to maintain concentration on the task at hand, necessitating the use of volitional strategies. Given their difficulties in invoking such strategies, state-oriented persons should therefore be at a disadvantage under these circumstances. External distractions should be less problematic

for action-oriented individuals who may simply increase their concentration, as exemplified by the student who is able to study effectively in a noisy cafeteria.

The critical question is when is background interference "sufficiently" distracting to require volitional strategies. This question is particularly important in light of Beckmann's (1987) assumption that minor intrusions are dealt with by means of low-level processes, and that activation of these processes can lead to enhanced performance in state-oriented individuals (Beckmann, 1989, 1990; Beckmann & Strang, 1992). As only two studies have manipulated external distractions by means of stimuli in the environment, with one showing facilitation effects (Beckmann & Strang, 1992) and the other inhibition effects (Stiensmeier-Pelster et al., 1989), it is not clear whether presenting a tone would cause performance increments or decrements. One might expect, however, that exposure to a tone over an extended period of time would be sufficiently aversive to lead to performance deficits in state-oriented persons.

In addition to the distraction manipulation and state orientation, participants' perceived control was also taken into account. How perceived control might interact with state orientation cannot easily be predicted, given the lack of research on this topic. Theoretically, perceived control is one of the two factors that determine whether volitional processes are invoked, the second being the difficulty of enacting an intention (Kuhl, 1985). That is, Kuhl argues that volitional strategies are activated only if: 1) the difficulty of enacting an intention exceeds a critical value; and 2) the person believes he or she can control the enactment of the action. Kuhl has further discussed the relation between perceived control and action control in the context of the elderly. In a chapter aptly entitled "The Hidden Costs of Wisdom" Kuhl argues that societal norms often lead to a deficiency in volitional control in the elderly because they encourage passivity and dependency. Despite the loss of actual control, the person may still retain a sense of perceived control, however.

Thus, perceived control and actual control, as reflected in action control style, can clearly be dissociated, with perceived control presumably being a necessary precondition for invoking action action. This raises the question of how state orientation interacts with perceived control. There are four types of individuals to consider: state-oriented low-control, state-oriented high-control, action-oriented low-control, and action-oriented high-control. Since state orientation is negatively correlated with perceived control (see Table 1), the combinations of state orientation low-control and action orientation high-control likely predominate. These two types of individuals would represent those most vulnerable versus those most buffered under distracting conditions.

However, the finding that the correlation between state orientation and perceived control is only weak suggests that some state-oriented persons can feel in control, whereas some action-oriented individuals would have a low sense of control. Predictions are more difficult for these types of individuals, as they display both an adaptive and a maladaptive characteristic. If action control is critical in overcoming obstacles, then action-oriented individuals should be at an advantage, despite a low sense of control. If, however, perceived control is an important component in dealing with distractions, then the state-oriented person with a high sense of control should benefit. Study 1 was designed to examine this possible interaction between perceived control and action control style.

The experimental task used in the study was a reading comprehension task based on a chapter from a textbook. This task was chosen for several reasons: First, it is relevant in an achievement context. Learning from textbooks is probably one of, if not the, most important academic requirements, with students likely spending much more time reading than engaging in other activities, including listening to lectures, writing, etc. Second, reading a text represents a rather unstructured task which can be approached in a number of ways. Students' approach should, in turn, have consequences for their understanding and learning of the material. In this respect research shows that receiving some information about what topics will be covered in a text facilitates encoding of new material. This

finding is typically discussed in terms of schemata, or organized knowledge structures (e.g., Rumelhart & Ortony, 1977), which enable the reader to incorporate new information with already known subject matter. In the education domain the benefits of advanced organizers, that is brief introductory statements presented at the beginning of instructional texts (Ausubel, 1963), has been documented in a number of studies (e.g., Derry, 1984; Mayer, 1983).

An effective approach to reading a chapter would therefore be for a student to read a summary first, or at least turn to the table of contents to obtain an overview of the material covered, before proceeding to the text. If state-oriented cognitions interfere with strategy use under difficult learning conditions, then they should be less able to invoke such an effective approach when reading an instructional text. Similarly, effective readers continuously monitor their comprehension (Bereiter & Bird, 1985). That is, such students would presumably re-read previous pages when realizing that they failed to understand some information. Again, to the extent that state-oriented students are unable to concentrate on a text under stressful conditions, they should be less likely to engage in comprehension monitoring than action-oriented individuals, and therefore be less likely to re-read material.

Lastly, the reading task was used because studying an instructional text requires considerable concentration and effort. As such, the ability to employ volitional strategies, particularly the strategy of selective attention, would be important. Students who are unable to focus attention on the material, as in the case of state-oriented individuals exposed to distracting learning conditions, should therefore learn less from the text than their action-oriented counterparts. This in turn should translate into poorer performance on a knowledge test.

In sum, participants in Study 1 were required to read a textbook chapter presented on the computer monitor in the presence (or absence) of a distractor tone. They were allowed to move backward and forward through the text as they wished. In addition, they could access other parts of the chapter, including an outline, a summary, and study

questions. After reading the text, they wrote a test on the reading material. In addition, participants' motivation was assessed prior to the reading task.

Research Questions and Hypotheses

Several questions were of interest in the present study. As performance on the achievement test was the primary dependent variable in the study, these questions are framed with that measure in mind. First of all, the question arises whether action control style in of itself would have an effect on performance. Even though action control theory predicts no such effect, given that state-oriented individuals should exhibit performance decrements only under aversive conditions, this issue still warrants direct testing. Second, the question of whether perceived control would affect performance was examined, a question that translates into a main effect hypothesis. Based on past research, one might expect that students with high perceived control would perform better than those with a low sense of control. The third question relates to whether the distraction condition would affect state-oriented and action-oriented students differently. This leads to an interaction hypothesis, the assumption being that only state-oriented, but not action-oriented students would show performance deficits in the distraction, compared to the no distraction condition. As indicated above, this hypothesis follows from action control theory and previous research where participants were exposed to stressful situations.

Of particular interest, however, was the question of whether the distraction condition would affect state-oriented and action-oriented students differently *depending on their sense of control*. That is, a three-way interaction hypothesis was also tested. If feeling in control is indeed necessary for invoking volitional control, then performance might be uniformly poor for students with low perceived control, regardless of action control style or the distraction manipulation. In the case of high perceived control students, on the other hand, being state-oriented might lead to performance deficits under distracting conditions, to the extent that the distraction is perceived as aversive.

In terms of the reading time and task approach measures, no specific hypotheses were tested. Reading time is sometimes used as an index of attention, with longer reading times thought to reflect greater attention (Anderson, 1982; Britton, Piha, Davis, & Wehausen, 1978; Reynolds & Anderson, 1982). However, in the case of state-oriented individuals who may be distracted by task-irrelevant thoughts or emotions, longer reading times may in fact be due to lack of concentration. Without including other, more specific measures of attention, it therefore becomes difficult to predict state-oriented and action-oriented individuals' responses. The motivation measure administered prior to the reading task was included to rule out a motivational explanation of potential performance deficits. That is, according to action control theory, performance differences between state-oriented and action-oriented persons should emerge without associated differences in motivation.

Method

Participants

Participants were male and female introductory psychology students at the University of Manitoba. They received credit toward a course requirement for their participation in the study. Participation in the study was restricted to students whose first language was English. Of the 163 students who participated in the first, questionnaire phase of the study, 150 returned for the second phase involving the reading task.

Materials

State orientation The Action Control Scale (ACS-90) developed by Kuhl (1994a) was used to differentiate between state-oriented and action-oriented students. The scale is made up of three subscales (preoccupation, hesitation, volatility) consisting of 12 items each. For the present purposes, the preoccupation subscale was used, as it is the most relevant in the context of dealing with distracting, and what was expected to be slightly aversive, conditions¹. The ACS uses a forced-choice format that requires respondents to choose between a state-oriented and an action-oriented response alternative in various

¹The hesitation and volatility scales were also administered for exploratory purposes.

situations. Choosing an state-oriented alternative was assigned a score of 2; selecting an action-oriented response a score of 1, for a possible range of 12 - 24. The scale had an internal reliability of .75. Students were then classified as state-oriented and action-oriented based on a median split. Those who fell above the median (Median = 19) were categorized as state-oriented ($M = 21.38$, $SD = 1.16$), those below the median as action-oriented ($M = 15.89$, $SD = 1.83$).

Perceived control. Perceived control was measured with two questions, one asking whether students felt they had control over things in general, the second whether they felt they had control over their academic performance in the psychology course (1 = very uncharacteristic of me; 7 = very characteristic of me). As the midpoint of the scale was labelled "neutral", and therefore cannot be treated as reflecting more control than a score of 2 or 1, the scale was subsequently recoded without this midpoint. This resulted in a 6 point scale, where 1 indicates the least control and 6 the most.

The two questions had an internal reliability of .71. As indicated earlier, these measures have shown test-retest reliabilities of .52, and .48 over six months and one year, respectively (Menec & Perry, 1994; Perry & Menec, 1994). Moreover, they were found to be predictive of students' motivation and course grades, as well as faculty's reported adjustment to their job. Consistent with previous research (see Table 1), perceived control was only weakly correlated with state orientation, $r = -.13$, $p > .12$. A median split was used to categorize participants as having a low sense of control (scores < 5, $M = 3.86$, $SD = .85$) and a high sense of control (scores ≥ 5 , $M = 5.42$, $SD = .44$), with the median being allocated to the high control group.

Instructional text. The text used for the reading comprehension task was an adapted version of a chapter on the topic of privacy. The chapter was taken from the environmental psychology text Environmental Psychology: Principles and Practice by Gifford (1987). This chapter was chosen for two reasons: First, it represents an ecologically valid task since students are required to read textbooks in many of their courses. Second, the topic of

environmental psychology is typically not covered in introductory psychology courses. It is therefore unlikely that participants would have been exposed to this material. As a result, prior knowledge of the subject matter should not affect reading comprehension.

The 4600 word text was divided into five segments of six pages each, with each page consisting of 153 words on average. Each page was about 18 to 19 lines in length and could easily fit on a computer screen. The entire text can be found in Appendix A. To facilitate presentation on the monitor, any figures or pictures were eliminated.

It was decided to present the text in fairly large segments so that the task would be more representative of reading in everyday life, as compared to procedures that allows more stringent control and more detailed measurement of reading time, such as displaying sentences one at a time. Although the length of each page is approximately equal, they may differ considerably in terms of the number of propositions or meaningful units they contain, lexical complexity, etc. Since the focus of the study was a comparison of students differing in state orientation and perceived control, rather than reading time per se, these factors should therefore affect both groups of students equally.

Besides reading the text, subjects could also access either an outline, a summary, or study questions. The summary was a modified version of the summary presented at the end of the chapter (Gifford, 1987). The outline and study questions were adapted from the Instructor's Manual accompanying the textbook (Gifford, 1987). These materials are reproduced in Appendix A. The options of reading either the text, outline, summary, and study questions were presented on a "menu". As in the case of an actual textbook chapter, these options were listed on the menu in the following order: outline, text, summary, study questions. Each of these files could be accessed only from the menu, but students could return to the menu from any document. The location in a particular file was maintained even when an individual exited to the menu. That is, a student might start to read the text up to page 5, at which point she or he could exit to the menu, select the summary, and subsequently continue reading the chapter from page 5 on. Moreover, students could move

backward and forward through any of the four files. Pressing the <page down> key displayed the next page, pressing <page up> the previous page.

Manipulation of distraction. In the distraction condition, a computer-generated tone was periodically presented while students were reading the text. The tone was presented three times in each of the five segments of the chapter, for a total of 15 distractors. The tone was coded in the computer program as a hidden character embedded in the text and was activated when a subject turned to that particular page. The specific page on which the tone was sounded was randomly determined, with the restriction that three tones had to appear in each segment. This ensured that the distractors were spread out relatively evenly over the entire text. Each tone was sounded only once, when the subject first accessed a particular page of the text. It was not sounded when an individual returned to that page a second time. The tone was generated by the computer at 56 decibels, at a frequency of 440 megahertz and was presented for a duration of 500 milliseconds. Interviews with 17 students used in a pilot study indicated that all participants perceived the tone as distracting. In the no distraction, or normal, condition, participants read the text without being exposed to the tone.

Dependent measures. Prior to reading the chapter, students' motivation regarding the achievement test was assessed. Two items were included that asked how important it was for students to perform well on the test (1 = not at all important; 5 = extremely important), and how motivated students were to perform well on the test (1 = not at all motivated; 5 = extremely motivated). These two measures were subsequently combined.

A 20-item, multiple-choice test was used to measure students' comprehension of the chapter (see Appendix B). The questions measured knowledge of the content covered in the text. When possible, questions were selected from the Instructor's Manual accompanying the textbook (Gifford, 1987). Six questions were developed by the experimenter.

Furthermore, the time participants spent on each segment of the text was measured by the computer. Reading time included the total time spent on each segment. Lastly, students' approach to the task was examined by tabulating how many students accessed either the outline, the summary, or the study questions. Moreover, the number of times subjects skipped backward was counted.

Procedure

The study involved two phases. In the first phase, state orientation and perceived control was measured.² The questionnaire was administered in group sessions ranging from 14 to 27 students. Most students completed the questionnaire in 25 to 30 minutes. At the end of the session, participants signed up for the second phase of the study, scheduled for the following week. The second phase was run in a computer laboratory. The computer laboratory contained 49 color video monitors controlled by a Turbo computer system. The computers were not separated by partitions and subjects were therefore placed one seat apart to minimize distraction from neighbouring stations. Participants were guided to the stations as they came into the laboratory. A total of eight sessions were conducted in the computer laboratory, with groups ranging from 14 to 26. Four sessions were used for the distraction condition, four for the no distraction condition. In smaller sessions, students were still seated one station apart, starting at the front of the room, to make conditions similar to those in larger sessions.

All the materials were presented on the computer, including the general introduction and instructions regarding the study. The program was written in the C programming language. In the distraction condition, the experimenter told students at the beginning of the session that, due to a "bug" in the program, they would periodically hear a tone during the reading comprehension task. This bug, they were informed, would be dealt with for

² A number of additional variables were assessed in this phase of the study, such as time management practices, intrinsic motivation, etc. These measures were included for exploratory purposes and will not be discussed in this thesis. In the questionnaire these additional measures were presented after the ACS.

subsequent sessions. In the no distraction condition, students were simply welcomed to the study.

After this initial brief introduction by the experimenter, participants proceeded on their own on the computer. They could proceed through the experiment at their own pace and could leave as soon as they had completed all the tasks. General instructions were provided first, with participants being told that the study would involve a reading comprehension task. Moreover, the tasks they were asked to engage in were briefly described. Following this general introduction, subjects received a practice session that provided them with the opportunity to familiarize themselves with the computer. Points covered in the tutorial were how to answer questions on the computer and how to scroll through a text.

After the tutorial, students' motivation to perform well on the reading comprehension text was assessed. These questions were followed by instructions regarding the instructional text. Students were told that they had 45 minutes to read the text and should allocate their time accordingly. A pilot study indicated that 45 minutes should provide sufficient time for students to read the text. The time restriction was therefore not expected to place any great pressure on students, although it was intended to prevent very slow readers from spending an excessive amount of time on the task.

Students were then provided with the menu screen that allowed them to choose among the options of reading either the outline, text, summary, or study questions. Students could proceed to the achievement test only from the last page of the text. This was to ensure that they actually read the entire text without skipping to the test half-way through the text. Before the test was displayed, a message appeared on the monitor asking whether students really wanted to take the test. At this point, they had the option of reviewing the text one more time. The 20-item, multiple-choice achievement test was presented one question at a time. Selecting a response alternative for one question by pressing the <return> key automatically displayed the next question. Students were

allowed as much time on the test as they wished. The majority of students completed the experiment in 40 to 45 minutes.

Results

The study included three between-subjects factors, action control style (state-oriented, action-oriented), perceived control (low, high), and distraction (yes, no). The segment of the instructional text (1 to 5) was further included as a within-subjects variable in some of the analyses. To deal with the unequal sample size across the eight conditions, and consequent correlated effects, analyses of variance (ANOVAs) were computed using Type III sums of squares, that is, an unweighted means solution.

Because students were allowed to proceed through the experimental tasks at their own pace, the danger arose that some would take advantage of this and simply skip through the materials without paying attention. One student was identified who fit into this category and spent only 2.07 minutes on the 30-page text. As this participant clearly did not read the text, he or she was eliminated from the analyses.

Motivation

The motivation measure was included to examine whether students differing in action control and perceived control had approximately equal levels of motivation before starting to read the chapter. An Action Control Style (state-oriented, action-oriented) x Perceived Control (low, high) analysis of variance (ANOVA) was computed to address this question. Examination of the means indicated that state-oriented participants were slightly more motivated to perform well on the achievement test than their action-oriented counterparts ($M_s = 2.96$ vs. 2.70), an effect that was not significant, however, $F(1,130) = 2.92$, $p > .09$. Moreover, neither the perceived control main effect, $F(1,130) = .77$, $p > .38$, nor the interaction, $F(1,130) = .27$, $p > .59$, reached significance. Thus, the four groups were similar in their motivation level prior to starting the experiment.

Achievement Test

Four questions were of particular interest regarding students' performance on the achievement test. These relate to the main effects for action control style and perceived control, respectively, the action control style by distraction interaction, and the three-way action control style by perceived control by distraction interaction. These hypotheses were tested with an Action Control Style (state-oriented, action-oriented) x Perceived Control (low, high) x Distraction (yes, no) ANOVA. For completeness sake, all effects produced by the ANOVA are reported.

Main effects were found for action control style and perceived control. F-values are presented in Table 3. Means and standard deviations are shown in Table 4. Overall, state-oriented participants performed better on the achievement test than action-oriented students ($M_s = 11.88$ vs. 10.78), and participants with a high sense of control performed better than those with a low sense of control ($M_s = 11.90$ vs. 10.76). These main effects were qualified by a three-way interaction that was significant with a p-value of .06. This interaction is graphed in Figure 2. As the Figure shows, the pattern of findings for state-oriented students given the distraction manipulation was quite different depending on their sense of control. Students with a low sense of control performed at an approximately equal level regardless of action control style and distraction condition. In contrast, for individuals with a high sense of control, a state orientation led to enhanced performance in the distraction condition.

Reading Time

For two individuals, the computer failed to keep track of the time spent on page 30 of the text. For these participants, this missing value was replaced with a mean value derived from the remaining 29 pages. Moreover, one person had to be eliminated from the subsequent analysis because the computer recorded reading times for only half of the

Table 3: F-statistics for Achievement and Reading Time Measures

<u>Effect</u>	Measures			
	<u>Achievement Test</u>		<u>Reading Time</u>	
	F-value	p-value	F-value	p-value
Action Control	4.57	.034	3.52	.063
Perceived Control	4.94	.028	1.57	.212
Distraction	2.51	.115	4.73	.032
AC x PC	1.06	.306	0.12	.734
AC x Distraction	0.76	.384	0.09	.769
PC x Distraction	0.10	.749	1.04	.310
AC x PC x Distraction	3.71	.056	0.52	.473
Segment	-	-	51.08	.001
Segment x AC	-	-	1.29	.278
Segment x PC	-	-	0.62	.650
Segment x Distraction	-	-	0.14	.967
S x AC x PC	-	-	0.11	.979
S x AC x Distraction	-	-	0.68	.610
S x PC x Distraction	-	-	0.95	.440
S x AC x PC x Distraction	-	-	0.21	.933

Note: AC = Action control style, PC = Perceived control, S = Segment. $MS_e = 8.40$, $df_e = 126$ for the achievement test; MS_e between-subjects effect = 8.12, $df_e = 126$ for reading time.

