

MOTIVATIONAL ANTECEDENTS OF INTERNALIZATION:  
AN EXPERIMENTAL INVESTIGATION

by

Haleh Eghrari

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Supervised by

Edward L. Deci, Ph.D.  
Department of Psychology

University of Rochester  
Rochester, New York

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## VITA

HALEH EGHRARI

### Address:

Psychology Department  
University of Rochester  
Rochester, NY 14627  
Telephone: (716) 275-8463

### EDUCATION

1981	B.A.	University of Southern California Los Angeles, California Major: Psychology
1985	M.A.	University of Rochester Rochester, New York Major: Social Psychology
1988	Ph.D.	University of Rochester Rochester, New York Major: Social Psychology

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## Abstract

The motivational theory of internalization predicts that choiceful self-regulation of uninteresting activities is most likely to occur in a socialization context that uses minimal control in requesting engagement in the uninteresting activity, provides a meaningful rationale that explains the activity's social utility, and acknowledges the person's conflict in performing such an activity. To test this prediction, 128 individuals were randomly assigned to the conditions of the 2 x 2 x 2 (Low-Control vs. High-Control x Rationale vs. No-Rationale x Acknowledgment vs. No-Acknowledgment) factorial design. In each of the conditions, subjects were asked to engage in an uninteresting activity. Following the task engagement period, all subjects were left alone for a period of five minutes, during which the amount of time they spent on the task was recorded as the behavioral measure of internalization. The results supported the prediction: the highest level of engagement time (i.e., self-regulation) occurred in the Low-Control/Rationale/Acknowledgment condition; i.e., the context that presented all three facilitating factors. Moreover, the three facilitating factors followed an additive pattern of effect in promoting internalization. Thus, the next highest level of engagement time occurred in the two-facilitating-factors conditions and this was, in turn, followed by a lower level of self-regulation in the one-facilitating-factor conditions. However, contrary to



expectations, the no-facilitating-factor cell (i.e., High-Control/No-Rationale/No-Acknowledgment condition) produced a level of self-regulation which was as high as the one that occurred in the Low-Control/Rationale/Acknowledgment condition. Despite their similar behavioral outcomes, additional analyses indicated that different psychological processes underlied self-regulation in each of these two conditions: whereas self-regulation in the three-facilitating-factors condition was associated with perceptions of freedom, self-regulation in the no-facilitating-factor condition was correlated with feelings of being controlled. These results are interpreted in terms of the different levels of internal regulation (i.e., integrated vs. introjected) along the internalization continuum. The implications of the study's findings and some suggestions for future research are also discussed.

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## Introduction

Throughout life, there are numerous activities that are antagonistic to one's natural inclinations and interests, but adaptation to the environment requires that the person perform these intrinsically uninteresting activities. Because the person will not spontaneously engage in them, behavior regulation with respect to such activities is initially dependent upon the support of external contingencies. For instance, to ensure a child's physical safety, parents or other primary caretakers are initially responsible to inculcate constraints on a dangerous and yet interesting activity. Even though the environment initially controls regulation of these behaviors, mastery of the social world makes it necessary that the person eventually acquire independence from extrinsic controls and develop capacities to choicefully self-regulate uninteresting but important behaviors.

This process has been addressed by many psychologists, often from different schools of thought, as the issue of internalization. For example, Hartmann and Loewenstein (1962) defined internalization as the process through which "regulations that have taken place in interactions with the outside world are replaced by inner regulations" (p. 48). English and English (1958) defined it as "adopting as one's own, ideas, practices, standards or values of another person or society" (p. 272). Similarly, Deci and Ryan (1985) defined internalization as "the process through which an

individual acquires an attitude, belief, or behavioral regulation and progressively transforms it into a personal value, goal, or organization" (p. 130). Collins (1977) provided a similar definition: "Internalization occurs when an interpersonal or other external regulatory function is partially replaced by an internal or intrapsychic regulatory function" (p. 5).

The common denominator among these various conceptualizations is that internalization concerns the self-regulation of all those behaviors whose occurrence was originally initiated by external events. However, different theories disagree about the nature of this transformation and the psychological processes that underlie it.

#### Psychoanalytic Approach

In his account of the psychosexual stages of personality development, Freud (1923) postulated that a child (usually the boy) develops a sexual longing for the opposite-sex parent. The anxiety aroused from the anticipation of retaliation by the same-sex parent forces the child to identify with the rival parent and to incorporate the parental standards, or the society's values as the parents have interpreted them. These prescriptions and proscriptions are, thus, introjected into the newly evolved personality structure known as the superego whose emergence highlights the resolution of the "oedipus complex." Superego rewards the child with feelings of

pride for approved behaviors and punishes it with feelings of guilt and shame for disapproved behaviors. In this way, self-regulation replaces parental or external regulation.

More recently, other psychodynamically-oriented theorists have challenged Freud's basic conception of the person as a passive organism who is energized into action (i.e., self-regulation) only by drives and forces that are mainly in the service of anxiety-reduction. Hartmann (1939), for example, maintained that the ego provides a source of energy for action which is neutralized from, and thus independent of the forces of drives and instincts. White (1963) went still further by saying that this independent ego energy is innate rather than neutralized from drives. Both theorists emphasized that promotion of adaptation is the ego's central role. This is achieved through the functions of inner regulatory apparatuses which allow for delay in reacting to the pressures of the stimuli in the immediate environment. This process enlarges the person's range of adaptive capacities and thus ensures his or her effective and autonomous functioning.

In a similar vein, Shapiro (1981) disagreed with the classical psychoanalytic conception of self-regulation as motivated by anxiety-reduction. According to Shapiro, the capacities for anticipation, planning, and intentionality endow the developing child with the ability to self-direct choicefully and according to conscious aims. Thus, behaviors that are reactive to the transitory demands of

circumstances come to be replaced by active (i.e., self-directed) responses.

#### Empirical Approaches

Learning Theories. Within the tradition of empirical psychology, the concept of internalization, by definition, is in conflict with the basic meta-theoretical assumptions that underlie operant learning theory (Skinner, 1953), because the advocates of this tradition believe that the environment is the ultimate locus of behavior regulation. Nonetheless, operant theorists have considered phenomena similar to internalization within the basic reinforcement framework.