Table 4: Means and Standard Deviations (in Brackets) for Achievement and Reading Time

<u>Low Perceived Control</u>				
	State-oriented		Action-oriented	
	Normal	Distraction	Normal	Distraction
Achievement	10.82 (2.58)	11.26 (3.12)	9.71 (3.54)	11.23 (2.45)
Reading Time				
Segment 1	7.74 (1.98)	6.77 (1.85)	7.29 (1.63)	6.29 (1.60)
Segment 2	6.06 (1.25)	5.48 (1.52)	5.81 (1.17)	5.06 (1.67)
Segment 3	6.20 (1.29)	5.53 (1.27)	5.58 (0.91)	4.95 (1.67)
Segment 4	6.03 (1.28)	5.18 (0.71)	5.46 (0.68)	4.85 (1.62)
Segment 5	6.17 (1.35)	5.18 (1.08)	5.10 (1.11)	4.97 (1.68)
Mean reading time	6.44	5.62	5.85	5.22
n	17	23	14	13
<u>High Perceived Control</u>				
Achievement	11.67 (3.46)	13.75 (3.09)	11.48 (2.25)	10.69 (2.59)
Reading Time				
Segment 1	6.44 (1.45)	6.75 (1.55)	6.52 (1.95)	6.38 (1.31)
Segment 2	5.34 (1.14)	5.61 (1.47)	5.56 (2.40)	4.92 (1.78)
Segment 3	5.68 (1.39)	5.57 (1.04)	5.44 (1.83)	4.74 (1.61)
Segment 4	5.39 (1.01)	5.14 (0.67)	5.14 (1.94)	4.69 (1.85)
Segment 5	5.61 (1.41)	5.24 (0.83)	5.22 (1.85)	4.69 (1.79)
Mean reading time	5.69	5.66	5.58	5.08
n	15	16	23	13

Note: The range for the achievement test score is 0 -30. Reading times are given in minutes.

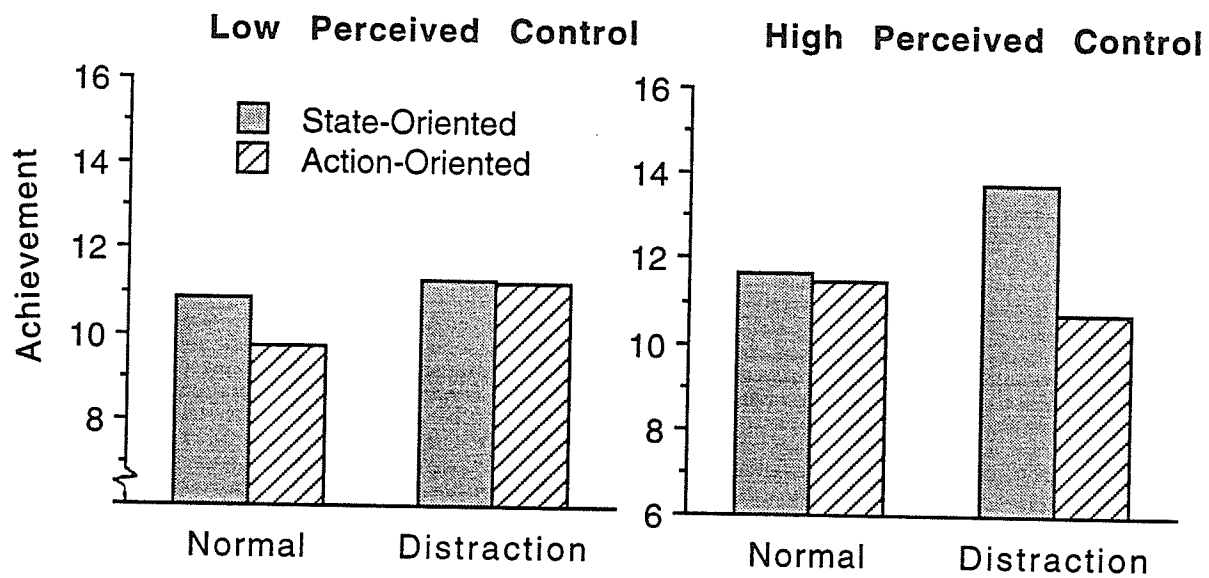


Figure 2: The interaction for achievement between action control style and distraction conditions for students with a low and high sense of control.

pages. Similar to the achievement measure, reading time was analyzed with an Action Control Style (state-oriented, action-oriented) x Perceived Control (low, high) x Distraction (yes, no) x Segment (1 to 5) 2 x 2 x 2 x (5) repeated measures ANOVA, with Segment being the within-subjects factor. The multivariate approach to analyzing the within-subjects factor was used in this analysis.

Only two significant main effects emerged, one for the distraction manipulation, the second for the segment (see Table 3 for F-values). Participants in the distraction condition spent less time on the text than those in the normal condition ($M_s = 27.0$ minutes versus 29.45 minutes). The segment main effect was due to the fact that the time spent on each segment decreased over time. The main effect for action control style was almost significant, with a p-value of .063. State-oriented individuals spent slightly more time on the text than their action-oriented counterparts ($M_s = 29.27$ vs. 27.16). None of the interaction effects were significant.

Task Approach

While subjects were reading the text, the computer kept track of how frequently they backtracked. Inspection of this data showed that most participants backtracked not at all or only a few times ($M = 16.6$, $M_d = 4$, Mode = 0). The distribution of the scores was therefore strongly skewed. As transformation of the data did not reduce the skewness, the data was dichotomized using a median split and analyzed with a chi-square analysis. Scores below the median (< 4) were classified into a low, those at or above the median (≥ 4) into a high backtracking category. Eight chi-square analyses were then performed. These analyses compared the frequency of participants with a low versus high backtracking profile as a function of differing personal/situational characteristics. For example, backtracking in the distraction condition was compared to that in the normal condition for state-oriented low-control participants with a Distraction (yes, no) x Backtracking (low, high) 2 x 2 chi-square analysis. The frequencies in each of the conditions are shown in Table 5.

Table 5: Frequency of Participants who Backtracked While Reading the Text (Low, High) and Accessed the Outline, Summary, and Study Questions (Low, High)

		<u>Low Perceived Control</u>			
		State-oriented		Action-oriented	
		Normal	Distraction	Normal	Distraction
Backtracking	Low	7	13	6	5
	High	10	10	8	8
Accessing of Other Files	Low	10	15	7	5
	High	7	8	7	8
		<u>High Perceived control</u>			
Backtracking	Low	5	6	7	7
	High	10	10	16	6
Accessing of Other Files	Low	6	8	11	8
	High	9	8	12	5

Note: Participants in the low backtracking category backtracked less than four times while reading the text, those in the high backtracking category four times or more. The low category for students accessing other files included individuals who turned to either the outline, summary, or study questions once or never, the high category included participants who accessed these files more than once.

None of the tests reached statistical significance, all chi-squares $< .78$, $ps > .38$. Three additional tests were subsequently computed for action control style, perceived control, and the distraction manipulation, respectively. These tests would be similar to main effect analyses. Again, none of the tests were significant, all chi-squares < 2.11 , $ps > .14$. Thus, participants were equally likely to backtrack versus not backtrack, regardless of their personal characteristics or situational circumstances.

A similar approach was taken to analyzing the number of times participants accessed either the outline, summary, or study questions. Again, the distribution of the data was heavily skewed in that most participants accessed these additional files either not at all, or only once. To simplify analyses, the data for the outline, summary, and study questions were combined into one score. This new combined variable was then dichotomized. Scores at and below the median (≤ 1) were classified into a low category, those above the median (> 1) into a high category. None of the eight tests computed was significant, all chi-squares > 2.10 , $ps > .12$. Moreover, state-oriented participants overall did not differ from action-oriented students in terms of their accessing additional information, chi-square = .44, $p > .50$, nor were there any overall differences between perceived control groups and distraction conditions, chi-squares = .54 and 1.49, respectively, $ps > .14$.

Discussion

The findings for Study 1 provided some support for the proposed hypotheses, in that students with a high sense of control performed better on the achievement test than their low control counterparts. Moreover, a three-way interaction between action control style, perceived control, and distraction condition was found. That is, neither action control style nor the distraction manipulation affected the performance of individuals with a low sense of control. In contrast, the distraction manipulation had a different effect on state-oriented versus action-oriented students who also felt in control, with state-oriented, high-control individuals performing particularly well in the distraction condition. While it

was expected that the tone condition would create a relatively aversive and stressful learning environment, thereby leading to performance deficits in state-oriented students, the finding that they showed enhanced performance is not inconsistent with action control theory or previous research (Beckmann, 1989, 1989; Beckmann and Strang, 1992; Kuhl & Beckmann, 1994). This research shows that mildly distracting situations, such as the presence of an observer, can lead to facilitation of performance in state-oriented individuals, presumably because of the activation of low-level attentional processes.

This performance increment in the present study cannot be attributed to greater motivation prior to starting the task, as state-oriented high-control participants were not more motivated to perform well on the achievement test before starting the experiment than any of the other groups. The lack of a three-way interaction for the time spent on the reading task further indicates that these individuals also did not spend more time on the reading task than the other groups. Moreover, their task approach did not differ. Thus, it would appear that the performance increment was indeed due to more effective processing of the information, likely as a result of enhanced concentration. In this respect, it is interesting to note that participants spent less time on the text under distracting, compared to nondistracting conditions. This would suggest that the tone was indeed somewhat aversive and caused students to complete the task more quickly. For state-oriented, high-control individuals, however, this slight aversiveness ultimately proved to be beneficial.

That only state-oriented, high-control, but not state-oriented, low-control students showed enhanced performance under distracting conditions is consistent with the assumption that state-oriented persons may be at an advantage over action-oriented individuals in relaxing situations (Kuhl & Beckmann, 1994). That is, an increase in attention, or enhanced sensory processing, resulting from exposure to the tone should only manifest itself if state-oriented individuals are exposed to an environment that is conducive to volitional facilitation. The combination of feeling in control as well as the relatively

unstructured, self-paced nature of the experimental task would provide such conditions, thereby leading to enhanced performance.

Besides measuring students' achievement and reading time, an attempt was also made to assess their approach to the reading task. No significant differences were obtained for any of these measures, a finding that was likely due to the lack of sensitivity of the measures used. Task approach was assessed by tabulating the number of participants who backtracked or accessed the outline, summary, or study questions. However, many students neither backtracked, nor read the additional information available. As such, the measures did not differentiate between students who approached the reading task in an effective fashion, which should ultimately lead to high performance on the achievement test, and those who took an ineffective approach. A more useful measure of studying strategies might be to have students verbalize their approach while they are engaging in the task.

Study 2

Study 1 examined the effect of an external distraction on individuals differing in action control and perceived control. Study 2 focused on the impact of exposure to noncontingent failure. Unlike the emotionally neutral distraction introduced in Study 1, noncontingent failure represents a more powerful experience, as it is associated with negative emotions and cognitive activity, such as self-doubts or a search for the reasons of the failure. As the summary table of the literature on state orientation shows, the impact of noncontingent negative events on individuals differing in action control has been examined in a number of studies. This literature is listed in Table 2 under the heading "learned helplessness".

As discussed earlier, the notion of learned helplessness refers to the affective, cognitive, and motivational deficits induced by exposure to noncontingent negative events (Abramson et al., 1978; Seligman, 1975). According to learned helplessness theory, these deficits are due to expectations of noncontingency in the future. That is, exposure to

uncontrollable events leads to the expectation that negative outcomes will reoccur no matter what actions one initiates (Abramson, et al., 1978; Seligman, 1975). Kuhl (1981) has argued, however, that performance deficits are not always due to low expectations, as suggested by learned helplessness theory. According to Kuhl, problems arise because uncontrollable, negative outcomes induce state-oriented cognitions, such as excessive rumination about the cause of the event or general worry thoughts. Such cognitions, rather than a lack of motivation, would then interfere with efficient cognitive functioning on subsequent tasks. To differentiate this type of interference from Seligman's (1975) notion of motivational helplessness, Kuhl (1981) has labelled it functional helplessness.

Several studies support Kuhl's notion of functional helplessness (e.g., Brunstein & Olbrich, 1985; Kuhl, 1981; Stiensmeier-Pelster, 1991). In one experiment (Kuhl, 1981, Experiment 1), only those subjects who were told to engage in state-oriented cognitions after experiencing noncontingent failure (e.g., thinking about the causes of the negative outcome) exhibited performance deficits on a subsequent test task, relative to a no-treatment control group. Interestingly, and contradictory to Seligman's (1975) assumption that noncontingency leads to expectations of noncontingency, the groups did not differ in terms of the perceived controllability of the test task. That is, subjects exposed to noncontingent failure did not expect to be out of control in the future, as learned helplessness theory would predict.

Other studies provide further evidence that only state-oriented, but not action-oriented, individuals have difficulty dealing with noncontingent failure (Brunstein, 1989; Kuhl & Weiss, 1994; Mayr & Walschburger, 1991). The findings for strategy use, emotions, and task involvement are quite consistent across studies. Following noncontingent failure, state-oriented persons use less efficient strategies, and report more negative emotions and less task involvement than action-oriented individuals (Brunstein, 1989; Brunstein & Olbrich, 1985; Kuhl & Wassiljew, 1985; Kuhl & Weiss, 1994; Mayr & Walschburger, 1991; see Table 2 "learned helplessness" section).

In an experiment by Brunstein and Olbrich (1985), for example, participants were exposed to a problem solving task. On successive trials of guessing the shape of a geometrical figure, they received a series of failure feedback regarding their hypotheses, followed by veridical feedback. Intermittently, subjects' emotions were measured and their verbalizations during the task were recorded. Moreover, their strategy use in solving the task was recorded. The results of the study show that state-oriented participants used less effective problem solving strategies following noncontingent failure, whereas action-oriented subjects refined their strategies after noncontingent failure. State-oriented persons also exhibited increased negative affect, associated with lack of ability statements and verbalization of inadequate strategies to solving the reasoning task. Action-oriented subjects, on the other hand, maintained a sense of competence.

While affective deficits and deterioration of strategies in state-oriented persons have been demonstrated in several studies, performance deficits have been found primarily with simple tasks, such as concentration tasks (Kuhl, 1981) or anagram tasks (Kuhl & Weiss, 1994). Little research has focused on more complex tasks. Thus, the purpose of Study 2 was twofold: First, to examine whether noncontingent failure impacts on state-oriented individuals' performance on a complex, reading comprehension task, and second, to examine the combined effect of state orientation and perceived control after noncontingent failure.

Overview of Study 2

The paradigm developed for Study 1, involving a reading comprehension task, was used to examine these issues. Prior to this task, participants were administered a GRE-like aptitude test developed by Perry and Dickens (1984), with some subjects receiving noncontingent feedback of their performance on the test and some no feedback. Learned helplessness studies typically involve a triadic design, including a noncontingent, a contingent, and a no treatment condition (Abramson et al., 1978). Perry and Dickens (1984) introduced a fourth condition in their paradigm, which received no feedback

regarding their performance on the contingency task. This control group is particularly useful in an achievement context as it exposes participants to the same task as the noncontingent group, namely the aptitude test. At the same time, it provides an ecologically valid experience, as students usually do not receive immediate feedback of their performance on tests. Only this control condition therefore was included in the present study.

Several dependent measures were used in the study. As in Study 1, performance on the chapter-based achievement test and reading time was assessed. Moreover, emotions and motivation were measured twice over the course of the study, once immediately after the contingency task, the second time after the reading task. Two measurements were taken in order to examine potential changes in emotions and motivation over time. For example, one might expect that both state-oriented and action-oriented students would experience negative emotions immediately after noncontingent failure. State-oriented individuals, however, should be unable to exert control over their emotions, whereas action-oriented persons would be expected to bring these emotions under control after a short period of time.

The reason for including a measure of motivation was the same as in Study 1, namely to examine whether potential performance differences are mediated by volitional or motivational deficits. Based on action control theory, one would expect that state-oriented and action-oriented individuals should exhibit similar levels of motivation regarding the achievement test following the noncontingency task. In contrast, learned helplessness theory predicts that noncontingent failure decreases motivation to perform well on the test.

Research Questions and Hypotheses

Analogous to Study 1, four questions were of particular interest in the present study: 1) Does action control style affect achievement? 2) Does perceived control affect achievement? 3) Does the contingency manipulation affect state-oriented and action-oriented students differently? and 4) Does the contingency manipulation affect state-oriented and

action-oriented students differently *depending on their perceived control*? These research questions translate into main effects hypotheses for action control style and perceived control, an action control style x contingency training interaction hypothesis and a three-way interaction hypothesis. The first hypothesis, more specifically, addresses the question of whether state-oriented students overall perform more poorly than action-oriented individuals, the second hypothesis whether students with a low sense of control perform more poorly than those with a high sense of control.

The action control style by contingency training interaction hypothesis is based on previous research which shows that only state-oriented, but not action-oriented, individuals have difficulties under noncontingent failure conditions. Lastly, as in the Study 1, the three-way interaction hypothesis was of primary interest, as it focuses on the joint effect of action control style, perceived control, and contingency training. Similar to the predictions in Study 1, one might expect that action control style and the contingency training would have little impact on students who feel out of control. Being exposed to noncontingent failure, on the other hand, may affect students with a high sense of control, with state-oriented, but not action-oriented, high-control, participants exhibiting performance decrements.

In terms of the emotion measures, the same hypotheses were tested as for achievement. For motivation, no differences between any of the groups were expected. Lastly, the reading time measure was considered exploratory in nature and no specific hypotheses were suggested for this dependent variable.

Method

Participants

The sample was again drawn from introductory psychology classes at the University of Manitoba. Credit toward a course requirement was provided for students' participation in the experiment. Only students whose first language was English were asked to volunteer for the study. One hundred and seventy-nine female and male students

completed Phase 1 of the study which involved completing the ACS and perceived control questionnaire. Of these students, 157 returned for the second phase.

Materials

State orientation. The preoccupation subscale of the ACS (Kuhl, 1994a) was again used to measure students' state orientation (Cronbach's $\alpha = .71$). As in Study 1, a median split was performed to classify subjects as state-oriented (ACS score > 19 , $M = 21.49$, $SD = 1.14$) and action-oriented (ACS score < 19 , $M = 16.03$, $SD = 1.69$).

Perceived control. The two measures described in Experiment 1 were used to assess students' perceived control ($\alpha = .69$). The correlation between perceived control and state orientation was $-.24$, $p < .01$. While this correlation is stronger than that in Study 1 ($r = -.13$) and in previous research ($r = -.16$), it still reflects only a weak relation between the two variables. A median split procedure was used to create a low (score < 4.5 , $M = 3.63$, $SD = .79$) versus a high control group (scores ≥ 4.5 , $M = 5.34$, $SD = .42$). The median of 4.5, on a scale ranging from 1 to 6, was grouped into the high control category.

Contingency task. A 50-item version of an aptitude test developed by Perry and Dickens (1984) was used to induce noncontingent failure in half of the participants. The test is similar to the Graduate Record Examination (GRE) and consists of 20 verbal analogies, 10 quantitative and 20 sentence completion questions (see Appendix C). The test is described as an aptitude test that has ostensibly been shown to predict students' success in university. The test was timed, with participants being allowed a maximum of 10 minutes for each of the three sections. Similar paper-and-pencil versions of the test have been used in previous research to provide noncontingent failure (Perry & Dickens, 1984, 1987; Perry & Magnusson, 1987; Perry et al., 1986). In these studies, subjects in the noncontingent failure condition marked their responses on a special answer sheet which gave them immediate feedback as to whether the answer chosen was correct or incorrect. Unbeknownst to participants, the feedback they received was false, in that the answer sheet indicated the selected response was incorrect on a predetermined number of questions. In

the no feedback condition, subjects recorded their responses on a normal computer-scored answer sheet.

Research indicates that this task reliably induces loss of control, with subjects in the noncontingent failure condition reporting less control than those in the no feedback or contingent feedback groups (Perry & Dickens, 1984; Perry & Tunna, 1988; Perry & Magnusson, 1987). Moreover, both the length of the test and the number of incorrect questions have predictable effects on subjects' perceived control. That is, perceived control in the noncontingent condition has been shown to decrease linearly as the length of the test increases from 25 to 50 to 75 items, with means of 3.48, 2.87, and 1.83 on a 10-point scale, respectively (Perry & Dickens, 1987). Test length did not affect subjects' sense of control in the no feedback group ($M_s=5.33, 5.45, \text{ and } 5.29$). The 50-item test was selected for the present study since it should lower subjects' perceived control sufficiently, while not being overly long as to require an excessively lengthy experimental session.

Varying the amount of noncontingent feedback also produced consistent results across several studies (Perry & Dickens, 1984, 1987; Perry et al., 1986). These studies show that a failure rate of at least 40% is required to create loss of control, with failure densities below that being insufficient to do so. Similar to previous research (Perry & Magnusson, 1987; Perry & Tunna, 1988), a 62% failure rate was chosen here since it corresponds quite closely to subjects' actual, average performance on similar versions of the test (Menec et al., 1994).