The experimental demonstration of such phenomena has involved intermittent reinforcement, especially on a variable ratio schedule. Specifically, in this form of schedule the organism (usually a rat or a pigeon) is positively reinforced after a varied number of responses have been emitted. A behavior that has been partially reinforced is highly resistant to extinction (Keller, 1969). In other words, return to the baseline rate is very long after the external reinforcement has been withdrawn. Thus, "self-control" is said to occur. However, once self-control is established in this way, it must be maintained externally by partially reintroducing the reinforcements (Weiner & Dubanoki, 1975).

In addition to the variable ratio schedule which basically entails positive reinforcement, self-control (or

resistance to extinction as operant theorists have conceptualized it) can also occur in a paradigm known as avoidance training (Solomon & Wynne, 1954). In this procedure, the organism learns to avoid a potentially aversive situation by responding or abstaining from responding. The avoidant behavior which has been negatively reinforced is highly resistant to extinction because, in a sense, the organism never learns that the negative reinforcement has been terminated.

A behavior control that occurs under the variable ratio schedule or avoidance conditioning, especially in an experimental setting, is directly controlled by an external agent. In other words, another person (e.g., the experimenter) applies reinforcement contingencies by presenting a positive reinforcement or removing a punishing event. However, self-control or self-management, especially under more naturalistic conditions, may involve the person him or herself manipulating the environmental variables that promote the desired behavior.

According to Skinner (1953), self-control under such conditions may be achieved through physical restraint, removing temptation, doing something else, or staying away from undesirable situations. In each of these cases, by engaging in a certain behavior (e.g., throwing away cigarettes), the individual manipulates those variables that are related to punished responses (e.g., smoking); thus, reducing the likelihood of those responses. Nonetheless,

what appears to be a behavior that is regulated by the person him or herself is governed by the same learning principles that govern regulation of a behavior from outside. That is, just as an environmental agent manipulates certain variables to elicit a certain response from a person, the person him or herself manipulates the variables that control the desired behavior.

Social learning theory (Rotter, 1954; Bandura, 1977a) has provided a different theoretical analysis of the internalization processes. In contrast to operant theorists who believe that all behaviors are controlled by associative bonds between contingencies and responses, social learning theorists pay attention to the role of inner cognitive processes in the regulation of behavior. Thus, cognitive-behavioral theories represent a major break from the S-R tradition in that, in accounting for the internal regulation of behavior, they give theoretical consideration to the role of the person or the self--the latter conceptualized in terms of cognitive structures that are involved in the evaluation and regulation of behavior (Bandura, 1978).

How do cognitions affect internal regulatory mechanisms? According to Bandura (1976; 1977a), two major components are involved in the process of self-regulation. First is a judgmental component through which the individual evaluates his or her performance by matching it against self-selected standards. Performance standards are adopted by either direct experience or observational learning



(Bandura & Kuper, 1964). The second component involves conditional self-administration of rewards (e.g., self-praise or self-criticism). Bandura and Perloff (1967) have demonstrated that self-administered contingent rewards lead to a greater behavioral maintenance than do other-administered or non-contingently-administered rewards.

Of considerable theoretical importance in the process of self-reinforcement is the construct of expectancy. Bandura (1977a) suggested that the expectation of behavior-outcome contingency serves a major motivating function in the self-regulation of behavior. Through the anticipation of future reinforcements, individuals persist in their efforts until their performances reach the self-selected standards and therefore, the consequent self-rewards. Thus, from the perspective of the social learning theory, it is anticipation of reinforcements, rather than their past response-strengthening effect, that controls behavior.

Several lines of research have documented that the expectation of behavior-outcome contingency plays an important role in behavior regulation. For instance, a person with an internal perceived locus of control is known to show greater persistence across various behavioral domains such as achievement-related tasks (e.g., Rotter, 1966). Also, when expecting behavior-outcome independence, individuals evidence motivational and performance deficits (Seligman, 1975).

In addition to the expectations of behavior-outcome

contingency, Bandura (1977b) suggested that efficacy expectations should also be present for self-regulation to occur. That is, the person needs to believe that he or she is capable of performing those activities that are instrumental to producing the anticipated reinforcements. Efficacy expectations have been shown to predict initiation and regulation of behavior. However, their application to behavior change has been mostly limited to clinical settings; for example, altering the coping behavior of snake phobics (Bandura, Reese, & Adams, 1982).

In short, learning theories maintain that self-regulation is facilitated by reinforcement processes, although the cognitive-behavioral tradition makes the additional observation that this facilitation takes place through the mediational effects of inner cognitions. In contrast, the theory that will be presented in the following section comes out of a totally different line of theorizing and makes a wholly different set of assumptions about the nature of the relation between self-regulation and extrinsic reinforcements.

Cognitive Dissonance Theory. The cognitive dissonance theory, as originally formulated by Festinger (1957), assumes that people are motivated to maintain harmony between their beliefs and their actions. If people perform an uninteresting activity (i.e., one that is inconsistent with their original attitude) in the absence of salient external justifications, they will experience a state of

tension or arousal. They will then relieve the discomfort by changing their initially held attitude in the direction of the behavior. Thus, harmony is restored.

Theoretical analysis of the dissonance processes leads to a straightforward prediction about the mechanisms that underlie internalization. Individuals develop positive attitude toward an uninteresting activity and, subsequently, self-regulate with respect to it, when they are induced to perform it with a minimum of extrinsic contingencies. Thus, it is clear that learning and dissonance theories hold divergent views about the effectiveness of reinforcements in promoting self-regulation. Nonetheless, dissonance theorists make the reasonable assumption that there needs to be a minimally sufficient external control to initially induce engagement in the uninteresting activity (see Lepper, 1983). The so-called "illusion of choice" technique--used in dissonance research to make people believe they are willingly engaged in the undesirable activity--is derived from this assumption.