For the present purposes, the contingency task was modified to be presented on a computer. In the noncontingent condition, immediate feedback was provided after each question by displaying a "right" or "wrong" message on the computer monitor. To maximize their impact, these messages were presented in the center of the monitor, the "right" message in a box colored green, the "wrong" message in a red box. As in the case of the paper-and-pencil version, the feedback was predetermined so that participants received the "wrong" message on 31 of the questions, and a "right" prompt on the

remaining 19 items, regardless of the alternative they choose. "Wrong" and "right" questions were selected at random.

In order to make sure that participants were aware of how many questions they answered incorrectly and to reinforce the fact that they had performed quite poorly, the total number of correct responses was displayed at the end of the test. As it was anticipated that some participants would not be able to finish the questions in the allocated time, the final score was adjusted for the number of questions actually attempted. In the no feedback condition, participants simply entered their responses. They received no feedback of their performance, neither immediately after each question, nor at the end of the test.

Instructional text. The text developed for Study 1 on the topic of privacy was used in the present study. The passage was again divided into five segments of six pages each.

Manipulation checks. Two measures were included to assess the effectiveness of the contingency manipulation. The first measured students' perceived control over their performance on the aptitude test (1 = no control at all; 5 = total control), the second question pertained to how successful they perceived themselves to be on the aptitude test (1 = not at all successful; 5 = extremely successful).

Dependent measures. Performance was measured with the 20-item achievement test developed for Study 1. Students' emotions and motivation were assessed immediately after the aptitude test and again after reading the instructional text. Four emotion measures were included. Two assessed anger (1 = not at all angry; 5 = extremely angry) and helplessness (1 = not at all helpless; 5 = extremely helpless) as a reaction to the aptitude test. Two questions measured positive emotions, namely pride (1 = not at all proud; 5 = extremely proud) and confidence (1 = not at all confident; 5 = extremely confident) regarding the performance on the aptitude test. The former two questions were combined as an index of negative emotions, the latter two as an index of positive emotions. Motivation was measured with the two items described in Study 1. Moreover, participants' reading time was again measured.

Procedure

As in Study 1, the experiment involved two phases. In the first phase, state orientation and perceived control were assessed. The second phase was scheduled for the following week, and participants were asked to sign up for one of the six sessions at the end of the screening phase. The second phase of the experiment was run in the computer laboratory described in Study 1. Sessions in the computer laboratory were conducted in groups of 12 to 33 students. Each session contained both noncontingent and no feedback conditions. Students were directed to the stations, starting at the front of the room, by the experimenter.

All the materials were presented on the computer, with the exception of a postexperimental questionnaire administered at the end of the study. Participants could proceed through the tasks at their own speed and could leave once they were finished. The majority of students completed the tasks in 75 to 85 minutes.

At the beginning of the session, they were again provided with general instructions and a tutorial concerning the use of the computer and keyboard. The aptitude test was presented next. In the general instructions to the task, students were informed that they would have 10 minutes to complete each of the three sections. An internal clock monitored the time subjects spent on each section and the computer was programmed to automatically display the next section once the allocated time had elapsed.

Immediately after completing the aptitude test, the manipulation checks, and emotion and motivation measures were administered. Following this, subjects were directed to the instructional text. Although students' task approach was not measured in the study, the same paradigm as in Study 1 was used, which provided students with the option of reading an outline, summary, and study questions. At the end of the instructional text, a prompt appeared asking students whether they wanted to take the achievement test. The test could be called up by pressing a particular combination of keys. Before being given

the achievement test, emotions and motivation were assessed the second time. The emotion/motivation questionnaire was followed by the 20-item achievement test.

After completing the test, a prompt was presented on the monitor for students to raise their hand to indicate to the experimenter that they had finished the experimental tasks. At this point, the experimenter handed out a brief postexperimental questionnaire. Two questions were included in the questionnaire, one asking students to describe the thoughts and feelings they had while working on the aptitude test. This question was intended to assess whether students were suspicious about the noncontingent feedback received. The second question asked participants what they thought the purpose of the aptitude test was. These questions were answered directly on the questionnaire.

The questionnaire further included the instruction to press a certain combination of keys once they had answered the questions. These instructions were presented at the bottom of the questionnaire. Pressing the keys then displayed a debriefing screen. All students were informed that the "aptitude" test was not predictive of success in university and that it had been chosen because of its difficulty. They should therefore not feel frustrated if they had problems answering the questions. The noncontingent feedback group, in addition, was told that their performance was predetermined and the maximum possible score was 19 out of 50. This information was intended to eliminate any lingering helplessness effects by allowing subjects to attribute their performance to task difficulty or to the experimenter (Abramson et al., 1978).

Results

Inspection of the data showed that one person spent only 4.97 minutes on the 30-page text, considerably less time than anybody else. This student was therefore eliminated from all the analyses. As in Study 1, Type III sums of squares were used to deal with the correlated effects that resulted from unequal cell sizes. The postexperimental questionnaires indicated that only one person expressed doubts about the feedback

manipulation. Since the responses of this individual did not seem to differ from those of the other noncontingent feedback subjects, the participant was retained in the analyses.

Manipulation Checks

To assess whether the contingency task induced loss of control, the perceived control and perceived success measures regarding the aptitude test were first analyzed. For this purpose, two separate Action Control Style (state-oriented, action-oriented) x Perceived Control (low, high) x Contingency Training (no feedback, noncontingent feedback) ANOVAs were computed. No significant effects were found for the perceived control dependent measure, with the F for the contingency training main effect being: $F(1,129) = 0.63, p > .42$ (see Table 6 for means). However, a significant contingency training effect was found for perceived success. That is, participants in the noncontingent feedback condition felt they were less successful on the aptitude test than those in the no feedback condition, $F(1,129) = 52.54, p < .0001$ ($M_s = 1.26$ vs. 2.11). Moreover the main effect for action control style was significant, $F(1,129) = 5.32, p < .03$, with state-oriented students feeling less successful than action-oriented participants ($M_s = 1.55$ vs. 1.82). None of the other effects reached significance.

These results are somewhat surprising, as they are directly opposite to what was expected. Based on previous research, it was anticipated that noncontingent feedback would create loss of control, regardless of perceptions of success. This has been demonstrated in previous studies using a paper-and-pencil version of the contingency task (Perry & Dickens, 1984; Perry & Magnusson, 1987; Perry et al., 1986). In one study (Perry & Tunna, 1988), noncontingent feedback lowered perceptions of success compared to a contingent feedback condition, but consistent with the other studies it also reduced control ratings.

The finding of no perceived control differences presents a problem if the focus of the research is loss of control. However, one can also conceptualize the learned helplessness paradigm in the broader context of experimenter-induced failure (Coyne et al.,

1980). In fact, Kuhl's (1981) argument that noncontingent failure induces state-oriented cognitions does not seem to require loss of control per se. In this respect, the study by Menec et al. (in press) shows that perceptions of failure have negative consequences for state-oriented individuals. These findings are therefore consistent with studies involving the learned helplessness paradigm, and indicate that the experience of failure, rather than loss of control, induces performance deficits in state-oriented individuals. Thus, the finding that noncontingent feedback led to lower perceptions of success in the present study was taken as evidence that the manipulation was effective in inducing failure, albeit not loss of control.

Achievement Test

The hypotheses regarding students' performance on the 20-item achievement test were examined with an Action Control Style (state-oriented, action-oriented) x Perceived Control (low, high) x Contingency Training (no feedback, noncontingent feedback) ANOVA. F-values are shown in Table 7, descriptive statistics can be found in Table 8. A significant main effect was found for contingency training. Moreover, the interaction between perceived control and contingency training was significant. Both effects were qualified by a three-way interaction. This interaction is graphed in Figure 3. As the Figure shows, the pattern of findings is quite different for low perceived versus high perceived control students. Most importantly, for students who felt in control, a state orientation lead to performance deficits following failure, whereas action-oriented, high-control students were relatively unaffected by the failure experience.

Emotions

Feelings of anger, helplessness, pride, and confidence regarding the aptitude test were assessed twice, immediately after the aptitude test and again after the instructional text. Positive and negative emotion scores were obtained by combining anger and helplessness scores on the one hand, and pride and confidence on the other. To examine

Table 6: Means and Standard Deviations for Manipulation Checks

		<u>Low Perceived Control</u>			
		State-oriented		Action-oriented	
		No Feedback	Nonconting. Feedback	No Feedback	Nonconting. Feedback
Perceived Control	M	2.61	2.38	2.69	2.27
	SD	0.78	0.61	0.87	0.65
Perceived Success	M	1.87	1.13	2.13	1.36
	SD	0.69	0.34	0.72	0.50
	n	23	32	16	11
		<u>High Perceived Control</u>			
Perceived Control	M	2.73	2.89	2.68	2.69
	SD	0.65	1.27	0.89	1.01
Perceived Success	M	2.09	1.11	2.37	1.44
	SD	0.30	0.33	0.76	1.03
	n	11	9	19	16

Note: The range for both measures is 1-5 (1 = no control at all; 5 = total control, and 1 = not at all successful; 5 = extremely successful).

Table 7: F-statistics for Achievement, Emotion, Motivation, and Reading Time Measures

<u>Effect</u>	<u>Measures</u>				
	Achievement Test	Negative Emotions	Positive Emotions	Motivation	Reading Time
AC	0.01	5.42*	8.23**	0.98	0.20
PC	2.04	0.20	1.64	0.97	0.39
Contingency	5.66*	6.27*	18.61***	1.54	0.20
AC x PC	3.03	1.53	0.04	0.02	0.20
AC x Cont	0.00	1.99	0.00	0.01	0.06
PC x Cont.	5.52*	0.33	0.33	0.73	0.32
AC x PC x Cont.	5.60*	0.09	0.67	0.32	7.02**
Time ^a	-	13.26***	35.26***	5.58*	33.19***
Time x AC	-	0.04	0.15	3.07	0.49
Time x PC	-	0.89	0.82	0.71	0.40
Time x Cont.	-	0.47	0.01	1.56	1.09
T x AC x PC	-	0.06	0.04	0.04	0.47
T x AC x Cont.	-	0.00	0.12	4.66*	0.81
T x PC x Cont.	-	0.73	0.08	0.60	0.69
T x AC x PC x C	-	0.04	0.82	0.03	1.31
	MS _e =10.02 df _e =129	MS _{eb} =1.16 MS _{ew} =0.26 df _e =129	MS _{eb} =0.70 MS _{ew} =0.13 df _e =129	MS _{eb} =1.45 MS _{ew} =0.20 df _e =129	MS _{eb} =9.02 MS _{ew} =0.92 df _e =129

Note: AC = Action control style, PC = Perceived control, Cont. = Contingency manipulation, T = Time. ^a For the the emotion and motivation questions time is the within-subjects variable. For the reading time measure this variable involves the five segments of the text. * = $p < .05$; ** $p < .01$; *** $p < .001$. MS_{eb} refers to the mean square error for the between-subjects effects, MS_{ew} to the error term for the within-subjects effects.

Table 8: Means and Standard Deviations (in Brackets) for Dependent measures

<u>Low Perceived Control</u>				
	State-oriented		Action-oriented	
	No Feedback	Noncontingent	No Feedback	Noncontingent
	Feedback		Feedback	
Achievement	9.60 (3.38)	10.94 (2.53)	10.00 (2.80)	8.64 (3.04)
Negative Emotions				
Time 1	2.48 (1.11)	2.78 (1.02)	2.19 (0.79)	2.77 (0.93)
Time 2	2.33 (0.89)	2.58 (0.85)	2.00 (0.77)	2.59 (0.80)
Positive Emotions				
Time 1	1.50 (0.52)	1.27 (0.44)	2.00 (0.86)	1.45 (0.57)
Time 2	1.83 (0.68)	1.44 (0.54)	2.19 (0.81)	1.73 (0.61)
Motivation				
Time 1	2.46 (0.80)	3.03 (0.97)	2.41 (0.84)	2.55 (1.06)
Time 2	2.70 (0.89)	2.98 (0.89)	2.59 (0.74)	2.91 (0.92)
Reading Time				
Segment 1	5.96 (2.11)	7.21 (2.24)	6.76 (1.67)	6.35 (1.85)
Segment 2	4.97 (1.65)	5.54 (1.62)	5.84 (1.21)	5.24 (1.44)
Segment 3	4.88 (2.46)	5.30 (1.29)	5.80 (1.67)	5.23 (1.38)
Segment 4	4.73 (1.64)	5.11 (1.56)	5.40 (1.84)	4.76 (1.06)
Segment 5	4.84 (1.79)	5.35 (1.49)	5.80 (1.25)	5.19 (1.08)
Mean reading time	5.08	5.70	5.92	5.36
n	23	32	16	11

Table 8 (continued)

	<u>High Perceived Control</u>			
	State-oriented		Action-oriented	
	No Feedback	Noncontingent	No Feedback	Noncontingent
	Feedback		Feedback	
Achievement	12.18 (2.89)	8.00 (3.20)	11.84 (2.83)	10.50 (4.63)
Negative Emotions				
Time 1	2.86 (0.39)	2.78 (0.67)	2.08 (0.87)	2.50 (0.68)
Time 2	2.41 (0.63)	2.56 (0.58)	1.71 (0.71)	2.31 (0.79)
Positive Emotions				
Time 1	1.82 (0.56)	1.17 (0.25)	2.03 (0.68)	1.59 (1.00)
Time 2	2.14 (0.50)	1.56 (0.30)	2.34 (0.47)	1.88 (0.96)
Motivation				
Time 1	2.82 (0.78)	3.06 (0.81)	2.63 (0.86)	2.75 (1.02)
Time 2	3.05 (0.88)	2.78 (1.03)	2.82 (0.93)	2.97 (1.06)
Reading Time				
Segment 1	7.01 (1.26)	6.26 (1.61)	5.77 (1.03)	6.65 (1.79)
Segment 2	6.15 (1.51)	5.04 (1.50)	4.72 (0.84)	5.19 (1.88)
Segment 3	5.82 (1.23)	5.31 (1.78)	4.92 (1.38)	5.21 (1.69)
Segment 4	5.32 (0.83)	4.75 (1.38)	4.42 (1.20)	4.67 (1.53)
Segment 5	6.08 (1.04)	4.18 (1.99)	4.61 (1.22)	5.05 (1.40)
Mean reading time	6.08	5.11	4.89	5.35
n	11	9	19	16

Note: The possible range for achievement scores is 0 - 20, for emotions and motivation the range is 1 - 5, where higher scores indicate more negative emotions, more positive emotions, and greater motivation. The reading time is given in minutes.

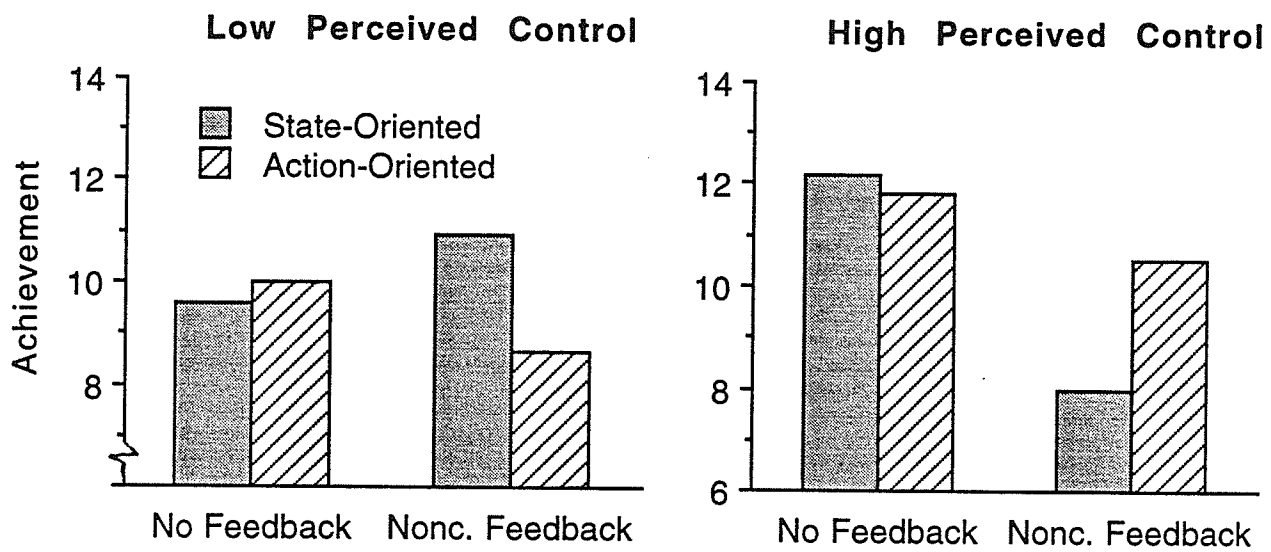


Figure 3: The interaction for achievement between action control style and contingency training for students with a low and high sense of control.

possible changes in these measures over time, two separate Action Control (state-oriented, action-oriented) x Perceived Control (low, high) x Contingency Training (no feedback, noncontingent feedback) x Time (1, 2) 2 x 2 x 2 x (2) repeated measures analyses were performed.

For negative emotions, significant main effects were found for contingency training and action control style. See Table 7 for F-values and Table 8 for descriptive statistics. Participants experienced more negative emotions in the noncontingent than the no feedback condition ($M_s = 2.61$ vs 2.26). Moreover, state-oriented students reported more negative emotions than action-oriented individuals ($M_s = 2.60$ vs 2.27). The main effect for the within-subjects factor, time, was also significant, indicating that emotions became less negative over time ($M_s = 2.56$ immediately after the aptitude vs. 2.31 after the reading task). Interestingly, none of the interactions was significant.

The same pattern of results was obtained for positive emotions. Again, main effects were found for contingency training, with students reporting less positive emotions in the noncontingent than the no feedback condition ($M_s = 1.51$ vs 1.98). The ANOVA further revealed a significant main effect for action control style, in that state-oriented students had less positive emotions than their action-oriented counterparts ($M_s = 1.59$ vs 1.90). The main effect for time was also significant, with emotions becoming more positive from the first to the second assessment ($M_s = 1.60$ vs 1.89).

Motivation

Motivation to perform well on the achievement test was also analyzed with an Action Control (state-oriented, action-oriented) x Perceived Control (low, high) x Contingency Training (no feedback, noncontingent feedback) x Time (1, 2) repeated measures analysis. The F-values and means are shown in Tables 7 and 8, respectively. A significant main effect for time emerged, in that students' motivation increased from the first to the second assessment ($M_s = 2.71$ vs 2.85). Moreover, the ANOVA revealed an Action Control Style x Contingency Training x Time interaction. This interaction was due

the fact that at Time 1, immediately after the aptitude test, state-oriented individuals in the noncontingent feedback condition were more motivated than any of the other groups, that is, action-oriented students in the noncontingent condition and state-oriented and action-oriented participants in the no feedback condition. In contrast, motivation was approximately equal across all four groups at Time 2.

Reading Time

Reading time across the five segments was analyzed with an Action Control (state-oriented, action-oriented) x Perceived Control (low, high) x Contingency Training (no feedback, noncontingent feedback) x Segment (1 to 5) repeated measures analysis. The multivariate approach was used to analyzing within-subjects' effects. The ANOVA revealed a segment main effect, in that participants' reading time decreased over time (see Tables 7 and 8). Moreover, an action control style by perceived control by contingency training interaction was found (see Figure 4). Inspection of the Figure indicates that state-oriented, but not action-oriented, high-control students were affected by the failure manipulation. These individuals spent more time on the task in the no feedback condition than the failure condition. In contrast, the failure manipulation had little impact on students with a low sense of control.

Discussion

The results of the present study show that the performance of state-oriented students suffered following noncontingent feedback. However, this effect was obtained only for individuals with a high sense of control. Noncontingent feedback did not affect action-oriented individuals, regardless of their sense of control. The finding that state-oriented, but not action-oriented students showed performance impairments under noncontingent failure conditions is consistent with previous research (e.g., Brunstein & Olbrich, 1985; Kuhl, 1981). However, the present study extends this research by showing that under certain conditions only state-oriented students who also felt in control were affected by noncontingent failure.