Although various paradigms have been used in the experimental analysis of the dissonance phenomenon, the underlying theme in all revolves around an unattractive behavior that is performed either under a high or under a low justification condition. In the forced compliance paradigm where either role playing (e.g., Festinger & Carlsmith, 1959) or counter-attitudinal advocacy (e.g., Cohen, 1962) is used, subjects are underpaid or sufficiently

paid to perform a dull task or to write a set of false arguments, respectively. In the insufficient deterrence paradigm (e.g., Aronson & Carlsmith, 1963; Freedman, 1965) subjects are mildly or severely threatened to refrain from performing an enjoyable activity. And in the effort justification paradigm (e.g., Aronson & Mills, 1959) subjects either expend minimal effort or undergo a great deal of discomfort--that is to say, there is inadequate justification--to participate in a boring group discussion.

The convergence of results across different paradigms strongly supports the dissonance prediction: that when an initially unattractive behavior is minimally justified by external rewards or constraints, people evidence a greater interest in the behavior. However, it should be noted that most of these studies have measured post-manipulation attitudes, rather than behavior, as an index of change. Nonetheless, dissonance theorists use this index to infer self-regulation.

Attribution Theory. The fourth empirical theory that will be outlined here is the attributional approach, the hallmark of which is the self-perception theory (Bem, 1967; 1972). Bem, who was primarily inspired by the operant tradition, downplayed any direct access to private internal events. Instead, he suggested that knowledge of one's internal states is often inferred from the observation of one's public behavior and the surrounding controlling stimuli (i.e., reinforcements). When the behavior and the

external contingencies co-occur, an attribution will be made to the environment as the primary determiner of behavior. In the absence of such co-occurrence, the behavior will be taken to reflect inner sources of regulation, such as personal affects and attitudes (e.g., Bandler, Madaras, & Bem, 1968).

Self-perception theory received a great deal of attention, in part because it offered an alternative explanation of the dissonance effect. Bem (1967) suggested that there is no need to posit a motivational state as a mediator of change in attitude. Rather, when insufficiently rewarded, the person observes that his or her behavior has occurred in the absence of plausible external causes. Therefore, the person attributes such a behavior to internal sources; namely, favorable attitudes.

In recent years, self-attributionists (e.g., Lepper, 1983) have argued that a similar set of inferential processes underlie internalization. That is, when external contingencies are insufficient to account for one's behavior, the person will attribute his or her actions to personal attitudes and interests and will, therefore, self-regulate them in the future. Because self-attribution and dissonance theories make similar predictions about the antecedents of internalization, support for the self-attributional analysis of internalization has been mostly confined to a translation of dissonance findings into an attributional language. Whether dissonance or attribution

processes mediate change and self-regulation is an issue that is beyond the scope or the interest of the present paper.

Motivational Theory. Although various empirical theories that were thus far reviewed disagree in their specific accounts of internalization, they share in common the implicit assumption that the person is passive vis-a-vis the internalization process--a point which will be discussed later. On the other hand, the motivational theory of internalization (Deci & Ryan, 1985), which provides the basic theoretical framework for the present research, is based on a different set of meta-assumptions about the internalization process and the nature of the interchange that exists between this process and human organisms.

At the core of this motivational theory is the conception of human beings as active organisms. This means that a person acts on (i.e., actively manipulates) his or her environment and thereby develops the capacities that are necessary for a competent interaction with the external world. This active engagement with the environment, the theory suggests, is an intrinsically motivated process. That is, the basic needs for self-determination and competence are the primary energizers of the development of self-regulatory capacities. Thus, the underlying process through which one internalizes regulations is motivated by the inherent satisfaction that exists in such a transformation, although the specific behavior for which

self-regulation develops is performed for extrinsic reasons.

The motivational analysis of internalization suggests that the development of self-regulatory mechanisms is not something that the environment does to the person. Rather, it is something that the person actively strives for, and this is fueled by the innate need to be choicefully effective in dealing with the environment. This is the basic difference between the motivational and the previously mentioned theories of internalization. Lets take the traditional operant theory. From this perspective, self-control of the behavior is directly determined by the reinforcing properties of environmental stimuli. Of all the various theories, the operant tradition endorses the passive-organism viewpoint most explicitly; therefore, it will receive no further elaboration.

The cognitive behavioral tradition, on the other hand, has made the important contribution of acknowledging cognitive influences in regulatory processes. However, this approach continues to conceptualize behavior as being under the control of reinforcement processes. Specifically, behavior self-regulation, according to the social learning theory, is determined by the expectation of reinforcements. In this sense, the organism takes on a somewhat passive role, since it is the attainment of reinforcements, rather than intrinsic satisfaction, that motivates the person to self-regulate.

In contrast to the behavioral theories, dissonance



theory predicts a negative relation between internal regulation and external reinforcements. However, a closer look at the dissonance reduction processes reveals that the passive-organism conception is implicit in such processes as well. According to the dissonance theory, self-regulation results from the need to relieve the tension or the discomfort that is induced by inconsistency. This mechanism is conceptually similar to the drive-reduction processes (e.g., Hull, 1943) wherein the behavior acquisition is hypothesized to be controlled by the reduction of discomfort. Thus, a self-regulation that is based on dissonance reduction is not a fully organismic process, because self-regulation results from the person being "pushed" by inner tension and anxiety to rationalize his or her behavior, rather than being motivated to actively seek out effective accommodation.

Finally, the attributional approach suggests that self-regulation results from the observation of public behavior and its attribution to inner causes when no external justifications are available to explain such behaviors. This process, attributionists have argued, is similar to an observer's perception of the actor's behavior and the subsequent inference of his or her inner states (Bem, 1972). That is, actors infer their own dispositions by relying on extrinsic cues: public behaviors and the conditions within which they occur. Based on this analysis, self-regulation that results from inferential processes is mediated by the



information provided by extrinsic cues. Stated differently, self-regulation is determined, not by an inner, organismic motivation to regulate oneself effectively, but by a cognitive self-justifying process; thus, a somewhat passive-organism viewpoint.

Deci and Ryan (1985) have further suggested that internalization of regulations is a developmental phenomenon that proceeds along a continuum. At the lower levels, the mode of behavior regulation is primarily external. That is, behavior regulation occurs only in response to contingencies that are available in the immediate environment. Thus, at this stage the provision of extrinsic controls is necessary to elicit the regulation of an uninteresting behavior.