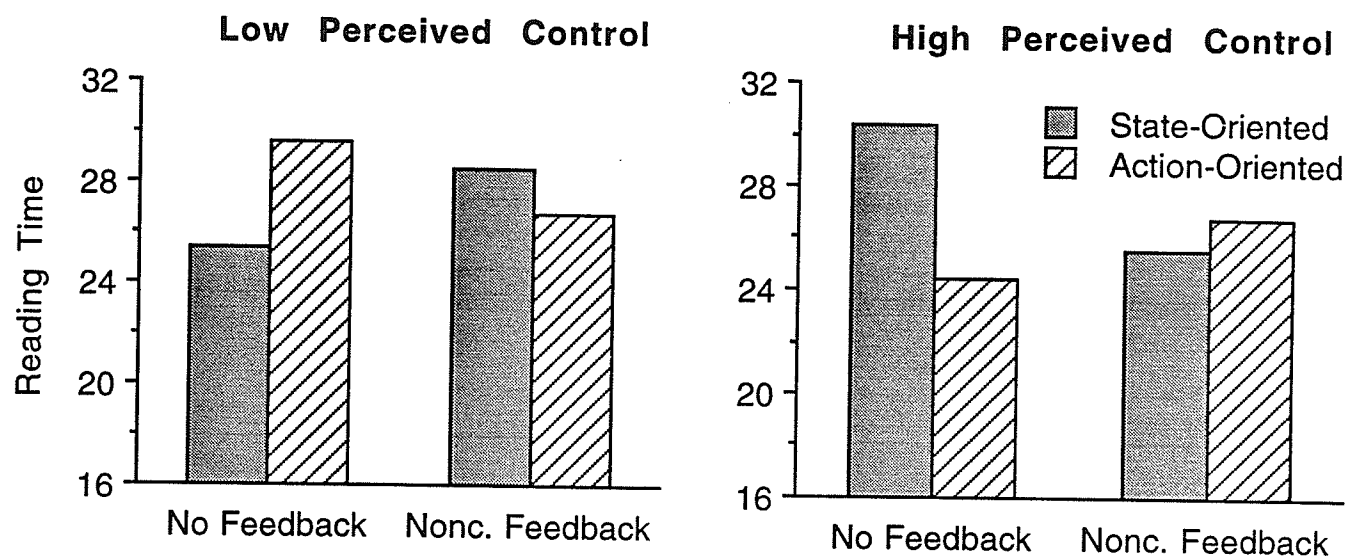


Figure 4: The interaction for reading time between action control style and contingency training for students with a low and high sense of control.

It is interesting to note that the pattern of results is similar to that in Study 1. In both experiments, the performance of low control participants was not affected by the experimental manipulation, be it the manipulation of a distraction or noncontingent failure. Performance differences were obtained only for students with a high sense of control, in that state-oriented, high-control participants showed performance increments under distracting conditions in Study 1, and performance decrements in the noncontingent feedback condition in Study 2. In effect, these individuals seem to be more sensitive to, and affected by, situational circumstances than their action-oriented counterparts.

Overall, state-oriented individuals reported more negative and less positive emotions than action-oriented participants, both immediately after the contingency training and also after the reading comprehension task. Similarly, the noncontingency manipulation had its intended effect by inducing more negative and less positive emotions. Interestingly, however, action control style did not interact with contingency training. That is, state-oriented participants did not experience more negative emotions under noncontingent than no feedback conditions. This suggests that the performance decrements found for state-oriented, high-control students were not mediated by emotions. Nor can performance deficits be attributed to lack of motivation, as state-oriented participants were more motivated to perform well on the achievement test than their action-oriented counterparts immediately after receiving noncontingent feedback.

The present results suggest that the time participants spent on the text may be a mediating factor impacting on achievement. State-oriented, high-control participants spent less time on the text in the noncontingent than the no feedback condition. Reduced time spent on the task might then have led to learning deficits, and consequently poorer performance on the achievement test. This interpretation is consistent with the results obtained in Study 1, which showed that state-oriented students spent slightly more time on the text and also performed better on the achievement test. Learning conditions, such as being exposed to noncontingent failure, that curtail the time state-oriented individuals spend

on a task would therefore have negative consequences. These findings might indicate that state-oriented individuals compensate for a less efficient approach to the reading task by spending more time on it. This possibility is further supported by the finding that in the no feedback condition, state-oriented students spent more time on the text than action-oriented participants, yet their performance on the achievement test was equivalent.

In sum, as in Study 1, state orientation had a differential impact on achievement depending on students' sense of control. Students with a low sense of control generally performed quite poorly, regardless of their action control style or contingency manipulation. In contrast, noncontingent failure led to performance decrements for state-oriented, high-control students.

Study 3

Study 2 showed that the performance of state-oriented, high-control students suffered following noncontingent failure. The question that arises next is whether the detrimental consequences of failure can be alleviated. Several studies have examined this issue (Kuhl, 1981, Experiment 2; Kuhl & Weiss, 1994; Schmalt, 1994; Stiensmeier, 1985a, Experiment 2). One method used to reduce excessive rumination in state-oriented individuals involves having participants verbalize their hypotheses while they are engaged in the contingency training task (Kuhl, 1981, Experiment 2; Kuhl & Weiss, 1994; Stiensmeier, 1985a, Experiment 2). In effect, this manipulation should focus state-oriented individuals' attention on the task at hand and prevent them from thinking about the failure experience.

In the experiment by Kuhl (1981, Experiment 2), for example, participants were presented with a logical reasoning task which required them to guess the position of black and white circles arranged in a series of rows. Feedback for their guesses was predetermined and provided them with noncontingent failure on half of the trials. In one condition, subjects were asked to verbalize their hypotheses regarding the arrangement of

the circles out loud, whereas no such instructions were given in a second condition.³ After this contingency task, all subjects then completed a concentration task that involved checking off letters.

The results of the experiment indicate that for state-oriented subjects, performance on the concentration task was considerably better when they explicitly stated their hypothesis, as compared to the control condition. As expected, this finding suggests that being forced to form hypotheses prevented these individuals from ruminating about their previous failure. Similar results were obtained by Kuhl and Weiss (1994). Interestingly, in Kuhl's (1981) study, action-oriented participants performed better in the no hypothesis than the explicit hypothesis condition. This finding is somewhat surprising given that action-oriented persons should presumably be able to control task-irrelevant thoughts following noncontingent failure on their own. Stating hypotheses explicitly should benefit, but not interfere with these processes.

A second study also produced somewhat unexpected findings (Schmalt, 1994). Participants in this study were assigned to one of four experimental conditions following noncontingent failure, and prior to engaging in a subsequent concentration task. In the first condition, which will be referred to as the self-focus group, participants were required to think about the failure experience; the second condition involved what the author refers to as a general action focus, in that subjects were asked to develop a floor plan for house, a task that was not related to the subsequent concentration task. In the third condition, the specific action focus group, participants were given practice on tasks that could be applied to the subsequent concentration task. Lastly, a failure-only control group was included that received no particular instruction, but simply read a short story after experiencing noncontingent failure.

³ The study further included a control condition that received no contingency training. To simplify the findings of the study, this group will not be discussed, however.

One would expect that a specific and probably also a general action focus would enhance the performance of state-oriented participants, or conversely reduce their performance deficits. Such an effect would be consistent with findings for the explicit hypothesis testing conditions in Kuhl (1981) and Kuhl and Weiss' (1994) studies. A self-focus, on the other hand, should magnify performance deficits, as it forces state-oriented participants to pay even more attention to the failure experience than they otherwise would. The results of the study show, however, that the performance of state-oriented participants did not differ across the experimental conditions.

In contrast, action-oriented individuals in the self-focus condition performed more poorly on the concentration task than their action-oriented counterparts in the general and specific action-focus conditions. Schmalt explains this finding by arguing that a self-focus should have detrimental consequences for individuals who typically do not focus on negative, self-related implications of experiences, as in the case of action-oriented individuals. While this explanation accounts for the results for action-oriented participants, it does not address the issue of why state-oriented participants showed no performance deficits in the failure-only and self-focus conditions, contrary to previous research (Kuhl, 1981).

Thus, the issue of how state-oriented persons can be helped to overcome the negative consequences of a failure experience warrants further investigation. Theoretically, any intervention that prevents state-oriented individuals from ruminating about past experiences and focuses their attention on a subsequent task should be of benefit. In the present study, this was accomplished by having participants focus on a goal and an action plan to bring about the goal.

The paradigm used in Study 2 was applied to the present experiment, which involved the contingency task and reading of the instructional text. Unlike Study 2, however, all subjects were exposed to noncontingent failure as only this condition should cause learning deficits in state-oriented individuals. As such, an action control intervention

should only be beneficial under these circumstances, while being unnecessary in the case of a no feedback condition. Following the contingency task, participants were assigned to one of three conditions: an action control training condition, an interference task condition, and a no-intervention control condition.

Action control training involved a brief, written passage. The manipulation was based on the definition of state orientation as involving a focus on either a past, present or future state, with a lack of focus on an action plan to bring about the desired future state (Kuhl, 1982a). As such, participants were encouraged to think about a past, negative event, imagine a potential goal state, and lastly think about a plan of action on how to attain the goal. This manipulation differs from that in previous research (Kuhl, 1981; Kuhl & Weiss, 1994) in two ways: First, the intervention was administered after the noncontingent failure experience, unlike previous research where subjects stated their hypotheses while they were engaged in the contingency task. Second, the present approach provided a more general strategy for dealing with negative situations, as it was not specifically linked to the experimental task.

The present action control manipulation is therefore similar to remedial interventions like attributional retraining. Attributional retraining involving university students typically involves brief, generic videotapes, designed to inform subjects about attributions that are maladaptive and to encourage them to change them to more adaptive ones (Perry, Hechter, Menec, & Weinberg, 1993). The videotapes are generic in the sense that they do not directly relate to the experimental task, although using them in the study would presumably benefit subjects' performance on experimental tasks.

The advantage of non-specific interventions is their potential generalizability. Attributional retraining studies show, for example, that a single, brief intervention of only 8 minutes can enhance performance on achievement tasks one week later (Menec et al., 1994; Perry & Penner, 1990). The brief intervention proposed for the present study should therefore be sufficient to induce at least short-term changes. One question that has not been

addressed to date is whether an intervention presented in written format of the type proposed for the present study, will be as effective as those provided via videotape or in vivo. It seems plausible to assume that this would be the case, however, as evidenced by the numerous self-help books teaching study strategies, for example.

To examine whether focusing on a goal and action plan is superior to simply focusing on a task that diverts students' attention away from the failure experience, a second experimental group was also included. This group was exposed to an interference task of approximately the same length as the action control training, and involved counting backwards from 853 by 7s. This task has been used in previous research to clear short-term memory (Bargh, Lombardi, & Higgins, 1988; Reitman, 1975) and was thought to be sufficiently engaging to take state-oriented participants' mind off the failure experience.

Lastly, a no-intervention control group was included that proceeded to the instructional text immediately after responding to the questions following the aptitude test. This condition therefore corresponds to the noncontingent failure condition in Study 2.. As in the previous experiments, action control style was combined with participants' perceived control, resulting in an action control style (state-oriented, action-oriented) by perceived control (low, high) by action training (no intervention, interference task, action training) 2 x 2 x 3 design. Achievement, emotions, and reading time were again used as dependent measures.

Research Questions and Hypotheses

The main focus of Study 3 was to examine whether the performance deficits experienced by state-oriented, high-control students following failure could be alleviated with a brief action control intervention. It was anticipated that the action control training intervention would benefit state-oriented, high-control students, but not action-oriented, high-control individuals. Moreover, the intervention should be of little use to students with a low sense of control, regardless of their action control style. These students would

presumably need an intervention designed to increase their sense of control in order to enhance performance.

In addition, one might expect that for state-oriented high-control participants, performance in the interference task condition might lie somewhere in between that of the no-intervention and the action training conditions. That is, engaging in a task that should take these subjects' mind off of the failure experience might increase performance to some extent, but may not afford all the benefits of the more specific action control intervention. Based on the findings of Study 2, it was further expected that state-oriented participants would experience more negative and less positive emotions than action-oriented students.

Method

Participants

Participants were male and female students recruited from the same subject pool as in Studies 1 and 2. They received credit toward a course requirement for their participation in the study. As in the previous studies, participation in the study was restricted to students whose first language was English. The overall sample included 199 students. As 16 individuals failed to return for the second phase of the study, the sample to be used in the analyses was reduced to 183 participants.

Materials

State orientation. The preoccupation subscale of the ACS (Kuhl, 1994a) described in Study 1 was again used to measure action control style. Students scoring above the median (median = 19.5) were classified as state-oriented ($M = 21.79$, $SD = 1.31$), those below the median as action-oriented ($M = 16.50$, $SD = 2.00$). The internal reliability of the scale was .77. It is interesting to note at this point that the mean scores on the ACS for state-oriented and action-oriented participants were comparable across the three studies. The means for state-oriented students were 21.38, 21.49, and 21.79 in Studies 1, 2, and 3, respectively. For action-oriented subjects, the means were 15.89, 16.03, and 16.51 across the three studies. The reliabilities which ranged from .75 to .71 to .77 were also quite

consistent and similar to those found in previous studies (e.g., Kanfer et al, 1994; Kuhl, 1994a).

Perceived control. The two measures used in the previous studies were used to assess students' sense of control (Cronbach's $\alpha = .68$). The correlation between state orientation and perceived control was $-.25$, $p < .01$, which is comparable to those in Studies 1 and 2, $r = -.16$ and $r = -.24$, respectively. Students below the median on the perceived control measure were categorized as having a low sense of control ($M = 3.62$, $SD = 1.02$), those at or above the median (median = 5 on a 6-point scale) were categorized into a high perceived control group ($M = 5.37$, $SD = 0.42$). As for the action control style classification, the mean perceived control ratings for the low and high perceived control groups were very similar across the three studies. Across Studies 1, 2, and 3, mean control ratings were 3.86, 3.63, and 3.62 for the low perceived control group. For the high perceived control group the means were 5.42, 5.34, and 5.37 in Study 1, 2, and 3, respectively. Thus, the two groups were comparable across the studies in their sense of control.

Contingency task. The 50-item aptitude test described in Study 2 was used in the present study to create a failure situation. Unlike in the previous study, however, all subjects were exposed to noncontingent failure, with the failure rate again being set at 62%. The test was presented in the same manner as in Study 2, with the exception that students were given eleven minutes for each of the three sections on the test, rather than the ten minutes allowed in the previous study. This modification was introduced because many students in Study 2 failed to complete all the questions on the test, particularly those in the mathematics section. It was felt that one reason for this was that students took somewhat longer than expected to read a sample question presented at the beginning of each section. As the time was monitored starting at the beginning of each section, which included the example, students in Study 2 really only had approximately nine minutes to answer the

questions. By increasing the time to eleven minutes, they were therefore expected to have about ten minutes for the questions.

Instructional text. The instructional text on the topic of privacy developed for Study 1 and 2 was again administered. As in the previous studies, the text was divided into five segments of six pages each.

Action control training. The text for the action control training condition is displayed in Table 9. The passage was presented on the computer monitor, with participants being allowed as much time reading it as they wished. To prevent them from moving through the task too quickly the three parts of the intervention (labelled A,B, and C) were presented sequentially on the monitor, as indicated by the prompt "press <page down>".

After the initial instructions, participants' attention was directed to a negative experience, that is, poor performance on a test or assignment. This section is labelled (A) in Table 9. To remember the full range of reactions elicited by such negative experiences, students were asked to remember their feelings, thoughts, and physiological responses in this situation. Similarly, having participants imagine their thoughts, feelings, and physiological reactions in the goal state was expected to provide them with the full range of responses in a future and more positive situation (Part B). By highlighting the past and future states in such a way, the discrepancy between them should become salient. Lastly, participants were encouraged to think of a plan to attain the goal (Part C).

Interference task. The interference task required participants to count backwards from 853 by 7s. The task was presented on the monitor and participants typed their responses into the computer to ensure that they actually completed the task. They engaged in the task for three minutes. The computer was programmed to prompt participants to continue with the experiment once the allocated time had elapsed.

Dependent measures. Performance was again measured with the 20-item, multiple-choice test developed for Studies 1 and 2. Similarly, emotional reactions following the

Table 9: Text for the Action Control Training Condition**ACTION CONTROL TRAINING**

As mentioned earlier, this experiment is designed to examine some of the factors that affect student learning. We want to take a moment now to describe one technique that has been shown to enhance academic achievement in students. This strategy should be of great benefit to you and should contribute to your success in university.

University students are faced with a variety of experiences that can interfere with academic success, including poor performance on tests or assignments, financial problems, or difficulties with interpersonal relationships. Unfortunately, we know that some students worry excessively about such experiences. As a result, they are unable to concentrate on subsequent tasks. For example, you may have had the experience that you were so worried about having performed poorly on a test that you had great difficulty starting to study for the next test. Even when you finally got yourself to open your textbooks, you were unable to put the negative experience out of your mind and were therefore unable to pay attention to the material.

How can you control irrelevant thoughts or emotions? Here is one strategy that should help you to do so. Please work through the following instructions step by step. To get the full benefit of this strategy, **it is important that you consider each sentence carefully and really try to put yourself into the situation described by visualizing your reactions.** You may spend as much time on the task as you wish.

Press <page down> now to start the task

(A) Take a moment now to remember the last time you performed **poorly** on a test or assignment. Note that it does not matter what your actual grade was. What counts is that you felt you did not perform as well as you expected.

- Remember how you **felt** after this experience.
- Remember what your **thoughts** were after this experience.
- Remember what your **physiological** responses were to this experience.

When you have a clear image of what it was like after this negative experience, press <page down>.

(B) Now that you remember exactly what it was like when you did poorly, imagine how you would like to feel if you could change the experience to a more positive one in the future.

- How would you **feel** in this more positive situation.
- What would your **thoughts** be in this more positive situation
- What would your **physiological** responses be in this more positive situation.

When you have a clear image of yourself under these more pleasant circumstances, press <page down>.

(C) You have now thought about what it was like to do poorly. You should also have a clear picture of what it would be like if you could change the negative experience to a more positive one. We now want you to think of a plan of action that could bring about this

second, more positive state. The plan you come up with is unique to your situation, but Table 9 (continued)

here are some general examples you may want to consider: could it be brought about by changing your study strategies, by studying more, etc.

Once you have a clear and detailed plan of action in mind, press <page down>

We have provided you with a strategy that should help you focus on the future, rather than being caught up with the past and, as a result, being unable to concentrate on future tasks. To summarize, the strategy involves: 1) putting yourself back into the situation that caused you to worry; 2) thinking about how you would like to feel if you could change this negative situation to a more positive one; 3) thinking about what action you would have to engage in to bring about this more positive situation.

We strongly encourage you to use this strategy in your everyday life, be it for academic experiences or other events in your personal life that might cause some worry thoughts. The important thing to remember is that instead of worrying too much about the past, focus on a goal and a plan of action to bring about that goal.

Please press <page down> now to continue with the experiment.

aptitude test were measured. The four emotion measures (anger, helplessness, pride, and confidence) described in detail in the previous study were used. Emotions were assessed immediately after the aptitude test, prior to the action control intervention, as a base-line measure and again following the instructional text to examine possible changes as a result of action control training. Reading time was included as an additional dependent measure.

Procedure

The same two-phase procedure used in Studies 1 and 2 was applied here. Phase 1 involved responding to the ACS and perceived control questions. The questionnaire was administered in seven sessions ranging from 11 to 32 students each. Phase 2 was run in the computer laboratory described in Study 1. Eight sessions were available that were conducted the week following Phase 1. Participation in these sessions ranged from 10 to 30 students. In each session, all three experimental conditions were available and students were assigned to computer stations by the experimenter.

After the initial instructions, all participants completed the aptitude test and immediately after responded to the emotion questions. Students in the action control training condition then read the passage designed to induce some action control. The interference task group, in the meantime, engaged in the backward counting task. Following these tasks, both groups were prompted to continue with the instructional text. The no-intervention group proceeded to the reading comprehension task immediately after answering the emotion questions.

The instructional text was presented as in Studies 1 and 2, with the computer recording reading time. As in the previous studies, students were given a maximum of 45 minutes to read the text. Emotions were assessed again after the text, followed by the achievement test. A postexperimental questionnaire was administered after the achievement test using the procedure described in Study 2. At the end of the session, participants were debriefed as in Study 2.

Results

Inspection of the data showed that several participants spent very little time on the text, with six individuals spending less than two minutes reading it. Compared to the previous studies, the number of students who apparently did not read the text was therefore considerably higher. One explanation for this may lie in the time of the year the study was run. Study 3 was conducted at the end of the academic term, at a time when many students were studying for final examinations or writing term papers. As a result, they may have taken the opportunity to proceed through the experiment as quickly as possible, without paying a great deal of attention. Four of the six individuals were state-oriented and two action-oriented. Given the small numbers involved, it is not clear whether this difference should be considered a systematic pattern or should be attributed to chance. For the present purposes, the six participants were dropped from the study because they spent substantially less time on the text than the other students.

An additional problem arose in that the median split procedure produced quite uneven cell sizes in the twelve conditions, with a sample size of only 4 participants for action-oriented, low-control students in the control condition. A three-way interaction between the variables, as was hypothesized for the achievement scores, would be quite difficult to detect with such a small sample size. For the achievement variable, a supplementary analysis was therefore computed for which the noncontingent feedback condition from Study 2 was added to the no-intervention condition of the present study⁴ In contrast to the achievement measure, main effect hypotheses were proposed for the emotions, consistent with the results in Study 2. For these measures, the small sample size was therefore of lesser concern. Type III sums of squares were again used in all analyses.

⁴ An alternative solution to the sample size problem would have been to combine Experiments 2 and 3 for all variables. This approach was not taken because Study 3 involved a replication of the emotion effects obtained in Study 2. As the main effects obtained for emotions in Study 2 were unexpected, it was felt to be important to replicate these results with an independent sample.

Achievement Test

An Action Control Style (state-oriented, action-oriented) x Perceived Control (low, high) x Action Control Training (no intervention, interference task, action training) 2 x 2 x 3 ANOVA was used to analyze performance on the achievement test. The first ANOVA was computed with data from Study 3 only. The ANOVA revealed a main effect for perceived control, $F(1,164) = 9.64$, $p < .002$, in that students with a low sense of control performed more poorly on the test than those with a high sense of control ($M_s = 9.69$ vs. 11.41). None of the other effects were significant.

Although the three-way interaction was not significant, $F(2,164) = 2.00$, $p > .13$, the data showed that the action control manipulation increased achievement somewhat for state-oriented participants who had a high sense of control, compared to their counterparts in the no-intervention group ($M_s = 11.43$ vs. 10.00). Moreover, there was some indication that action control training raised the performance of action-oriented low-control students ($M_s = 10.93$ vs. 9.25 in the no-intervention condition). In order to further examine these potential differences without the constraints of small cell sizes, a supplementary analysis was then computed whereby the noncontingent feedback condition from Study 2 was added to the no-intervention condition in Study 3. Procedurally, the conditions were virtually identical and achievement did not differ significantly across the two studies, $F(1,11) = 1.84$, $p > .18$ ($M_s = 9.97$ in Study 2 and 10.86 in Study 3). F-statistics for all measures can be found in Table 10, descriptive statistics in Table 11.

The perceived control main effect was again significant (see Table 10) and the ANOVA now revealed a significant three-way interaction. The interaction is graphed in Figure 5. Six interaction contrasts were then computed, three for students with a low sense of control and three for students with a high sense of control, to probe this interaction. For low and high control students separately, these interaction contrasts tested: 1) whether the interference compared to no intervention enhanced performance for state-oriented, but not action-oriented individuals; 2) whether the action control training intervention compared to

Table 10: F-statistics for Achievement, Emotion, and Reading Time Measures

<u>Effect</u>	Measures			
	Achievement Test ^a	Negative Emotions	Positive Emotions	Reading Time
AC	0.33	4.22*	0.25	1.75
PC	10.18**	1.59	0.01	0.03
Action Training	1.22	2.71	0.33	1.94
AC x PC	3.16	1.44	0.05	0.15
AC x Action Training	0.37	0.07	0.20	1.60
PC x Action Training	2.37	1.98	1.69	2.72
AC x PC x Action Training	3.58*	0.27	0.11	0.75
Time ^a	-	13.01***	13.33***	45.38***
Time x AC	-	2.33	0.43	2.16
Time x PC	-	5.88*	0.16	1.73
Time x Action Training	-	3.00	0.91	0.92
Time x AC x PC	-	1.34	0.11	1.16
Time x AC x Action Training	-	0.81	0.01	1.05
Time x PC x Action Training	-	3.33*	0.57	0.70
Time x AC x PC x Action T.	-	1.87	0.68	1.00
	MS _e =10.61 df _e =232	MS _{eb} =1.46 MS _{ew} =0.27 df _e =164	MS _{eb} =0.37 MS _{ew} =0.13 df _e =164	MS _{eb} =10.83 MS _{ew} =1.21 df _e =164

Note: ^aThe analyses for achievement include participants in the noncontingent feedback condition from Study 2 than were added to the no-intervention condition of this study.

^bTime is the within-subjects variable for the emotion measures. For the reading time measure, this variable involves the five segments of the text. AC = Action control style, PC = Perceived control, Action T = Action control training intervention. * = $p < .05$; ** $p < .01$; *** $p < .001$. MS_{eb} refers to the means square error for the between-subjects effects, MS_{ew} to the error term for the within-subjects effects.

Table 11: Means and Standard Deviations (in Brackets) for Dependent measures

<u>Low Perceived Control</u>						
	State-oriented			Action-oriented		
	No Intervention	Interference Task	Action Training	No Intervention	Interference Task	Action Training
Achievement ^a	10.94 (2.70)	9.33 (3.35)	9.43 (3.16)	8.80 (3.55)	8.29 (4.46)	10.93 (2.79)
n	47	15	21	15	7	15
Negative Emotions						
Time 1	3.20 (0.59)	2.77 (0.98)	3.00 (1.01)	3.63 (0.48)	2.57 (1.24)	2.90 (1.12)
Time 2	2.87 (0.79)	2.40 (1.09)	3.07 (1.05)	2.38 (0.25)	2.29 (1.35)	2.80 (0.88)
Positive Emotions						
Time 1	1.27 (0.42)	1.27 (0.56)	1.26 (0.41)	1.25 (0.29)	1.21 (0.39)	1.27 (0.32)
Time 2	1.44 (0.56)	1.30 (0.41)	1.36 (0.48)	1.50 (0.71)	1.21 (0.39)	1.57 (0.68)
Reading Time						
Segment 1	6.57 (1.69)	6.32 (2.18)	6.63 (2.25)	8.59 (3.29)	6.43 (3.20)	7.22 (2.11)
Segment 2	5.47 (1.52)	5.01 (1.76)	5.10 (2.14)	6.22 (1.77)	4.16 (2.17)	5.56 (2.18)
Segment 3	5.03 (1.58)	4.62 (1.47)	5.05 (1.96)	6.60 (0.93)	3.99 (1.44)	5.31 (2.17)
Segment 4	5.03 (1.59)	4.42 (1.69)	4.74 (1.61)	5.86 (0.62)	3.91 (0.92)	5.93 (2.68)
Segment 5	5.04 (1.17)	4.39 (2.33)	4.99 (1.82)	6.38 (1.40)	4.00 (1.67)	4.69 (2.36)
Mean	5.43	4.95	5.30	6.73	4.50	5.74
n	15	15	21	4	7	15

Table 11 (continued)

High Perceived Control							
		State-oriented			Action-oriented		
		No Intervention	Interference Task	Action Training	No Intervention	Interference Task	Action Training
Achievement ^a	n	9.10 (3.49) 20	11.14 (2.68) 14	11.43 (3.65) 14	11.30 (3.84) 30	12.06 (3.10) 31	11.60 (3.27) 15
Negative Emotions							
Time 1		2.77 (1.21)	2.79 (0.96)	3.14 (0.95)	2.04 (0.66)	2.58 (0.93)	2.73 (1.02)
Time 2		2.73 (0.56)	2.75 (0.94)	3.07 (1.11)	2.04 (0.60)	2.32 (0.67)	2.70 (1.03)
Positive Emotions							
Time 1		1.27 (0.52)	1.32 (0.42)	1.04 (0.13)	1.32 (0.58)	1.29 (0.48)	1.13 (0.40)
Time 2		1.36 (0.50)	1.43 (0.58)	1.32 (0.58)	1.46 (0.72)	1.52 (0.52)	1.33 (0.57)
Reading Time							
Segment 1		6.35 (1.89)	6.67 (2.26)	6.97 (1.74)	7.29 (1.63)	6.75 (1.66)	6.43 (2.18)
Segment 2		4.84 (1.81)	5.62 (1.56)	5.42 (1.14)	5.46 (1.40)	5.46 (1.31)	5.17 (2.09)
Segment 3		4.71 (2.46)	4.89 (0.87)	4.77 (1.39)	5.87 (1.48)	5.22 (1.05)	4.84 (1.76)
Segment 4		4.40 (2.31)	4.79 (0.83)	4.83 (1.71)	4.95 (1.22)	5.08 (1.19)	4.45 (1.89)
Segment 5		4.98 (2.47)	4.99 (1.26)	4.94 (1.85)	5.25 (1.79)	5.34 (1.25)	5.14 (1.83)
Mean		5.06	5.39	5.39	5.76	5.57	5.21
	n	11	14	14	14	31	15

Note: ^aThe means for achievement were calculated by combining the noncontingent feedback condition from Study 2 with the no-intervention condition in this study. The possible range for achievement scores is 0 - 20, for emotions the range is 1 - 5, where higher scores reflect more negative or more positive emotions. Reading time is given in minutes.

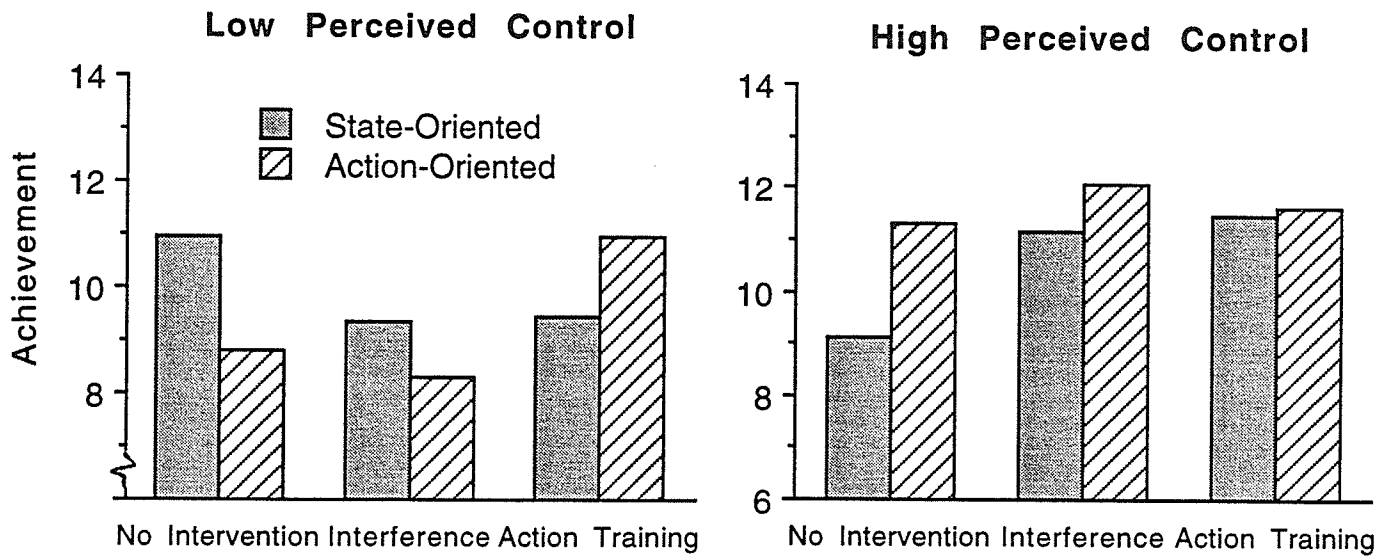


Figure 5: The interaction for achievement between action control style and action control training for students with a low and high sense of control.

no intervention enhanced performance for state-oriented, but not action-oriented individuals; and 3) whether action control training versus the interference condition had a differential impact on state-oriented and action-oriented participants. To protect the error rate at $p \leq .05$, each interaction contrast was evaluated at $p < .0083$.

For the low perceived control group, one significant contrast emerged. That is, the action control intervention, compared to no intervention, enhanced performance for action-oriented, but not state-oriented individuals, $F(1,94) = 7.52$, $p < .007$. The other two interaction contrasts were not significant, $F_s = .40$ and 1.86 , $p_s > .17$. For students with high perceived control, action training enhanced performance, compared to no intervention, for state-oriented, but not action-oriented, individuals. However, the contrast testing this interaction failed to reach significance, $F(1,75) = 1.42$, $p > .23$. The other two contrasts were also not significant, $F_s = .76$ and $.23$, $p_s > .38$.

In sum, the results of this supplementary analysis which included subjects from Study 2 differed somewhat from that computed with data from Study 3 only. Although the action control training condition did raise achievement scores for state-oriented, high-control participants, as was anticipated, this finding did not reach statistical significance. These results cannot be attributed to lack of power, but are likely due to a weak manipulation. However, the action control intervention did enhance performance for action-oriented, low control students.

Emotions

Negative (anger, helplessness) and positive (pride, confidence) emotions were each analyzed with an Action Control Style x (state-oriented, action-oriented) x Perceived Control (low, high) x Action Control Training (no intervention, interference task, action training) x Time (1, 2) repeated measures ANOVA, where time represents the repeated measure. These analyses were based on data from Study 3 only. For negative emotions only two significant effects emerged, namely main effects for action control style and time (see Table 10 for F-statistics and Table 11 for means). As in Study 2, state-oriented

participants experienced more negative emotions than action-oriented students ($M_s = 2.88$ vs. 1.58) and emotions became less negative over time ($M_s = 2.84$ immediately after the aptitude test and 2.62 after the reading task).

The main effect for time was qualified by a Perceived Control x Action Training x Time interaction. At Time 1 in the no-intervention condition, students with a low sense of control experienced the most negative emotions. That participants with low perceived control would have particularly negative emotions is not too surprising, as the experience of failure is likely to be particularly threatening for them. Emotions were not as negative in the interference task action training conditions, however. As emotions were assessed prior to the interference task and action training manipulation, these interventions could not have moderated feelings. The more negative emotions in the no-intervention condition may therefore simply be due to random error.

For positive emotions only the time main effect was significant, in that emotions were more positive at the second assessment than the first one ($M_s = 1.24$ at Time 1 and 1.40 at Time 2). The action control style main effect was not significant in the present study, unlike in Study 2.

Reading Time

The computer failed to record reading time for page 30 of the text for three participants. As in Study 1, these missing values were replaced with a mean value derived from the remaining pages. Reading time across the five segments of the text was then analyzed with an Action Control Style x (state-oriented, action-oriented) x Perceived Control (low, high) x Action Control Training (no intervention, interference task, action training) x Segment (1 to 5) repeated measures ANOVAs, with segment being the repeated measure involving five levels. As in the previous studies, the multivariate approach was used for effects involving the repeated measure. The ANOVA revealed only one significant effect, a time main effect (see Tables 10 and 11). This effect was due to the fact that

reading times became shorter over time, an effect that was also found in the previous studies ($M_s = 6.85, 5.29, 5.07, 4.87, \text{ and } 5.01$).

Discussion

The results of the present study are encouraging in that the pattern of results was consistent with the hypothesis that state-oriented, high-control, but not action-oriented, high-control students would benefit from the action control intervention. Moreover, the interference condition also increased achievement for state-oriented, high-control students, but not as much as the action training condition. However, neither of these effects reached significance. In contrast, the intervention did improve the performance of action-oriented, low-control individuals. This finding is interesting in light of the results obtained in Study 2. The groups that performed most poorly in that study were state-oriented, high-control and action-oriented, low-control students under noncontingent feedback conditions. In Study 3, the action training manipulation raised performance of only these two groups of students, whereas the performance of the other types of students was approximately the same across all experimental conditions.

It is not entirely clear why the action control intervention would enhance the performance of action-oriented, low-control students. A possible explanation is that the intervention provided an external impetus to invoke volitional control. These students presumably could access volitional mechanisms, yet are prevented from doing so because of a low sense of control. In situations where feelings of control are of relatively lesser importance, as in the case of a relatively structured environment that minimizes the need for self-initiated actions, these action-oriented may therefore exhibit adequate volitional control. Thus, by providing a certain structure to their thoughts and by focusing their attention on a goal state, the action control intervention may have allowed these students to overcome the failure experience, leading to enhanced performance.

The findings for emotions replicate those of the previous study to some extent in that state-oriented participants experienced more negative emotions than their action-

oriented counterparts. In contrast to Study 2, no such effect was obtained for positive emotions. This might have been due to a floor effect, because emotions scores of all participants were very low, ranging from 1.25 to 1.43. In Study 2, scores ranged from 1.43 to 2.03. The results of the two studies are consistent, however, by showing no interaction between action control style and the experimental conditions.

General Discussion

The present thesis had two main purposes: first, to broaden the range of experiences that might cause difficulties for state-oriented individuals by including a relatively neutral distraction (Study 1); and second, to examine the combined effects of state orientation and perceived control. The findings of the three studies add to the literature by demonstrating both positive and negative effects of a state orientation on the same reading task, depending on the type of experience to which individuals were exposed. These findings lend support to Kuhl's (Kuhl & Beckmann, 1994) argument that the effect of state orientation depends on situational circumstances, with state-oriented persons being at an advantage under relaxed conditions, and action-oriented individuals in stressful situations.

Moreover, state orientation interacted with perceived control, in that only the combination of state orientation and high perceived control led to performance increments or decrements. In this respect, there is considerable consistency across the three studies in that a low sense of control led to relatively poor performance on the achievement test, regardless of whether participants were state-oriented or action-oriented, or the situational circumstances. In contrast, action control style made a difference for individuals with a high sense of control, with state orientation combined with high perceived control leading either to performance increments or deficits depending on the situational conditions. The issues of facilitation and inhibition effects and perceived control will be discussed next. As these issues relate primarily to the achievement measure, the findings for motivation, task approach, and emotion measures will be discussed separately.

Facilitation Effects

In Study 1, the tone presented during the reading task was expected to be sufficiently distracting for students to require some volitional control to maintain concentration on the task. As a result, state-oriented individuals were thought to be at a disadvantage when taking the achievement test, as compared to their action-oriented counterparts. Interestingly, however, state-oriented students who also had a high sense of control performed particularly well in the tone condition.

The finding of a facilitation effect on a performance measure is not unprecedented. Similar results have been found with procedures whereby an incentive was withdrawn (Beckmann, 1989, 1990) and by introducing an observer while subjects were engaged in a task (Beckmann & Strang, 1992). In all these studies, the distraction was quite subtle, as compared to the experience of noncontingent failure that has been shown to lead to performance decrements in state-oriented individuals.

Beckmann's (1987, 1994) two-level model of volition provides one explanation of why facilitation effects might occur. Beckmann proposes that distractions are first dealt with by means of low-level processes, whereby a person increases the attention focused on a task, and only when such low-level processes prove to be insufficient are higher-level volitional strategies invoked, such as motivation control, environmental control, etc. Low-level processes are invoked without becoming consciously aware of the distraction. In the presence of a tone, as in Study 1, an individual may increase the attention focused on the task without any conscious awareness. According to Beckmann, invoking low-level processes can lead to performance increments once the distraction is removed, because of surplus energy that now becomes available. Eventually, however, exhaustion sets in and performance will decrease again.

The procedure of Study 1 differed somewhat from Beckmann's model in that the tone was presented throughout the reading task. The facilitation effect is therefore likely not due to surplus energy available after the distraction was removed, but more likely due

to a continuous increase in the concentration allocated to the task. It is noteworthy that a facilitation effect was obtained on the present task which involved reading a fairly long text. Participants spent an average of 28 minutes on the text, and would require considerable energy to maintain attention focused on the task.

Beckmann (1987) further argues that state-oriented persons rely more heavily on low-level processes than action-oriented individuals because they have difficulty invoking higher-level volitional strategies. Although this accounts for the empirical finding that only state-oriented individuals show facilitation effects (Beckmann, 1989, 1990; Beckmann & Strang, 1992; Study 1 in this thesis), it is not entirely clear why action-oriented persons should not also be able to invoke such low-level processes. In effect, the assumption seems to be that relying on high-level strategies reduces one's ability to invoke low-level processes, perhaps because of lack of use. But this raises the question why action-oriented individuals would not make use of high-level processes when faced with a distracting tone.

With respect to the problems with Beckmann's theory, Kuhl has argued that negative affect facilitates low-level processes in state-oriented individuals, but inhibits certain higher-level processes. Exposure to a distracting tone, by invoking negative emotions, would therefore enhance low-level processing in state-oriented individuals. To the extent that situational circumstances are conducive to the expression of these processes, such as a relaxed environment, facilitation effects should occur. In other words, facilitation effects should occur only for state-oriented, high-control individuals, as feeling in control should provide necessary conditions for applying low-level processes.