As the development of internalization moves beyond the external regulatory stage, the individual learns to regulate him or herself in the absence of immediate external contingencies. When the internal regulation is introjected, one essentially self-regulates in response to internalized contingencies as they represent the previously external ones. That is, the person self-regulates in reaction to internally imposed controls. Thus, even though at this stage contingencies from the immediate environment are not necessary to elicit the behavior, self-regulation is still somewhat controlling.

Ryan (1982) provided the first empirical support for the idea that internally controlling regulation is not self-determined. In his study, half the subjects were led to

perform an interesting activity in a way that could be characterized as internally controlling; they became ego-involved in the activity and performed it to prove to themselves they were intelligent. Results indicated that internal controls carried the same functional value as external controls, and they undermined intrinsic motivation. Moreover, internally controlling events created the same experience of pressure and tension that is characteristic of being controlled by external events. Although Ryan's study concerned intrinsically interesting activities, its application to internalization seems clear: when a behavior has been internalized in a way that leads the person to regulate him or herself in an internally controlling style, the regulation is not self-determined and the internalization process could not be said to have been completed.

On the other hand, when a regulation of an uninteresting behavior is integrated, it has come into harmony with one's existing internal structures (i.e., one's interests and inclinations). This form of internal regulation, which represents the most advanced stage of internalization, is self-determined because an undesirable value or regulation that is in harmony with one's interests, in essence, has become one's own; thus, a sense of personal responsibility or self-determination that goes along with carrying it out.

The distinction between integrated and introjected

forms of internal regulation raises some interesting and theoretically important issues with regard to the previous, nonmotivational theories that have been discussed throughout this paper. For one, these theories have failed to differentiate these two forms or levels of self-regulation. From their point of view, any regulation that occurs in the absence of external contingencies reflects internalization of that regulation.

Furthermore, conceptualization of the internalization process in terms of a developmental continuum provides a framework for a theoretical analysis of the processes that these theories have predicted to underlie internalization, and the level of self-regulation that results from such processes. Lets first consider the social learning perspective on internalization. This theory suggests that self-control occurs when the person expects to receive certain self-administered reinforcements. Stated differently, self-regulation is determined by internally-imposed contingencies. Based on the preceding discussion, one can see that a self-regulation that is determined by such processes corresponds more closely to introjected rather than to integrated internal regulation. Although behavior regulation takes place in the absence of external contingencies, it is nonetheless determined by the self-imposed reinforcement contingencies.

From the perspective of both dissonance and attribution theories, self-regulation is facilitated when controlling events are minimal. However, the processes that, according to these theories, underlie internalization may lead to a behavior regulation that is not fully self-determined. For instance, from the attributional point of view, self-regulation is determined by attributing to oneself motivation that is aligned with the behavioral cues. However, self-regulation that results from this process could not be said to be integrated (and thus self-determined), because it does not involve identifying the motivational processes that regulated the behavior in the first place. Furthermore, self-regulation that results from dissonance-reduction process may not be fully self-determined, because behavior regulation under such processes is mediated by the need to relieve the pressure or anxiety that is created by conflict.

Although internal regulations that are achieved through the social learning, self-perception, or dissonance processes may correspond more closely to introjected regulation, self-regulation through principles of operant conditioning would perhaps more closely represent the external regulatory level of the internalization process. According to the operant tradition, self-control is a direct result of the environmental variables. Even though the individual him or herself may manipulate these variables (for example, avoid them) to achieve the desired regulation,

the variables are still in the immediate environment. This form of behavior control is more consistent with the external regulatory mode in that immediate extrinsic contingencies are necessary to elicit the behavior.

These basic theoretical differences between the non-motivational and the motivational theories lead to different predictions about the conditions that facilitate internalization. As mentioned earlier, the motivational approach to internalization is based on the premise that the process of internalizing a regulation is intrinsically motivated; that is, it is energized in part by the needs for self-determination and competence. Accordingly, Deci & Ryan (1985) have hypothesized that conditions that influence these basic needs, and therefore affect intrinsic motivation, would also promote internalization.

#### Contextual Influences on Intrinsic Motivation

Research on intrinsic motivation over the past decade has provided substantial support for the undesirable effects of external controls on intrinsically motivated behaviors. This body of research indicates that performing an inherently interesting activity in the presence of events that control behavior results in reduced intrinsic motivation and impaired performance. For instance, monetary rewards (Deci, 1971), avoidance of punishment (Deci & Cascio, 1972), good player award (Lepper, Greene, & Nisbett, 1973), surveillance (Lepper & Greene, 1975), and competition (Deci, Betley, Kahle, Abrams, & Porac, 1981) have all been

demonstrated to negatively affect intrinsic motivation. On the other hand, performing interesting activities in the presence of events that support self-determination (e.g., choice of task) leads to enhanced intrinsic motivation (Zuckerman, Porac, Lathin, Smith, & Deci, 1978).

Deci and Ryan (1985) have further suggested that the impact of external events on intrinsic motivation is not solely determined by the objective characteristics of these events, but also by the interpersonal context or the ambiance within which these events are communicated to the recipient. Research has indicated that when communicators such as teachers are oriented toward supporting autonomy, the intrinsic motivation and self-esteem of their students are reportedly higher (Deci, Nezlek, & Sheinman, 1981; Deci, Schwartz, Sheinman, & Ryan, 1981). Similarly, students who perceive that their classroom climate is autonomy- versus control-oriented report greater mastery motivation and feelings of self-worth (Ryan & Grolnick, 1986). Further research has shown that intrinsic motivation is undermined even when a single phrase with a controlling connotation (e.g., should) is added to the content of a communication (e.g., Ryan, Mims, & Koestner, 1983). Taken together, the results of these studies indicate that in addition to objective external events, the interpersonal ambiance (defined more specifically in terms of the locution of communication, and/or the intent and orientation of the communicator) can have powerful effects on motivational

processes.

Theoretical interpretation of the intrinsic motivation research has been offered by Deci and Ryan (1985) in terms of the cognitive evaluation theory. The theory suggests that when events control behavior, they undermine intrinsic motivation through promoting an external perceived locus of causality for that behavior. Thus, when such events as rewards or controlling language are presented, the individual tends no longer to initiate the behavior out of interest and mastery, but rather out of the pressure to attain or avoid certain extrinsic outcomes.