Thus, the present findings are intriguing by demonstrating positive consequences of state orientation when combined with high perceived control. State orientation is often considered a maladaptive characteristic, an assumption that arises because the effect of state orientation is typically examined in stressful situations, such as following failure. Few studies have examined its impact in relaxed or mildly distracting situations. Under these circumstances, a state orientation should be advantageous (Kuhl, 1994b; Kuhl &

Beckmann, 1994), as was the case in Study 1. More research is now required to examine the specific conditions under which a state orientation is adaptive.

Moreover, it would be useful to identify the threshold at which state-oriented individuals can no longer benefit from low-level processing. In this respect, the tone manipulation in Study 1 represents a relatively minor distraction that could easily be dealt with by increasing concentration on the task. It is interesting to note that, overall, students in the tone condition spent less time on the reading task than those in the no distraction condition, yet their performance was similar. This suggests that exposure to the tone increased students' attention, particularly in the case of state-oriented, high-control individuals. A stronger manipulation involving more frequent presentation of the tone or a louder sound should eventually lead to performance deficits in state-oriented individuals. Research shows, for example, that exposure to uncontrollable noise leads to helplessness (Glass & Singer, 1972). Based on action control theory, one would expect that functional helplessness under such noise conditions would occur for state-oriented, but not action-oriented individuals.

In sum, systematic research is needed to examine the effect of a variety of external distractions on state-oriented and action-oriented persons. The relatively innocuous tone condition in Study 1 was intended to simulate the minor distractions we are exposed to on an everyday basis, such as the ringing of a telephone in an adjacent office, shuffling of paper in a study carrel, etc. More aversive and stressful distractions like construction noise or loud music should lead to very different results than those obtained in Study 1.

Inhibition Effects

Studies 2 and 3 focused on a different type of challenge, noncontingent failure, which was expected to represent a more powerful experience than the tone in Study 1. The results of Study 2 mirror those of Study 1. Again, the experimental manipulation had little effect on participants with a low sense of control, regardless of their action control style. Similar to the results of Study 1, only state-oriented students with high perceived control

were affected by the failure experience and exhibited performance decrements. The finding of performance deficits for state-oriented individuals following failure is consistent with previous research (Brunstein & Olbrich, 1985; Kuhl, 1981; Kuhl & Weiss, 1994). This finding also supports action control theory and the assumption that state-oriented individuals are at a disadvantage under stressful conditions that require volitional control. The present thesis extends previous research, however, by showing that state orientation interacts with perceived control. The connection between action control and perceived control will be discussed in more detail in the next section.

In Study 3, an attempt was further made to assist state-oriented individuals following failure. Participants were therefore provided with a general strategy designed to focus their attention on a goal state and an action plan to attain the goal. The assumption was that this information would lead students to focus on a future situation, rather than have them think about the past failure experience on the aptitude test. The interference task served a similar purpose in that it was expected to take participants' minds off the previous failure which, in turn, might allow them to concentrate more on the subsequent reading task.

The results of the study provide some evidence for the benefits of action control training, but only for action-oriented students with a low sense of control. While it was expected that the action training and interference task conditions would benefit state-oriented, high-control students these effects did not reach statistical significance. The results of Study 3 therefore parallel those by Schmalt (1994). In Schmalt's study, subjects were assigned to one of three experimental conditions following noncontingent failure: a self-focus condition that required them to focus on the failure experiences and its implications; a general action-focus condition whereby participants engaged in a task that was not directly related to the subsequent test task; and a specific action-focus condition in which subjects practiced tasks that they would be able to use on the subsequent test task. A control group was further included that received no special intervention. The results show

that the manipulation had no effect on state-oriented subjects, although the self-focus condition led to poorer performance for action-oriented individuals.

Schmalt's study is similar to Study 3 in that the self/action-focus manipulation was presented after the noncontingency task. This is in contrast to other studies where subjects were asked to verbalize their hypotheses during the contingency task (Kuhl, 1981; Kuhl & Weiss, 1994; Stiensmeier, 1985). Unlike Schmalt's and the present findings, these studies show that explicit hypothesis testing had a positive effect on state-oriented individuals by reducing performance deficits. The critical difference between the two sets of studies would seem to be the timing of the manipulation. While explicit hypothesis testing during the contingency training may prevent negative emotions and cognitions, the action training administered following the failure experience attempts to reduce such negative emotions and cognitions.

In fact, if failure impairs state-oriented individuals' processing capacity as has been shown in several studies (e.g., Kuhl, 1981; Study 2 this thesis), then these persons may also have difficulty processing the action control training information, thereby reducing its effectiveness. To maximize its impact, an intervention administered following failure would therefore have to be considerably more intensive than those used in the present thesis or in Schmalt's study. For example, students might engage in a discussion on how to deal with negative experiences or they may be asked to write down their goals and the steps to attain them. This greater involvement on the part of participants should increase the likelihood that they focus attention on something other than the failure experience.

Although the action control intervention was ineffective for state-oriented, high-control students, it did benefit action-oriented, low-control individuals. These students are presumably unable to invoke volitional control when necessary because of their low sense of control, even though they would have the ability to do so. By specifically focusing these students' attention on a goal and an action plan to attain the goal, the intervention may have, in effect, "kick started" the volitional system. The finding that the inference

condition did not enhance performance for these students lends some support to this possibility. That is, simply taking students' minds off the failure experience did not benefit action-oriented students, although it should presumably help state-oriented individuals by preventing excessive rumination. For state-oriented, high-control students the interference task indeed enhanced performance slightly, albeit not significantly so. Thus, it was only when action-oriented, low-control were exposed to action control training that performance increments were observed.

Perceived Control

A major aspect of the present thesis was the inclusion of the perceived control variable in addition to action control style. The results of the first two studies, and to some extent the third study, show that action control style and perceived control indeed interact. Being state-oriented or action-oriented made no difference for students with low perceived control. Action control style had an effect only for students with a high sense of control. In effect, these findings suggest that if an individual lacks a sense of control it really does not matter whether she or he has the actual ability to control their actions.

This conclusion is consistent with Kuhl's (1985) assumption that perceived control is a necessary precondition for invoking volitional strategies. According to this view, volitional strategies are activated only if two conditions are met. First the difficulty of enacting an intention must reach a critical level as defined, among other factors, by the degree of state orientation. Second, the individual has to believe that he or she can exert control over carrying out the action. This suggests that even action-oriented persons would be unable to invoke volitional strategies if their perceived ability to carry out the action is low.

The present thesis provides the first empirical examination of the combined effects of perceived control and action control. While the present studies lend support to the assumption that perceived control is a necessary precondition for invoking action control, the findings also raise the question of why action control style overall had no impact on

students' performance. Based on previous research, one might have expected that state orientation by itself would result in performance decrements under failure conditions. Such a finding would correspond to an Action Control Style x Contingency Training interaction. Differentiating between students in terms of their perceived control would then simply represent a more detailed analysis, or refinement, of this more general finding, indicating that not all state-oriented individuals respond the same way.

That no such interaction was obtained requires some consideration. A possible explanation for the present results may be found in the procedures used. A critical aspect of the three studies in the present thesis was that students were allowed to proceed through the tasks at their own speed and could leave as soon as they were finished. Moreover, the reading task was unstructured in that participants could approach it as they wished by moving forward and backward and by accessing other parts of the chapter, including the outline, summary, and study questions. In addition, by imposing no severe limit on how much time they spent reading the text, they had considerable control over how well prepared they were for the achievement test.

Thus, the procedure provided students with a great deal of control over the experiment. As such, the control beliefs they brought to the experiment may have affected their responses substantially. As in real life, students with a high sense of control would therefore have approached the task more effectively than those with a low sense of control, consistent with the perceived control literature (Perry, 1991; Stipek & Weisz, 1981). The present thesis supports this assumption in that students with high perceived control overall performed better on the achievement test than those with low perceived control in Studies 1 and 3.

General control beliefs are likely to have a lesser impact under more structured conditions where students' responses are largely controlled by the experimenter. Typical experimental procedures, such as those used in previous studies on action control (e.g., Kuhl, 1981), impose considerable structure, in that the administration of the experimental

tasks is controlled by the experimenter. Completing the tasks therefore requires little self-initiation on the part of the participants. Similarly, studies on action control have often included simple tasks, such as anagram tasks or word identification tasks, that require few decisions in terms of which approach to take. In contrast, participants in the present studies could approach the reading task as they wished. Again, their general control beliefs may therefore have affected their behavior, while they may be of lesser importance on simple tasks.

In sum, the finding that state orientation in of itself had no impact on achievement scores under distracting or stressful conditions, but only in combination with high perceived control, may be due the experimental procedure that highlighted participants' control over the experiment. This possibility should be examined more closely by systematically manipulating participants' choices and control in an experiment. More importantly, however, the present findings indicate that perceived control can moderate the effects of state orientation and action orientation under distracting or stressful conditions.

A further issue that warrants closer examination is the finding that noncontingent failure in Study 2 produced similar levels of control than the no feedback condition, but lowered perception of success. Previous research involving the same contingency task, albeit a paper-and-pencil version, demonstrated that noncontingent failure decreased participants' sense of control over their performance on the test, but did not affect their perceptions of success (Perry & Dickens, 1984; Perry & Magnusson, 1987; Perry et al., 1986). One explanation for the results of Study 2 is that presenting the aptitude on the computer may have caused some loss of control. Noncontingent failure feedback may not have been able to lower participants' perceived control any further, resulting in a floor effect. Using a 7-point or 9-point scale to measure perceived control, rather the 5-point scale in the study, may help avoid this problem in the future.

More importantly, however, the finding that noncontingent failure did not significantly reduce participants' sense of control raises the question of whether the

manipulation had its intended effect. This, in turn, addresses the issue of whether it is loss of control per se or failure that is critical for testing action control theory. While Kuhl uses the two terms interchangeably (compare Kuhl, 1994b and Kuhl, 1995), they cannot be equated, as one can fail yet feel in control. For example, a student may attribute the failure to lack of effort, a factor that is under the person's influence, and thereby retain a sense of control. Regardless of whether the student feels in control, however, the failure experience would have negative consequences by inducing negative emotions, such as frustration or sadness. Moreover, negative events should lead to some cognitive activity, such as a search for why the failure occurred (Weiner, 1986). It is presumably these negative emotions and ruminative thoughts that create problems for state-oriented individuals.

Just as failure is not necessarily associated with loss of control, loss of control should not be linked to negative events only. In fact, Seligman (1975) argued that both positive and negative noncontingent events should lead to learned helplessness. Subsequent research indicates, however, that this is not the case (Miller & Norman, 1979). Learned helplessness occurs only after noncontingent negative events, which again brings into doubt whether loss of control is the critical factor in inducing learned helplessness symptoms. Addressing this issue, Coyne et al. (1980) have argued that the learned helplessness paradigm should really be classified as experimenter-induced failure.

In Study 2, the experimental manipulation was effective in creating a failure experience, with students in the noncontingent failure condition feeling less successful than those in the no feedback condition. The noncontingent failure condition also led to more negative and less positive feelings. Moreover, the failure condition resulted in poorer performance for state-oriented students with a high sense of control. These findings are consistent with previous research by Menec et al. (in press), which shows that state-oriented students who thought they had failed a test also performed more poorly on a subsequent test under ineffective instruction conditions.

It would therefore appear that it is the experience of failure, and not loss of control, that causes problems for state-oriented students. Such an experience, or any negative event for that matter, would lead to negative emotions and rumination which then interfere with subsequent tasks. The learned helplessness paradigm is useful from a practical perspective by providing a reliable procedure to induce failure. It may erroneously focus attention on loss of control, however, thereby detracting from the more important issue of failure.

Motivation, Task Approach, and Emotions

The discussion up to now has focused primarily on the results for achievement. The studies also involved several other measures to examine potential mediating factors between personal characteristics and achievement. A motivation measure was included in the first two studies to investigate whether achievement differences might be due to motivational or volitional factors. In Study 1, students' motivation was assessed prior to the reading task to determine whether differences existed between the types of students prior to starting the experiment. In Study 2, motivation was measured immediately after the contingency training and after the reading task. Based on learned helplessness theory (Seligman, 1975), one would expect that noncontingent failure reduces the motivation to perform well, whereas action control predicts that motivation is unaffected by this experience.

The results of Study 1 show that students' personal characteristics did not affect motivation. In Study 2, on the other hand, state-oriented students exhibited increased motivation following noncontingent failure. This greater motivation did not translate into enhanced performance, however. On the contrary, state-oriented, high-control participants performed particularly poorly after the failure experience. In combination, these results indicate that achievement differences were not mediated by motivational differences. The results of Study 2 therefore provide evidence for the notion of functional helplessness resulting from cognitive interference (Kuhl, 1981), rather than the motivational helplessness predicted by learned helplessness theory.

Moreover, students' approach to the task, as measured in Study 1, did not differ. State-oriented students with high perceived control were equally likely as their action-oriented counterparts to backtrack while reading the text. They were also equally likely to read the outline, summary, and study questions, yet they performed better on the achievement test. A problem with the task approach measures used was their lack of sensitivity. That is, most participants did not access the outline, summary, or study questions at all, thereby reducing the variability obtained. Similarly, most participants backtracked either never or only a few times.

From a practical perspective, this finding is interesting in and of itself. To the extent that it reflects students' actual reading practices, it suggests that many introductory psychology students lack adequate reading comprehension strategies. The lack of backtracking, for example, may suggest that they do not review what they have read or do not monitor their comprehension of the material. Similarly, the finding that most students did not read the outline of the chapter indicates that they may not understand the importance of having an overview of material to be presented before they start to read a chapter.

From a methodological perspective, the measures included in the study to examine task approach provided little information on the learning strategies students' used. In future research, it would be useful to include more specific measures of such learning strategies. For example, a think-aloud protocol whereby students verbalize their strategies while they are engaging the reading task may provide valuable information on their approach to the task. Alternatively, a questionnaire focusing on a variety of strategies could be administered after the reading task.

Reading time provided an additional measure of students' approach to the task. The findings were somewhat inconsistent across the three studies. In Study 1, reading time was shorter in the distraction, as compared to the normal condition. This suggests that the tone was indeed aversive, as anticipated. State-oriented students also spent slightly more time on the task than action-oriented participants. However, a correlation showed that

reading time was not related to achievement ($r = .12, p > .10$). In Study 2, state-oriented students with high perceived control had shorter reading times in the failure than in the no feedback condition, but reading time again was not correlated with achievement ($r = .11, p > .10$). This is in contrast to Study 3, in which reading time was affected by neither action control style, nor perceived control, nor the action training conditions, yet it was positively correlated with achievement ($r = .37, p < .0001$).

In combination, these results may suggest that state-oriented individuals require more time to effectively process information than action-oriented persons. This possibility is consistent with previous research that shows that state-oriented individuals spend more time on tasks than their action-oriented counterparts (Doll & Mentz, 1992; Stiensmeier & Schnier, 1988). Negative experiences like failing a test may lead them to shorten the time spent on a task, perhaps in an attempt to leave the environment associated with the failure event. As a result, their processing of information suffers, resulting in performance decrements. The present data does not provide sufficient evidence to confirm this possibility, however, it is an issue that warrants examining in future studies.

Emotions were assessed in Studies 2 and 3. State-oriented individuals experienced more negative emotions and less positive emotions than action-oriented participants, although the latter effect was obtained in Experiment 2 only. These findings are consistent with previous research (e.g., Brunstein & Olbrich, 1985; Mayr & Walschburger, 1991) and indicate that state-oriented persons have difficulty exerting control over their emotions. Interestingly, emotions were not moderated by the failure experience. One might have expected that state-oriented students would have particularly negative emotions following failure, corroborating previous research (Menec et al., in press). It is possible that the present findings are due to a restricted range in scores, which might be avoided by using 7-point or 9-point scales. Despite the lack of an interaction between action control style and contingency training, the present results are consistent with the assumption that state-

oriented individuals are more emotionally responsive to challenging situations, such as writing an aptitude test.

Emotions became more positive from the first to the second assessment in both Studies 2 and 3, but no interaction was obtained between action control style and time of assessment. That is, the emotions of state-oriented participants who had initially been more negative did not change more so than those of action-oriented individuals. This suggests that state-oriented persons either remain emotionally aroused for a long period of time following negative events, or that they always function at a higher level of emotional arousal. An alternative explanation is that state-oriented individuals only report stronger emotions, perhaps because they experience greater emotional fluctuation in everyday life than action-oriented persons. Similar to emotions, motivation also increased over time. In combination, the results for emotions and motivation may indicate that the negative experience of writing an aptitude wore off over time. Alternatively, the results may simply be due to regression towards the mean.

Conclusion

The literature on action control theory is growing rapidly and increasing evidence is available that shows that state-oriented individuals have problems dealing with challenging and negative experiences. While the notion of volition has only recently been reintroduced into the psychological literature, the construct of perceived control has a long history. The research on stable perceptions of control, as exemplified by the locus of control (Rotter, 1966) or self-efficacy (Bandura, 1986) constructs, or situationally-induced loss of control as in the case of learned helplessness (Seligman, 1975), is voluminous. This research consistently shows that feeling in control is related to positive adjustment to the environment, be it in the context of academic achievement (e.g., Stipek & Weisz, 1981), health (e.g., Taylor et al, 1991), or aging (e.g., Schulz, 1980).

Combining the notion of perceived control and volition would seem to be useful as the former relates to individuals' perceived ability to engage in an action, and the latter to

their actual ability to do so. Feeling in control is therefore not necessarily sufficient for engaging in an action, but a degree of action orientation may be required. Conversely, being action-oriented should provide no advantage if a person believes that she or he lacks the ability to carry out an action. This is the pattern of results found in the present studies, in that an action orientation was of no benefit when students lacked a sense of control. Moreover, high perceived control by itself did not buffer them against the negative consequences of a failure, but still led to performance deficits in the case of state-oriented individuals.

While the combined effect of action control and perceived control was examined here in the achievement context, it would be useful to investigate the effect of these variables in other domains. One such domain is adjustment to the aging process (Kuhl, 1986). In the case elderly individuals, the dissociation between perceived control and action control may be particularly evident. For example, an elderly person may retain a high sense of control but experience a decrease in the ability to exert action control because of biological changes associated with aging. Alternatively, elderly individuals may think they lack control over their environment, even though they still have the ability to use action control, because they believe in the stereotypic view that the aging process is associated with physical and mental deterioration.

From a practical perspective, it is critical to know whether poor adjustment, lack of persistence, or poor achievement in stressful situations is due to state orientation or a low of sense of control. In the former case, an attempt can be made to prevent the individual from ruminating excessively about events, by focusing her or his attention on a goal and action plan to attain the goal, for example. Alternatively, volitional control strategies can be taught. Such an intervention may focus on teaching people how to modify their environment in such a way as to minimize distractions, or by helping them deal with negative emotions. If the problem is one of lack of perceived control, however, then the intervention should be geared towards increasing the person's sense of personal control.

Attributional retraining (Weiner, 1986) is one technique that is designed for this purpose by attempting to change potentially maladaptive attributions to more adaptive ones.

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Appendix A

- 1) The instructional text on the topic of privacy used in all three studies. The text was divided into 30 pages (excluding the title page) of approximately 18 to 19 lines each in order to easily fit on the computer monitor.
- 2) Outline of privacy text
- 3) Summary of privacy text
- 4) Study questions

Privacy

The following text is adapted from Robert Gifford (1987). Environmental Psychology: Principles and Practice. Boston: Allyn & Bacon Inc. (chapter 8).

WHAT IS PRIVACY?

Privacy means many things to many people. Any attempt to define it precisely risks excluding some important aspects of privacy; overly broad definitions risk meaninglessness. Probably the best definition of privacy yet developed is one by Irwin Altman. Privacy, he says, is "selective control of access to the self or to one's group" (1975, p. 18).

Altman's definition captures the essence of privacy—the twin themes of **management of information** about oneself and the **management of social interaction**. That is, "access to self" may refer either to information about oneself or to social interaction with oneself.

Altman's definition also has room for other dimensions of privacy. One involves the number of individuals encompassed. We normally think of *individuals* seeking privacy, but as Westin (1967) has pointed out, we sometimes seek to be alone with one or more selected others. Everyone dreams of being alone in a favorite spot with that special someone; the two of you are seeking privacy at that point. At other times, classmates, business people, or football players huddle together in groups, excluding others. That is why Altman's definition includes one's group.