The theory further suggests that when events support autonomy or self-determination, they enhance intrinsic motivation through promoting an internal perceived locus of causality. Thus, when control is minimized (e.g., through providing an opportunity for choice) the individual engages in the behavior for the feelings of interest and mastery.

An additional line of research has also investigated the effects of positive performance feedback on intrinsic motivation (e.g., Deci, 1971; 1975; Blanck, Reis, & Jackson, 1984). In general, the data have indicated that positive feedback can enhance intrinsic motivation. This is typically interpreted in terms of the feedback enhancing subjects' perceived competence and thus, increasing intrinsic motivation which is based, in part, on the need for competence. However, additional research has shown that positive feedback will enhance intrinsic motivation only if



the feedback is administered in the context of choice or self-determination. When this information is communicated controllingly, it adopts the same deleterious characteristics as other types of controls and therefore disrupts the perception of internal causality that is necessary for intrinsic motivation.

Empirical support for the negative effects of controlling competence feedback has been documented in those studies where, subsequent to performing an interesting activity, subjects receive verbal praise--for example, "you did well." The control manipulation is then introduced through the use of controlling language--for example "you did well, as you should." The results of these studies have invariably demonstrated that there is less intrinsic motivation when positive performance feedback is administered controllingly than when it is administered without the controlling elements added (Fisher, 1978; Pittman, Davey, Alafat, Wetherill, & Kramer, 1980; Ryan, 1982).

To summarize, past research has shown that events or interaction settings that enhance a person's sense of being self-determining or having an internal perceived locus of causality with regard to an activity will promote intrinsic motivation for that activity, relative to objective rewards or interaction settings that leave the person feeling controlled or pressured in some specified way. However, in addition to rewards or controlling interaction settings,



competence feedback that is communicated through controlling language will also promote an external perceived locus of causality. The person will not perform the activity to feel competent, but rather to avoid or attain the control that is conveyed in the feedback. Thus, controlling events can not only include extrinsic outcomes or controlling interpersonal settings, but also competence feedback that is communicated controllingly.

#### Contextual Influences on Internalization

The application of the intrinsic motivation research and the cognitive evaluation theory's interpretation of it to internalization processes leads to a set of predictions about the nature of events that facilitate or forestall internalization. Specifically, because internalization is an intrinsically motivated process, the presence of events that support autonomy (e.g., using a non-controlling language to communicate competence feedback or to request engaging in an uninteresting activity) will promote an internal perceived locus of causality and thereby, enhance motivation for internal regulation. On the other hand, the presence of controlling events (e.g., using a controlling language when communicating the feedback or the request for task engagement) will promote an external perceived locus of causality and thus, hinder motivation for internal regulation.

The issue of autonomy versus control is especially relevant to the development of internalization, because socializing agents such as parents or teachers are initially

responsible for presenting the external structures that elicit engagement in the uninteresting behaviors. Thus, self-regulation is predicted to be facilitated when the uninteresting behavior is initially elicited in a context that involves a minimum of control. On the other hand, the presence of excessively controlling contexts is predicted to impede self-regulation of an uninteresting behavior.

Past research on internalization has provided some support for the undermining effects of extrinsic controls on internalization. Within the motivational framework, Eghrari and Deci (1986) conducted the first experimental test of this assertion. In that study, two groups of subjects were requested to engage in an uninteresting activity. In the self-determination condition, the context of communication was structured in a way that supported autonomy. Specifically, the request for engagement in the activity and the competence feedback were communicated through non-controlling locution. In the controlling condition, the request and the performance feedback were presented controllingly. Results indicated that in the self-determination condition subjects evidenced greater self-regulation.

Other studies from the motivational perspective have also provided evidence that is relevant, albeit indirectly, to this basic issue. In one study (Koestner, Ryan, Bernieri, & Holt, 1984), children who worked on an interesting task were given limits with regard to the target task. Limiting

one's behavior is, presumably, an uninteresting behavior for children to do. When the limits were presented in a noncontrolling manner, children's interest for the target activity was greater than when they were presented controllingly. In another study, Grolnick and Ryan (1987) presented fifth-grade children with reading materials from a textbook. Some children studied the passage in a context that supported autonomy. Another group studied it in a controlling setting. The measure of interest was the degree of enhancement in the motivation for learning the material. Results indicated that children who learned under noncontrolling conditions evidenced greater conceptual learning as well as feelings of interest and enjoyment for the material. Furthermore in a field study, Grolnick and Ryan (1986) correlated teachers' orientations towards autonomy versus control with students' self-regulation of achievement-related behaviors. As expected, children who were in the classrooms of autonomy-oriented teachers displayed greater self-regulation, measured in terms of the value attached to the behaviors.

Additional lines of research, although based on diverse theoretical frameworks, have provided results that are consistent with the ones mentioned above. Research on therapy outcomes is especially relevant, because maintenance and generalization of change subsequent to termination of the therapeutic procedure is, in essence, the transformation of external into internal regulation. For instance, studies

within the attributional framework have shown that internal attributions for change are highly related to maintenance of therapy outcomes (Davison et al. 1972; 1973). Bandura and his colleagues (e.g., Bandura, Jeffery, & Gajdos, 1975) have also demonstrated that self-directed experiences with the feared object lead to a greater fear reduction than do therapist-directed experiences.

Similarly, Dienstbier and Leak (1976) found that when subjects were not rewarded to lose weight, they evidenced greater maintenance following the treatment period. In another study, Bogart, Loeb, and Rutman (1969) demonstrated that the psychiatric patients who were paid to attend vocational workshops displayed a greater negative attitude and absenteeism when rewards were terminated. In sum, the evidence reviewed above supports the general assertion that an autonomy-supportive environment is one necessary ingredient in the development of internal regulation.

#### Contexts and Integrated Internalization

Even though the integration of regulations is a developmental process and, therefore, correlated with age (e.g., Chandler & Connell, 1987), situational events also play an important role in influencing this process, and thus affecting whether internalized regulations will be internally controlling, even when that is not age appropriate. Specifically, because internalization involves inherently uninteresting behaviors, it creates conflict between the person's inclinations or interests and

the self-regulation of such behaviors. Accordingly, the motivational theory has suggested that in addition to an autonomy-supportive context, situations that promote harmony between the undesirable behavior and the person's interests should also be present, if an integrated (i.e., self-determined) internalization is to occur.

One situational event that is expected to promote harmony and thus, facilitate internalization and its integration is the acknowledgment of the conflict that exists between the person's inclinations and the behavior in question. When the socializing agent (namely, one who initially requests engagement in an uninteresting behavior) acknowledges the person's feelings of disinterest toward the behavior, the person can learn that the regulation of that behavior and his or her inclinations can harmoniously coexist. In other words, it can reduce some of the pressure inherent in doing what one does not want to do.

Some indirect evidence in support of this assertion has emerged from past studies. For example, in the Koestner et al. study on setting limits, when the experimenter conveyed an acceptance of contrary feelings about limits, children's intrinsic motivation for the target task remained unaffected. Although in that study, the measure of interest was intrinsic motivation, results provide some relevant support for the enhancing effects of acknowledgment on motivational processes. More direct evidence comes from the Eghrari and Deci study. When subjects received an

acknowledgment of their disinterest, they displayed a greater internal regulation of an uninteresting behavior. Moreover, for these subjects internal regulation was highly associated with the perception of self-determination, suggesting that some degree of integration had occurred. Nonetheless, since this study tested the joint effect of the acknowledgment and autonomy, no definitive conclusions can be drawn about the unique contribution of the acknowledgment to internal regulation.

Still another situational event that is expected to positively influence harmony and integration concerns the provision of a meaningful rationale for the behavior. Because internalization involves behaviors that are useful and important for effective functioning and yet uninteresting, people need to know why they are being requested to engage in such behaviors, if they are to self-regulate them choicefully. This is so, because regulation of an uninteresting behavior in the absence of reasonable justifications would be in conflict with one's interests. However, when the person understands the usefulness and importance of the activity, he or she will be more likely to self-regulate with respect to it, not out of obligation, but because the person has identified with the activity's value for adaptation. Thus, a rationale that emphasizes the usefulness and importance of a behavior from the behavior's perspective is more likely to promote harmony and facilitate an integrated self-regulation of that behavior.

Self-report studies that have measured children's responses to why they perform certain uninteresting activities provide one indirect source of support for the theoretical significance of the rationale. In the Chandler and Connell study, older children who presumably had achieved a higher degree of integration, reported an understanding of the consequences of performing the uninteresting behaviors. These children attached greater importance to these activities. Also, the Eghrari and Deci study provided some preliminary support for the effect of the rationale. Subjects who received a rationale that emphasized utility and importance evidenced greater self-regulation. These subjects also reported a higher degree of self-determination, relative to those who had received the rationale, but in a manner that emphasized pressure and control.

In sum, the motivational theory of internalization suggests that the presence of three major events will facilitate internalization and its integration. An autonomy-supportive (or noncontrolling) context is the first necessary event. Although necessary, autonomy is not sufficient since conditions that promote harmony should also be present if a more fully integrated internalization is to occur.

It is interesting to note that the Eghrari and Deci study also provided some evidence that is indirectly relevant to the nonmotivational theories of internalization.



In that study, subjects displayed the highest level of integrated self-regulation when they performed in a setting that not only minimized control, but also promoted harmony by means of providing an acknowledgment and a rationale (the self-determination condition). Subjects displayed less internalization when they performed in a setting that minimized control, but did not provide a rationale. This condition corresponds to what dissonance and attribution theories would have predicted to result in a greater internalization; subjects had the least justification--there was neither rationale, nor control, either of which could have provided justification for doing the task.

Interestingly enough, the extent of self-regulation in the condition that provided the least justification did not differ from the one in the condition that had the greatest justification (i.e., high control and rationale); a condition that dissonance and attribution theories would have predicted to produce the least internalization. Moreover, this high justification condition came closest to representing the context that learning theories would have predicted to result in a greater internalization--there were clear contingencies and external reinforcement. Yet subjects in this condition evidenced significantly less self-regulation than those in the self-determination condition and no more than those who did not receive any justification.



### Additive Model and Hypotheses

The motivational theory of internalization calls for a set of conditions that are predictive of internalization and its integration. Moreover, the theoretical analysis of the conditions that, according to nonmotivational perspectives, underlie internalization suggests that these theories are inadequate to account for the development of integrated self-regulation. Although the evidence that has emerged from the motivational framework supports its predictions, this line of research has been largely limited to nonexperimental studies. The Eghrari and Deci study which experimentally manipulated the antecedents of internalization did not examine the independent effects of minimal control, acknowledgment, and rationale.

Therefore, the purpose of the present research was to investigate, within a laboratory setting, those conditions that the motivational theory predicts to promote internalization. Specifically, three major factors were hypothesized to facilitate self-regulation. The extent of control in the context of interaction was one major dimension, with a minimally controlling context being predicted to facilitate a greater degree of self-regulation. A meaningful rationale and the acknowledgment of disinterest were the other two factors that were predicted to facilitate self-regulation.

From a conceptual point of view, the nature of the relationship between a low-controlling context, the rationale, and the acknowledgment is such that the three factors can be expected to have an additive effect in facilitating internalization: the minimally controlling context would help to promote the sense of self-determination that is necessary for internalization, and the addition of the rationale and the acknowledgment would further enhance internalization by promoting the sense of harmony that is necessary for integration of the internalized regulation. Thus, the presence of all three events within the same interaction context should have the greatest, and their absence should have the least effect in promoting internalization. Furthermore, those contexts that eliminate one and those that eliminate two of the three facilitating factors should, respectively, result in moderately high and moderately low levels of internalization.

On the basis of the additive model presented above, the following specific predictions were formulated: although a minimally controlling context, rationale, and acknowledgment were each expected to have an overall positive effect, the highest extent of self-regulation was predicted to occur when a low controlling context provided both the rationale and the acknowledgment. The next highest levels of self-regulation would occur when the minimally controlling context provided either the rationale or the acknowledgment but not both, or when a controlling context provided both

the rationale and the acknowledgment. In comparison, lower levels of self-regulation were predicted to result when a minimally controlling context provided neither the rationale nor the acknowledgment, or when a controlling context provided either the rationale or the acknowledgment but not both. Finally, a controlling context that provided neither the rationale nor the acknowledgment was expected to result in the lowest level of self-regulation.