The words "access to self" also cloak a range of sensory avenues. For example, a head of state may stand on a prominent balcony so that citizens have visual access, yet no individual citizen may be granted an audience. You may seek privacy by going into your room to study but be bothered by music or conversation produced by others. Many others grant us both visual and acoustic access to them (as in a conversation) yet not allow us to touch them. Office employees in open-plan offices often have visual privacy but complain that their acoustic privacy is poor.

On the other hand, as Altman (1975) points out, even a stripper who is past her last G-string on stage may yet have considerable privacy. Her body has absolutely none, it is true. But if she successfully adopts a blank, closed expression, she manages to control access to a more important part of herself. She is denying the customers access to her thoughts, her interests, and any shred of social involvement. This is an extreme example, but it illustrates one complexity of privacy. Some channels of communication may be open while others are not.

The notion of open and closed channels leads us to a final observation on Altman's definition. "Selective control" implies that access may be *granted* as well as denied; privacy is not merely shutting out others. It often includes enjoying social interaction and gladly sharing information about yourself with others. The key word is **control**. A person who is fully enriched with privacy is not necessarily a hermit or recluse, but one who is able to find either companionship or solitude more or less at will (social interaction management); a person who, similarly, is able to either share or halt the flow of self-related information (information management).

MEASURING PRIVACY

Those who would measure privacy well **must** carefully consider its complex definition. To be comprehensive, the measure should include both the social and the informational themes, acknowledge that pairs and larger groups may seek privacy as well as individuals, note that privacy may vary across the various communication channels as well as over time, and recognize that privacy-seeking may actually lead an individual to search for a party to attend.

Privacy may be measured as a behavior, as a belief, as a value, as a preference, and as an expectation. Carol Weinstein (1982) erected some "privacy booths" in an elementary school classroom and observed the children's actual use of and *behavior* in the booths. Others have examined individuals' privacy *preferences*. In one study, the privacy

preferences of dormitory residents were affected by crowded living conditions (Walden, Nelson, & Smith, 1981). The privacy in question are often those of others toward our privacy. Gary Melton (1983) claims many adults do not believe adolescents are sufficiently developed as persons to warrant privacy; that is, adults often do not value adolescents' privacy. Finally, independent of our privacy preferences, behaviors, and values, we may have or low *expectations* for privacy. Prisoners, for example, have very little privacy. When they move to new facilities, though, even prisoners expect an increase in privacy (Smith, 1982).

No comprehensive measure of privacy has yet been developed. Most privacy investigations have actually studied *perceived* privacy, using surveys, questionnaires, or interviews. Questionnaire measures of privacy are often based on the pioneering typology of Alan Westin (1967). Westin reasoned that privacy has four faces: solitude, intimacy, anonymity, and reserve.

Solitude is the popular but limited notion of privacy: being alone. **Intimacy** refers to group privacy, as when a pair of lovers wish to be alone together. **Anonymity** suggests the times when individuals wish to be among others and to interact a one person among many but do not want to be personally identified or held accountable in their own names. For example, do you ever go to a shopping center to absorb and be a part of the bustling atmosphere without wanting to interact on a personal basis with anyone?

The last form of privacy in Westin's typology is **reserve**, the creation of a psychological barrier against intrusion. In public or in private, reserve means that you wish to limit communication about yourself to others. The form and extent of this reserve varies, of course, but it is facilitated when the others around you respect your limits.

The first large-scale attempt to create an instrument for measuring privacy was made by Nancy Marshall (1972). In analyzing a pool of eighty-six privacy items, she found six groups of them, or factors, that are strongly reminiscent of Westin's typology: anonymity, reserve, solitude, intimacy, seclusion, and "not neighboring." Only the last two factors are different from Westin's, and the differences are more like embellishments than new kinds of privacy. **Seclusion** refers to living out of sight and sound of traffic and others. **Not neighboring** means disliking neighbors who casually drop in and generally not desiring much contact with neighbors.

In Sum. Empirically derived questionnaire measures support Westin's speculations about the varieties of privacy and add several others. Privacy may be considered as a preference, expectation, value, and behavior. Privacy measurement is well-developed in the area of questionnaires, but few methods are available for studying privacy as it actually unfolds.

INFLUENCES ON PRIVACY

Differences in privacy behavior, beliefs, values, preferences, and expectations originate with differences in personal characteristics and differences in situations. Some of us, because of our culture, personality, or other characteristics, require more privacy or express our privacy needs differently from others. Some situations, regardless of who is in them, engender greater or lesser privacy needs. First we will examine personal factors.

Personal Influences

Differences in a person's background are related to privacy needs. Marshall (1972) found that individuals who grew up in homes they felt were crowded prefer more anonymity and reserve as adults. Those who had spent more time in cities preferred more anonymity and intimacy. Wanderers (those who are farther from the place where they grew up) prefer less intimacy, as you might predict of individuals who found a reason to leave their families and friends behind.

There are also sex differences in privacy. In a study of dormitory residents (Walden, Nelson, & Smith, 1981), men and women responded differently to two-person and three-person room arrangements. Men assigned to two-person rooms increased their preferences for all forms of privacy (compared to their preferences before they moved into the dorms), but men assigned to three-person rooms actually decreased their preference for solitude (their preferences for other forms of privacy were unchanged). Why would men assigned to two-person rooms begin to prefer more privacy if those assigned to three-person rooms do not? The researchers discovered that men in three-person rooms stayed away from their residences more. Apparently, men in three-person rooms coped with the higher density by deciding they really didn't want to be alone so much after all (thus bringing preferences into closer agreement with reality) and by avoiding their rooms more.

Women, on the other hand, did not show changes in preference for privacy when they were assigned to two-person or to three-person rooms. They also spent as much or more time in the three-person rooms as in the two-person rooms. This suggests that women respond to high-density living arrangements more favorably than men—a finding that crowding researchers have confirmed. We need not conclude that women do value privacy less than men. Women may enjoy the company of others more and, when asked to live in higher-density situations, may have more privacy-regulating mechanisms *within* the social context. In contrast, men seem to cope by adjusting the value they place on privacy and by escaping the social context if they can.

Situational Influences

Personal characteristics influence privacy, but so does each situation we find ourselves in. If you have just returned home from a night on the town with your beloved, you will probably want more privacy than if you are going to discuss this weekend's big game with some friends. If you are discussing your finances with a bank manager, you probably want more privacy than if you were responding to a questionnaire on your attitudes toward campus architecture. In general, our preferences for and satisfactions with privacy vary with the situation (Foddy & Finighan, 19801, that is, the physical setting or the social atmosphere.

The Physical Setting. What about the environment might lead an individual to have greater privacy preferences or lower satisfaction with privacy?

Eric Sundstrom and his associates have found that *satisfaction* with privacy at work is related to the degree of physical enclosure you are allowed. In their study of office workers who changed offices, they found that employees who left walled offices for open-plan offices reported a significant decline in privacy (Sundstrom, Herbert, & Brown, 1982). In another study of office workers, the best predictor of satisfaction with privacy was simply the number of partitions around the employee's workstation (Sundstrom, Town, Brown, Forman, & McGee, 19821. In general, these studies suggest that satisfaction with privacy is, as might be expected, a function of how much the environment allows us to be alone.

The Social Situation. In principle, both the physical setting and the social situation may influence both social privacy and informational privacy. However, most research on the social theme has investigated the effect of the physical setting and most research on the informational theme has investigated the social situation. Therefore, we turn now to the informational theme of privacy—how the individual's management of information relevant to self is affected by the social situation.

What is meant here by "social situation"? Some considerations are: which person or organization is asking for private information, what will be done with the information, what kind of personal information is sought, and what social consequences will follow should the information become widely known.

Eugene Stone and his associates interviewed individuals about their experiences, intentions, beliefs, and values concerning informational privacy (Stone, Gueutal, Gardner, & McClure, 1983). The participants' responses depended on the kind of organization seeking information from them—their employer, a lending institution, a law enforcement agency, credit grantors, insurance companies, or a taxation agency. For example, which organizations (if any) *should* be allowed to collect, store, use, and disseminate information about you? According to the Stone study, many believe lenders should be allowed to do so more than law enforcement agencies. Which organizations actually *do* collect, store, use, and disseminate information about us? Participants in the study believed that employers do so much more than credit-granting agencies.

Only a few studies have investigated physical setting influences on informational privacy. The emphasis in these information-oriented studies is self-disclosure, how much self-related information one person chooses to tell another. For example "soft" rooms, furnished with cushioned chairs, rugs, wall decorations, and incandescent lighting, have been found to elicit more intimate self-disclosure than "hard" rooms with bare floors and walls, hard chairs, and fluorescent lighting (Chaikin, Derleg, & Miller, 1976).

Cultural Influences

Do individuals from different cultures require the same amount of privacy, or do some cultures desire more than others? First, there is no doubt that different societies appear to vary widely in the amount of privacy that members actually have. In some Arab societies, families want to live in houses with high solid walls around them. Elsewhere, housing patterns can be quite different. I lived for a short while in a fishing village in southern India where all the families had grass huts very close to each other, so that very little privacy was available. The villagers did not seem to desire more separation from their neighbors.

A number of studies have shown, however, that superficial appearances are deceiving. Both desired privacy and achieved privacy may be as high in the Indian society as in the Arab society.

This is illustrated in a study of privacy among the Iban society of Sarawak, in Borneo (Patterson & Chiswick, 1981). The Iban live in longhouses with very little privacy in the First World sense of the term—opportunity for solitude or intimacy behind closed doors. Are the Iban desperate for privacy, or do they not desire as much privacy as individuals in developed countries? Patterson and Chiswick found that the Iban seem to need about as much privacy as we do, but they achieve it through different mechanisms. These mechanisms are largely *social* conventions instead of the physical means we rely on. For example, the Iban have special maneuvers for changing clothes in public that preserve their modesty; there are rules against criticizing others' children, which helps to keep disputes among adults to a minimum; the longhouse is closed to outsiders on many occasions; and beginning at puberty the sexes use separate sleeping areas.

In Sum. Privacy preferences, expectations, and satisfaction are influenced by personal characteristics, by physical setting and social situation characteristics, and by culture. Women seem to manage privacy in close groups by discussing more interpersonal and intimate matters and men often achieve privacy by removing themselves from the setting.

The physical setting has important effects on privacy preferences, expectations, and satisfaction. For example, open space at work often breeds dissatisfaction while at home it is preferred.

PRIVACY AND HUMAN BEHAVIOR

We have seen that privacy is influenced by personal and situational factors. In the course of human activity, it is also-inextricably linked with other important behavior processes. Once

again we are indebted to Westin (1967) for describing most of these essential functions. First, privacy is clearly related to **communication**. Both the informational and social themes of privacy are deeply involved with communication. Second, privacy is intimately connected to our sense of control, or autonomy. Being able to choose solitude or the company of others endows us with a sense of self-determination; not having that choice makes us feel helpless. Third, privacy is important to our sense of **identity**. Solitude and intimacy, in particular, can be used to evaluate our progress in life, who we really are, what our relationship to others is and what it ought to be. Fourth, privacy allows for **emotional release**. In private we can weep, make faces at ourselves in the mirror, sing loud crazy songs, and talk to ourselves.

Westin's four functions of privacy provide a good framework for research on the relation between privacy and other human behaviors. We will first survey the research substantiating Westin's four functions of privacy then discuss the links between privacy and other behavior processes.

Communication

One reason we seek privacy is for protected communication (Westin, 1967). When we wish to talk to a friend, lawyer, teacher, counselor, or co-workers about something personal or important, we try to find a private place. Many things never get said because we cannot find a private place to say them in.

Privacy and communication at work have been the subject of several investigations. In a study mentioned earlier, Sundstrom, Herbert, and Brown (1982) found that employees who moved from walled offices to open-plan offices were dissatisfied with privacy. More specifically, the employees were unhappy about communication; they felt that the confidentiality of their conversations had suffered.

Control

Westin describes how privacy can facilitate an individual's sense of control or autonomy. Beginning on the bleak side, those who have little solitude of their own choosing—institutionalized individuals, for example—have little control over their physical or social environment. Having little control leads an individual to feel a lack of autonomy or independence. On the fortunate side of life, wealthy individuals are able to control their access to others and others' access to them nearly all the time, using an endless succession of private rooms, private offices, private clubs, private transportation, and private elevators.

There are more studies of individuals who greatly lack privacy than of individuals who have it in abundance. Smith's (1982) study of prisoners, for example, looked into prisoners' sense of control in relation to their privacy. In their former (cramped) quarters, the more prisoners preferred solitude and reserve, the less control over their lives they felt. One outcome of moving to their new, more spacious quarters was a significant change in this relation between privacy and control. In their new quarters, the more that prisoners valued solitude and reserve, the greater their sense of control. Clearly, the physical setting acts as a mediator between privacy and control. In this case, the prisoners' actual preferences for solitude and reserve did not change with the move to new quarters, but presumably their sense of control increased significantly. Those who particularly valued solitude and reserve were able, in their new more private surroundings, to feel they had greater control over their lives.

Identity

Privacy is an important part of the individual's sense of self or identity. This may seem a strange declaration; what does either informational or interpersonal privacy have to do with

self-definition? Westin (1967) demonstrates how privacy is essential to enable us to integrate all the information from daily exchanges with others. It isn't easy to make sense of all the things that happen to us while we are still on the public stage. Privacy allows the time and space to reflect on the meaning of events, to fit them into our understanding of the world, and to formulate a response to them that is consistent with our views of ourselves.

Emotion

The fourth function of privacy, in Westin's approach, is to allow for emotional release. Society discourages us from public emotional displays except under exceptional circumstances such as weddings and funerals. We often feel more emotion than we are able to display, so privacy serves as a vehicle for emotional release. A person may feel very bad, for example, and head for the nearest secluded place to cry.

Adaptation and Regulation

A final area of privacy and behavior includes the mechanisms by which we regulate privacy. When we have less privacy than we desire, we may adapt so that we no longer believe we need as much as before. In the short term, we may avoid others or seek them out to obtain the amount of social contact we desire. In the long term, some evidence suggests that if we continue to face more or less privacy than we desire, we adapt by changing our social goals to fit reality. Let's take a look at evidence.

First-year university students who live in dormitories are especially sensitive to the privacy process. Uprooted from their family homes, they need social contact. Thrown together with many others in a residential building, they also sometimes need to get away from others. As everyone who has experienced dormitory life knows, the first year is full of ups and downs related to overexposure and underexposure to other people. What mechanisms do dormitory residents use to open themselves to others and to close themselves to others? What are the long-term effects of employing these mechanisms?

Vinsel, Brown, Altman, and Foss (1980) asked students how they handled contact with others. The most popular means of seeking others out were, as you might expect, phoning others, visiting others' rooms, leaving one's own door open and inviting others to one's room. To avoid contact, students close their doors and find quiet places, tune out noise, and go for walks alone.

Not all students, however, use the same number or kinds of mechanisms. Hypothesizing a connection between the use of privacy mechanisms and success in school, the researchers compared the number of privacy mechanisms used by students who were still in school about one year later versus those who had dropped out of school. The "stay-ins" were found to have reported using both more contact-seeking mechanisms *and* more contact-avoidance mechanisms than the dropouts.

The implication, although other factors could have played a role, is that students who know how to regulate their privacy better will do better in school. This does not mean that better students always avoid others; notice that they also used more contact-seeking mechanisms. The few mechanisms that were used more by the dropouts are revealing: they went to the dorm lounge more (to seek contact) and they turned up their stereos loud (to avoid contact). The latter mechanism, in particular, may be seen as maladaptive; if you play loud music to drive others away, you probably cannot study very well either.

In Sum. A major goal of our social behavior is to regulate the amount of contact we have with others. Those who know how to use the environment to accomplish this may be more successful in areas of life beyond the social realm. Some individuals adapt to or accept situations that would seem to offer too much or too little social contact. Others faced with a shortage of traditional mechanisms of regulating social interaction develop creative solutions to the problem.

As a key process in our dealings with others, privacy is inextricably linked to communication, autonomy, identity, and emotional release.

THEORIES OF PRIVACY

One theory dominates thinking about privacy. This dominant theory, proposed by Irwin Altman, is described next. Altman (1975, 1977) conceptualizes privacy as a three-dimensional process. First, privacy is a **boundary control process**: individuals do not merely attempt to exclude others; they also find themselves seeking out others. Second, privacy is an **optimization process**. The individual is not seeking more and more solitude, reserve, or anonymity; often intimacy or being together is the goal of social activity. According to Altman, the ultimate in privacy is not necessarily being alone most of the time, but in being alone when you want to *and* being with others when you want to. Privacy is having the *right* amount of social contact, whether that is a large or small amount.

In addition, each individual's privacy desires are assumed to vary. Thus, if I desire solitude, even one other person's presence may ruin my privacy, but when I want to be with many friends, having only two around may be too much privacy for me. For Altman, too much privacy is isolation, or loneliness. Too little privacy is crowding. Yet loneliness and crowding do not depend merely on how many others surround me; they depend on how many others are around *in relation to* how many others I would like around me.

Third, in Altman's model individuals and cultures employ a variety of means to optimize their privacy; that is, privacy is a **multimechanism process**. As we have seen earlier, there is some empirical support for the idea that privacy is a cultural universal. Even societies without walls find ways to allow members ways to achieve privacy. Most people tend to think of privacy in terms of doors and walls, but privacy may be regulated by other mechanisms. Nonverbal behavior is one. A person who desires solitude may convey that desire to another person who comes near with a look that clearly says, "Leave me alone." Verbal behavior is another. Have you ever delivered an invitation to "drop by sometime" knowing that you would probably never specify exactly *which* time, mainly because you do not really want that particular person close to you? Clothing can be another privacy mechanism—consider the use of the veil in traditional Moslem society and the use of sunglasses, even on cloudy days, by some members of our society.

PRIVACY AND ENVIRONMENTAL DESIGN

A Hierarchy of Spaces

Craig Zimring (1982) is the latest in a series of design-oriented environmental psychologists to suggest that space may be categorized into a hierarchy ranging from very public to very private. **Public spaces**, exemplified by shopping malls and sidewalks are, in cities, more often sites for interactions between strangers than between friends. In smaller settings, of course, an individual may encounter a greater proportion of acquaintances and friends. Most interactions in public spaces, large and small, are unplanned and ritualistic.

Designing for privacy in public spaces is largely a matter of arranging space so that ritualistic encounters between strangers are peaceful and efficient. In terms of peacefulness, privacy at this level chiefly means control over the unwanted attentions of muggers, panhandlers, rapists, and pamphleteers. In terms of efficiency, it means arranging space so that pedestrians do not bump into one another and so that business transactions occur smoothly. It also means designing spaces that allow for positive interactions between those

strangers or acquaintances who choose to interact—for example, by having lunch together in a downtown plaza (Whyte, 1980).

Slightly more private than public spaces are **semipublic spaces**, such as apartment hallways, community rooms, unfenced yards shared by neighbors, classrooms, and lobbies. Designing for privacy in semipublic spaces is largely a matter of creating arrangements that facilitate social interaction or discourage it. In a library reading room, for example, designing for privacy often means installing carrels to shield patrons from one another visually and acoustically. In housing developments, designing for privacy may mean arranging units to increase the probability that residents will meet one another, so that the chances of building a friendly and cohesive community are enhanced.

Semiprivate spaces include places like open-plan offices, teachers' staff rooms, VIP lounges living rooms, and other settings where most outsiders are excluded, yet a heterogeneous group of individuals are welcome. A primary design objective at this level is to create effective boundaries between activities that might otherwise cause conflict (Zimring, 1982). Boundaries are hardly noticed where they work well to promote privacy but when visual or acoustic barriers are absent or where they are inadequate, there are problems.

In one city hall, a whole planning department is housed in one large room on the assumption that employees will frequently need to communicate and pass drawings among themselves. Yet the employees complain bitterly because they also need to engage in less public activities such as talking on the phone, writing reports, or holding two-person conversations. Semiprivate spaces are difficult to design well, unless they include private spaces—in which case the semiprivate space may be underutilized because everyone flees to private space.

Private spaces are normally open to one or a few individuals, at least at any one time. Bedrooms, bathrooms, executive elevators, private offices, and cars are private spaces. Zimring (1982) believes that when individuals have private spaces they are *more* sociable, rather than less sociable. By giving an individual private space, we also give them a sense of control; they are less likely to skirmish with others over public space, thereby disrupting the social life of a place. Studies of institutions, dormitories, and prisons all suggest that private space is not only highly desirable but produces less stress than no-private-space designs.

OUTLINE OF PRIVACY TEXT

- 1) What is Privacy?
- 2) Measuring Privacy
- 3) Influences on Privacy
 - a) Personal Influences
 - b) Situational Influences
 - i) The Physical Setting
 - ii) The Social Situation
 - c) Cultural Influences
- 4) Privacy and Human Behavior
 - a) Communication
 - b) Control
 - c) Identity
 - d) Emotion
 - e) Adaptation and Regulation
- 5) Altman's Theory of Privacy
- 6) Privacy and Environmental Design - A Hierarchy of Spaces

SUMMARY OF PRIVACY TEXT

- * Privacy is a process whereby we attempt to regulate interaction with others. It incorporates management of information about oneself and management of social interaction.
- * Privacy has largely been studied through questionnaires, with privacy being measured in terms of people's preferences, expectations, values, and behaviors.
- * Researchers have discussed four main aspects of privacy: solitude, reserve, anonymity, and intimacy.
- * Privacy is influenced by people's personal characteristics (e.g., gender), the physical setting (e.g., presence of partitions), and the social setting (e.g., who is seeking information). Cultural factors also play a role in how people achieve privacy.
- * Privacy serves a number of functions, including communication, control, identity, and emotional release.
- * In his theory of privacy, Altman (1975, 1977) describes privacy as a three-dimensional process involving a boundary control process, an optimization process, and a multimechanism process.
- * Architectural space should be designed with people's privacy in mind. Sensitive designers can arrange space in public places, institutions, offices, etc., to maximize individual's privacy, while providing the opportunity for some interaction.

STUDY QUESTIONS FOR PRIVACY TEXT

1. What are the "twin themes" of privacy. Define them.
2. Give an example of the effect of personal characteristics on privacy.
3. Discuss the four functions of privacy described by Westin.
4. Altman conceptualizes privacy as a three-dimensional process. Discuss this view.

Appendix B - Achievement Test

ACHIEVEMENT TEST

INSTRUCTIONS:

This is a 20-item multiple-choice test on the Privacy chapter you have just read. Please answer the questions to the best of your ability. No one is expected to get all the answers correct. If you are in doubt about the answer to a question, then guess. Choose the one best answer for each item by using the "arrow" keys and then pressing <return>.

PLEASE START THE TEST BY PRESSING <ESC>.

1. The key to Altman's definition of privacy is:
 - a) being alone.
 - b) preventing access.
 - c) control.
 - d) intimacy.
2. Privacy's twin themes are _____ and _____.
 - a) selective control; unselective control
 - b) escape; choice
 - c) management of being alone; management of being together
 - d) management of information about self; management of social interaction.
3. Privacy may be measured as all of the following except
 - a) an adaptation.
 - b) a belief.
 - c) an expectation.
 - d) a behavior.
4. According to Westin, reserve means
 - a) being alone together.
 - b) creating a psychological barrier against intrusion.
 - c) existing away from the scrutiny of others.
 - d) disliking casual conversation.
5. Anonymity, according to Westin, refers to
 - a) group privacy.
 - b) a desire to be with people, but not in one's usual identity.
 - c) disliking neighbors who causally drop in.
 - d) having no identity.
6. Marshall added two privacy factors to Westin's typology for her measure of privacy. They are
 - a) seclusion and isolation.
 - b) reserve and isolation.
 - c) seclusion and neighboring.
 - d) seclusion and not neighboring.
7. The most common way of measuring privacy is through
 - a) simulations.
 - b) naturalistic observations.
 - c) questionnaires.
 - d) field studies.

8. Marshall's (1972) study shows that individuals who grew up in crowded homes prefer _____ as adults.
- a) more reserve
 - b) more intimacy
 - c) more solitude
 - d) both a and b are correct
9. In a study of dormitory residents, Walden, Nelson, and Smith found that:
- a) females expressed greater preference for privacy under high density than males.
 - b) females did not express greater preference for privacy under high density than under low density.
 - c) males in 3-person rooms preferred more privacy than did males in 2-person rooms.
 - d) males in 3-person rooms spent more time in their room.
10. According to Stone et al.'s study, people believe that
- a) employers should and do collect personal information more so than credit-granting agencies.
 - b) credit-granting agencies should and do collect personal information more so than employers.
 - c) law enforcement agencies should be allowed to collect personal information more so than lenders.
 - d) lenders should be allowed to collect personal information more so than law enforcement agencies.
11. Social privacy refers to the individual's
- a) management of interpersonal contact.
 - b) desire to control his or her life.
 - c) management of information.
 - d) all of the above.
12. Your text suggests, that in order to increase the likelihood that a person will disclose intimate aspects of his or her life, you would want to meet in
- a) a room with cushioned chairs and wall decorations.
 - b) a room with hard chairs and bare walls.
 - c) a cafeteria, so as to provide some measure of anonymity.
 - d) All of the above are true, since the physical setting has no impact on self-disclosure.
13. There is evidence supporting the view that
- a) cultures do not differ in the amount of privacy desired but in in how they achieve that privacy.
 - b) cultures differ in the amount of privacy.
 - c) Western society primarily uses social mechanisms to achieve privacy.
 - d) privacy is best achieved through physical mechanisms.
14. Westin's functions of privacy include all of the following except
- a) communication.
 - b) social information.
 - c) identity.
 - d) control.

15. Smith's study of prisoners shows that for inmates who were moved from cramped to more spacious quarters

- a) the preference for privacy decreased.
- b) the preference for control decreased.
- c) those who preferred privacy felt more in control.
- d) those with low privacy needs felt more in control.

16. Vinsel et al. found that compared to students who dropped out of school, continuing students reported using

- a) the dormitory lounge more.
- b) more contact-avoidance mechanisms.
- c) more contact-avoidance and more contact-seeking mechanisms.
- d) both a and c are correct.

17. Altman conceptualizes privacy as

- a) a boundary control process.
- b) a multi-adaptive process.
- c) an optimization process.
- d) both a and c are correct.

18. Having the right amount of privacy, whether that is a large or small amount, is an example of Altman's view that privacy is a(n)

- a) boundary control process.
- b) multi-mechanism process.
- c) optimization process.
- d) emotional release process.

19. A classroom or apartment hallway is an example of a

- a) semi-public space.
- b) semi-private space.
- c) private space.
- d) public space.

20. According to your text, stress could be reduced in institutions by

- a) creating more semi-private spaces.
- b) making private spaces more accessible to visitors.
- c) creating more private spaces.
- d) managing semi-public spaces more effectively.

Appendix C

Aptitude test for the noncontingent feedback condition. For the no feedback condition in Study 2 the instructions were modified to reflect the fact that participants received no feedback of their performance.

Abstract Reasoning and Abilities Test

Canadian Educational Testing Service

Toronto, Canada

September, 1991

The Abstract Reasoning and Abilities test (ARAT) has been developed for use in universities and schools across Canada as a measure of student ability and as a predictor of future success in university. The content of the test is more culturally appropriate than other similar aptitude tests such as the Scholastic Aptitude Test, Graduate Record Examination, or Millers Analogies Test.

The ARAT is composed of three separate sections, each with a different type of question. The first section is composed of 20 verbal analogy questions. The second section is made up of 10 quantitative questions, followed by 20 sentence completion questions in the third section. You have a total of **30 minutes** to complete the test, 10 MINUTES FOR EACH OF THE THREE SECTIONS. You should allocate the time you spend on each question accordingly.

The test is designed to give you **immediate feedback** as to whether your response is correct. A message to this effect will appear on the monitor once you have selected a particular answer. Choose the one response that best answers the question by using the "arrow" keys. When you are sure of your choice, press <return>. PLEASE THINK CAREFULLY BEFORE PRESSING <RETURN> BECAUSE YOU WILL NOT BE ABLE TO GO BACK TO PREVIOUS QUESTIONS. There is no penalty for an incorrect answer, so it is advisable to answer all questions.

PLEASE PRESS <ESC> NOW TO TURN TO THE INSTRUCTIONS FOR SECTION 1.

SECTION 1:

VERBAL ANALOGIES**Directions:**

Each of these questions consists of two capitalized words which have a certain relationship to each other, followed by five pairs of words. Choose the pair of words which are related to each other in the same way as the words of the capitalized pair are related to each other.

An example of an analogy question is:

SHIP : HARBOUR ::

- a) flower : garden
- b) village : people
- c) nest : bird
- d) editor : newspaper
- e) car : garage

The correct response is (e), that is, ship is to harbour as car is to garage.

PLEASE PRESS <ESC> NOW TO START THE TEST.

1. SYMPHONY : COMPOSER ::
 - a) bricks : builder
 - b) policeman : law
 - c) music : singer
 - d) airplane : stewardess
 - e) sonnet : poet
2. IMPLY : INFER ::
 - a) lower : raise
 - b) question : remark
 - c) emit : receive
 - d) swindle : detect
 - e) remove : carry
3. CHRONOMETER : SUNDIAL ::
 - a) reduction : enlargement
 - b) watch : ray
 - c) chronology : analogy
 - d) measurement : visibility
 - e) computer : abacus
4. OXYGEN : RESPIRATION ::
 - a) improvement : care
 - b) camera : photography
 - c) sunlight : photosynthesis
 - d) hydrogen : digestion
 - e) drama : acting
5. REQUEST : REFUSAL ::
 - a) eat : obesity
 - b) deny : affirmation
 - c) try : failure
 - d) swim : sinking
 - e) struggle : victory
6. SHACKLED : UNFETTER ::
 - a) land : sea
 - b) omen : sign
 - c) give : take
 - d) hurt : comfort
 - e) chain : link

7. CRITICIZE : CALUMNIATE ::

- a) slap : wallop
- b) sentimentalize : slobber
- c) plan : plot
- d) ruminate : ponder
- e) socialize : fraternize

8. GARGANTUAN : MINUSCULE ::

- a) positive : negative
- b) throaty : hoarse
- c) microscopic : enormous
- d) obese : spare
- e) scintillating : vapid

9. INIQUITOUS : DISOBEDIENT ::

- a) inflammable : flammable
- b) quiescent : lethargic
- c) adult : child
- d) inequitable : equitable
- e) hostile : cool

10. LULLABY : BARCAROLE ::

- a) birth : marriage
- b) cradle : gondola
- c) song : poem
- d) carol : sonneteer
- e) night : morning

11. WEALTH : LUXURIES ::

- a) enemies : friends
- b) sandwich : bread
- c) ticket : admission
- d) crying : sympathy
- e) story : moral

12. OBOE : BASSOON ::

- a) viola : cello
- b) trumpet : violin
- c) mountain : peak
- d) globe : city
- e) antonym : pseudonym

13. PLAY : DIRECTOR ::

- a) newspaper : editor
- b) theatre : scenery
- c) butcher : baker
- d) class : teacher
- e) store : manager

14. PRODIGIOUS : ORDINARY ::

- a) egregious : remarkable
- b) incommutable : flexible
- c) rigid : inconsiderate
- d) elaborate : complicated
- e) industrious : average

15. SCALES : FISH ::

- a) bear : fur
- b) woman : dress
- c) tree : leaves
- d) egg : bird
- e) skin : human

16. HYPOTHESIS : EXPERIMENTATION ::

- a) prediction : conclusion
- b) film : camera
- c) science : achievement
- d) reality : fantasy
- e) opinion : debate

17. LABEL : CLASSIFICATION ::

- a) joke : amusement
- b) organization : disorder
- c) river : swimming
- d) land : safety
- e) beauty : perfection

18. REJECTION : SORROW ::

- a) disillusionment : surprise
- b) popularity : elation
- c) ejection : injection
- d) sensitive : beauty
- e) tyrant : soldier

19. IGNORANCE : CONFUSION ::

- a) superstition : peasants
- b) disease : poverty
- c) pain : misery
- d) light : willingness
- e) despair : loneliness

20. LOVE : APPROVAL ::

- a) admiration : surprise
- b) caution : carelessness
- c) mountain : hill
- d) jealousy : respect
- e) sickness : recuperation

END OF SECTION 1; PLEASE PRESS <ESC> TO START SECTION 2

SECTION 2:

MATH ITEMS**Directions:**

Each of the problems in this section is followed by five alternatives lettered a through e. Solve each problem and then choose the correct answer.

An example of a math question is:

A certain type of siding for a house costs \$10.50 per square yard.
What does it cost for the siding for a wall 4 yards by 60 feet long?

- a. \$800
- b. \$840
- c. \$2520
- d. \$3240
- e. \$1940

The answer is (b.) \$840. The area of the wall = 4 yds by $(60 \text{ ft}/3) = 4 \text{ yds. by } 20 \text{ yds.} = 80 \text{ sq. yds.}$ The cost = $80 \times \$10.50 = \840 .

PLEASE PRESS <ESC> NOW TO CONTINUE WITH SECTION 2.

21. A large field of 700 acres is divided into two parts. The difference of the areas of the two parts is one-fifth of the average of the two areas. What is the area of the smaller part?

- a) 225 acres
- b) 300 acres
- c) 335 acres
- d) 315 acres
- e) cannot be determined from the information given.

22. Given that $[y]$ means the greatest integer less than or equal to y , find the value of $[-1/4] + [5\frac{1}{2}] + [7]$.

- a) $12\frac{1}{4}$
- b) 12
- c) $12\frac{1}{2}$
- d) 11
- e) 10

23. Anne has 3 blouses, 4 skirts, and 2 pairs of shoes. How many different outfits can she wear, if an outfit consists of any blouse worn with any skirt and either pair of shoes?

- a) 8
- b) 12
- c) 24
- d) 9
- e) 48

24. Car A runs at a constant speed of 30 miles per hour, and car B at a steady rate of 5 miles per hour. Starting from the same spot, car B drives due west, while A drives due north for one hour and then turns due east (maintaining speed) for two hours. How far apart are the cars two hours after they both started out originally?

- a) 72 miles
- b) 60 miles
- c) 55 miles
- d) 50 miles
- e) 36 miles

25. The ratio $a : b$ equals $2 : 3$. The sum of a and b is 4. What is the ratio $(a + b) : (b - a)$?

- a) $3 : 2$
- b) $4 : 7$
- c) $5 : 1$
- d) $2 : 5$
- e) $7 : 9$

26. There are f students in a school studying French, and s students studying Spanish. There are b students studying both French and Spanish. How many students in this school are studying French or Spanish or both?

- a) $f + s$
- b) $fs + b$
- c) $f + s - b$
- d) $f(s - b)$
- e) $f + s - 2b$

27. The ice compartment in a refrigerator is 10 inches deep, 5 inches high, and 4 inches wide. How many ice cubes will it hold if each cube is 2 inches on an edge?

- a) 16
- b) 20
- c) 18
- d) 22
- e) 25

28. What percent of 200 is .001 of $2^2 \times 5^3$?

- a) .0025%
- b) .025%
- c) .0145%
- d) .00005%
- e) .2500%

29. The sides of a triangle are three consecutive positive integers. Which of the following is false?

- a) The perimeter must be divisible by 3.
- b) The perimeter must be divisible by 6.
- c) The perimeter may be divisible by 6.
- d) The perimeter must be greater than 6.
- e) The perimeter may be odd.

30. The sum of three consecutive multiples of 3 is 90. What is the largest of the three numbers?

- a) 24
- b) 27
- c) 36
- d) 33
- e) 39

END OF SECTION 2; PLEASE PRESS <ESC> TO START SECTION 3

SECTION 3:

SENTENCE COMPLETIONS**Directions:**

Each of the sentences you will be shown has two blank spaces, each blank indicating that a word has been omitted. Beneath the sentence are five sets of words. You are to choose the set of words which, when inserted in the sentence, best fits in with the meaning of the sentence as a whole.

An example of a sentence completion question is:

Legal _____ initiated by the government necessitate that manufacturers use _____ in choosing food additives.

- a) entanglements knowledge
- b) devices intensification
- c) talents decretion
- d) proclivities moderation
- e) restraints caution

The answer is e) restraints caution

PLEASE PRESS <ESC> TO CONTINUE WITH SECTION 3.

31. Some people respond to a threat of rejection by becoming very _____, while others _____ and become again like little dependent children.

- a) concise objectify
- b) militant regress
- c) impulsive diminish
- d) indignant revive
- e) amiable procrastinate

32. While the _____ goal is to meet the specific learning needs of each child, the long-range aim is to develop his or her ability to assume the _____ for his or her own learning.

- a) real initiative
- b) supposed requirements
- c) immediate responsibility
- d) apparent desire
- e) innate preparation

33. In spite of its limited _____, the magazine had a strong _____ on political thought in the country.

- a) dimension intensity
- b) appeal repression
- c) values survival
- d) insights reminder
- e) circulation influence

34. They talk a good deal about using _____ but deep down they seem to expect that society will treat them with _____ if they do so.

- a) theology reverence
- b) violence indulgence
- c) intellect appreciation
- d) machinations relish
- e) insubordination revulsion

35. Not only did she display _____ manners but her whole attitude betrayed her _____ for these people whom she considered her inferiors.

- a) elegant frustration
- b) peculiar anxiety
- c) revolting indignation
- d) abominable contempt
- e) benign attrition

36. After remaining _____ for some time the object began to move _____ upward.

- a) stationary imperceptibly
- b) illuminated variously
- c) invisible partially
- d) secondary rapidly
- e) fragile undulatingly

37. _____ may conceivably be a virtue, if it is not _____ .
- a) frugality invalidated
 - b) ambition traditional
 - c) rivalry skeptical
 - d) nobility inevitable
 - e) inconsistency habitual
38. Increased _____ on school systems do not necessarily bring results _____ with the money spent.
- a) communications applicable
 - b) implementation consistent
 - c) evaluations persistent
 - d) expenditures commensurate
 - e) objectives relating
39. An attitude toward other races or religions that is _____ will only succeed in arousing more _____ on either side.
- a) sympathetic harmony
 - b) indigent analysis
 - c) bombastic euphony
 - d) militant participation
 - e) antagonistic hostility
40. Since the salary increases each year were _____, his action in cancelling them was considered highly _____.
- a) mendacious laudatory
 - b) mandatory arbitrary
 - c) exorbitant pecuniary
 - d) contested polemical
 - e) monetary philosophical
41. Use of air conditioners and other electrical apparatus had to be _____ that summer because of the _____ of the generating system.
- a) postulated reaction
 - b) curtailed inefficiency
 - c) implemented residuals
 - d) augmented responsiveness
 - e) manipulated intensity
42. Despite their seeming _____, the subjugated tribes secretly did their best to _____ their conquerors.
- a) acquiescence thwart
 - b) harmony assist
 - c) enmity foil
 - d) rebellion embarrass
 - e) resistance vindicate

43. Dogmatists at either end of the political spectrum _____ believe in freedom for themselves but not for those who _____ their ideologies.

- a) characteristically reject
- b) suitably require
- c) firmly belabor
- d) inherently pursue
- e) vehemently support

44. Many young people, even from _____ backgrounds, show their _____ by opposing the Establishment.

- a) immature indigency
- b) morose ingenuity
- c) repressed visibility
- d) affluent alienation
- e) disadvantaged connection

45. Since the bill was _____ an excellent chance for passage by _____ observers, he decided to base his future plans on the assumption that it would finally pass.

- a) applauded diligent
- b) reported anonymous
- c) accorded impartial
- d) precluded numerous
- e) granted biased

46. Because the lawyer's _____ was considered so good, her _____ were always respected.

- a) clientele whims
- b) knowledge antiquities
- c) judgment decisions
- d) intuition reservations
- e) diplomacy institutions

47. A strange and _____ fate seemed to keep him helpless and unhappy, despite occasional interludes of _____.

- a) malevolent conflict
- b) bizarre disenchantment
- c) virulent tension
- d) ineluctable serenity
- e) intriguing inactivity

48. She staggered as if _____ and finally, becoming _____, fell and lay outstretched on the ground.

- a) nonplused resilient
- b) inebriated comatose
- c) paralyzed belligerent
- d) actuated morose
- e) mortified enervated

49. His _____ feeling of fear gradually _____ as he became more familiar with the dangers to be avoided.

- a) elusive implicated
- b) initial subsided
- c) instinctive augmented
- d) optimistics declined
- e) obvious intensified

50. The defendant was unjustly _____ as a criminal on the basis of the _____ evidence given by the paid informer.

- a) lauded voluminous
- b) deified partisan
- c) stigmatized spurious
- d) mitigated adverse
- e) victimized accurate

END OF SECTION 3:

PLEASE PRESS <ESC> TO CONTINUE WITH THE REMAINDER OF THE EXPERIMENT.