Even though the present research was not designed to test the nonmotivational theories of internalization, the foregoing discussions suggest that these alternative perspectives would make differential predictions about the effectiveness of each of the three facilitating variables in promoting self-regulation. For instance, from the perspective of both the dissonance and attribution theories, a minimally controlling context should result in a high level of self-regulation. Furthermore, both theories would predict that the rationale will provide an external source of justification, and therefore should reduce self-regulation.

However, the two perspectives would hold divergent views regarding the function of acknowledgment. According to dissonance, making salient the initial attitude of disinterest should lead to a greater subsequent change (i.e., self-regulation), because attitude saliency would augment inconsistency and would, therefore, result in a greater need to reduce it through change (Ross & Shulman, 1973). Thus, when subjects receive an acknowledgment of

their disinterest, they will experience a greater dissonance and will display a higher level of internalization. On the other hand, attribution theory would predict that the acknowledgment of disinterest should minimize self-regulation, because the information that it provides is in contrast with the subjects' overt behavior. This would prevent subjects from making inferences on the basis of overt behavior and would, therefore, minimize subsequent change (i.e., self-regulation).

Finally, from the perspective of learning theories a high level of self-regulation should occur in a highly controlling context, because high level of control provides extrinsic contingency for task performance, and therefore reinforces self-regulation. The rationale should also lead to a high level of self-regulation, because the importance and usefulness of the task would create extrinsic contingency for performing it and, therefore, would reinforce self-regulation with respect to the task. However, learning theories do not address the issue of acknowledgment, and thus no predictions can be offered regarding the impact of this variable.

An empirical test of the predictions presented earlier required a laboratory setting that is an experimental analogue of the socialization context. Accordingly, subjects (persons to be socialized) interacted with an experimenter (the socializing agent) who requested that they engage in an uninteresting computer-assisted tracking task

and communicated to them the relevant instructions. When the context of communication was noncontrolling, the experimenter refrained from using controlling locution. Specifically, the experimenter communicated the request and the instructions for task engagement without any reference to words such as "should," "have to," "must," etc. Moreover, subsequent to task performance, the experimenter delivered the competence feedback with noncontrolling language.

In the controlling context, the experimenter essentially delivered the same statements except that words with a controlling connotation were used. So, for instance when delivering the competence feedback, the experimenter said: "You have done well, as you should." Within each of these contexts, the experimenter also delivered to some of the subjects the acknowledgment of conflict and/or the rationale for the task. Following the initial task-engagement period, all subjects were given the opportunity to either freely (i.e., in the absence of extrinsic contingencies) engage in the task or do something else. During this period, engagement in the activity was the major behavioral measure of internalization.

Although an internalized regulation was measured in terms of a free engagement in the activity, a behavior that is regulated in the absence of extrinsic contingencies may not necessarily reflect an integrated (i.e., self-determined) regulation, because both the integrated and the introjected

forms of internal regulation would manifest themselves in similar behavioral outcomes--they would be performed in the absence of extrinsic contingencies. Thus, it was important to differentiate the two from each other. To achieve this, subjects were also asked to complete a questionnaire that was designed, in part, to assess their experience of self-determination. Given the theoretical distinction that exists between the introjected and the integrated self-regulation, it was predicted that a positive association should exist between the task engagement and the perception of self-determination when the task was self-regulated choicefully (i.e., integrated self-regulation), while a negative association should exist when the task was self-regulated controllingly (i.e., introjected self-regulation).

Finally, in order to explore the role of personality attributes in internalization, subjects filled out the General Causality Orientation Scale--often referred to as the ACI Scale--(Deci & Ryan, 1985). Causality orientations are relatively enduring aspects of people and characterize the degree to which people experience their behaviors as self-determined. When autonomy oriented, individuals will experience a high degree of choice with respect to the initiation and regulation of their behaviors. When control oriented, they will organize their behaviors with respect to either environmental or internal controls. And when imper-  
sonally oriented, individuals will perceive the effective

regulation of their behaviors as being beyond their intentional control. The ACI scale was included for exploratory purposes and therefore, no specific predictions are offered. However, because the ACI Scale measures individuals' perceptions of self-determination with regard to the initiation and regulation of their behaviors, it is theoretically relevant to internalization processes.

## METHOD

### Overview

Subjects were asked to engage in an uninteresting activity. The request and the instructions for task engagement, as well as the efficacy feedback subsequent to task engagement were communicated to the subjects in a manner that was either noncontrolling or controlling. Within each of these two conditions, one group of subjects received an acknowledgment that the task was uninteresting and a rationale that emphasized the usefulness of the task; a second group received only an acknowledgment statement; a third group received only a rationale statement; and a fourth group received neither an acknowledgment, nor a rationale statement. Following the task engagement and feedback period, all subjects were left alone in the experimental room for a period of five minutes. During this period the amount of time subjects spent on the task was recorded. This index served as the behavioral measure of internalization. Finally, subjects completed a questionnaire that assessed various subjective experiences that might have been associated with self-regulation.

### Subjects

One hundred and twenty eight undergraduate students from the introductory psychology course at the University of Rochester participated in this study in partial fulfillment of a course requirement. Equal numbers of each sex were randomly assigned to the conditions of the 2 x 2 x 2 (Low-



Control vs. High-Control x Acknowledgment vs. No-Acknowledgment x Rationale vs. No-Rationale) factorial design. Thus, each of the eight cells consisted of 8 females and 8 males.

### Apparatus

The target activity in the present study involved working on an Apple IIe micro-computer that was programmed in such a way as to present small dots of light, one at a time, at different time intervals and with different placements on the screen. The task was for the subjects to watch the screen and, as soon as they saw the light, to press the space bar, thereby making the light disappear. The light would then reappear after a few seconds. Thus, the activity involved attending to the screen, pressing the space bar as soon as the light appeared, and then waiting for the light to reappear. This sequence was repeated over several trials. The time that elapsed between the disappearance and the next reappearance of the light varied randomly from trial to trial, ranging from 2 to 8 seconds. The computer program has been designed to allow the subject to practice for 60 seconds. Thereafter, the actual trials lasted for 300 seconds. The computer signaled the termination of the trials.

Past research on internalization which has used the same task (Eghrari & Deci, 1986) has indicated that subjects experienced this activity to be quite boring and uninteresting. At the same time, because it involved focused attention,

working on it could easily lend itself to a believable rationale--that it will be useful for improving concentration.

### Procedure

Subjects were run individually by a same sex experimenter. Upon arriving, subjects were ushered into the experimental room and seated at one side of the room where there was a chair and a coffee table with several magazines casually placed on it. The experimenter introduced him or herself and asked the subject to complete the ACI causality orientation scale. Thus, subjects in all conditions were told:

"Hi. My name is \_\_\_\_\_, and I am your experimenter. Before starting this experiment, there is something I'd like you to do. This is a questionnaire which a couple of professors are working to validate. In order to do this, they have asked various experimenters to hand it out at the beginning of their experiments this semester. Maybe you've seen it before in one of your experiments. But I'd like you to take a few minutes and fill it out."

This explanation was provided so to disassociate the ACI from the rest of the experimental procedures.

Following completion of the ACI scale, the experimenter returned to the room and began the experimental manipulation of high versus low control while communicating to the subject the general purpose of the study, the requested activity, and the instructions for engaging in that activity.

### Noncontrolling versus Controlling Induction

One half of the subjects were assigned to the low-controlling and one half to the high-controlling conditions. In both conditions, the experimenter's communication with the subject began as follows. (Note that the underlined words were used in the low-controlling condition only, while in the high-controlling condition words in the parentheses were substituted for the underlined words).

"In this experiment we are interested in finding out how people experience and perceive different types of activities. This activity involves engaging (requires you to engage) in several trials of a perceptual task, and afterwards, answering a questionnaire about your experience with the activity. The task is called vigilance. Specifically, it involves attending (what you must do is attend) to the computer screen, and pressing (press) the space bar as quickly as you can, every time that a light appears on the screen. Once we move to the terminal I will fully explain all the details (what you should do) and after that you may get ready to start the activity. As you know you can withdraw from the task at any time, without any penalty (you must get ready to start the activity)."

Following these introductory remarks, subjects were asked to move to the other side of the room and be seated at the micro-computer. The experimenter then delivered the instructions for engaging in the task:

"OK, you may have a seat here. Before we begin the actual trials, you may have a few practice trials (should practice for a few trials). I will first explain what to (you should) do and let you know when to begin. All you do (you should do) is press the space bar and a light will appear on the screen. As soon as you see the light, you press (should press) the space bar again and the light will disappear. Then after a few seconds it will reappear again, in which case you press (should press) the space bar again, and so on. The screen will signal the end of the practice trials and we will get ready for the actual trials. Is everything clear? OK. You may (should) start the program now by pressing the space bar."

Following the practice trial, the experimenter continued:

"Now that you have a sense of the task, you may (must) begin the actual trials. After you finish I'll ask you to answer a questionnaire. While doing this, I'll be seated there. When the actual trials are over, the screen will signal to you the end of the trials so that you can let me know. OK...If you are willing to continue, all you need to do is to start the activity by pressing the space bar (OK...Again, you should start the activity by pressing the space bar)."

### Acknowledgment Manipulation

One half of subjects in each of the low-controlling and the high-controlling conditions were assigned to the acknowledgment condition, and the other half were assigned to the no-acknowledgment condition. Following the instructions and prior to reactivating the program for the actual trials, the experimenter provided an acknowledgment of conflicting feelings to the subjects in the acknowledgment condition. Thus, these subjects were told:

"Oh...There's one more thing I'd like to say. I know doing this is not much fun; in fact many subjects have told me that it's pretty boring. So, I can perfectly understand and accept that you might not find it very interesting."

Subjects in the no-acknowledgment condition did not receive any such statement.

### Rationale Manipulation

One half of subjects in each of the above four conditions were, in turn, assigned to the rationale condition and the remaining half were assigned to the no-rationale condition. Following the acknowledgment manipulation, the experimenter provided a rationale for performing the task to the subjects in the rationale condition. Thus, for those subjects who received the acknowledgment manipulation, the rationale immediately followed the acknowledgment statements. Subjects in the no-acknowledgment condition received the rationale right after

the instructions and prior to the actual trials.

Accordingly, the rationale subjects were told:

"Doing this task has been shown to be useful. We have found that those subjects who have done it have learned something about their concentration. This is so because doing the task involves focused attention that is important in concentration. For example, this is the type of task that air-traffic controllers use in order to enhance their signal detection abilities. So we believe that doing this task can be of value to college students such as yourself."

#### Task-engagement Period

Following the experimental manipulations, subjects in all conditions activated the program for the actual trials. While the subjects performed the activity, the experimenter was seated across the room reading a magazine and waiting for the subject to signal the end of the trials. After the trials were over, the experimenter administered efficacy-enhancing feedback. Thus, subjects in the low-controlling condition were told: "I see you have done well." Subjects in the high-controlling condition were told: "I see you have done well, as you should."

#### Dependent Measures

Because internalization involves self-regulation of an uninteresting activity, the most convincing behavioral measure would be that subjects perform the activity voluntarily when they are alone and have not been asked to

do it; in other words, when they initiate the activity and persist on it in the absence of extrinsic contingencies. In the intrinsic motivation research, the measure that has been widely used is the free-choice measure (Deci & Ryan, 1980). Because the behavioral manifestations of intrinsic motivation and internalized regulations look the same (i.e., both are performed in the absence of extrinsic contingencies), the free-choice measure which is used to assess intrinsic motivation can also be employed to measure other internally motivated behaviors (Ryan & Deci, 1986). Thus, if subjects performed the uninteresting activity when they were alone and there were no external contingencies for doing it, then the regulation of this activity can be said to have been internalized.

Accordingly, subsequent to the experimental period, a situation was created in which subjects were left alone for a period of five minutes during which they could resume the target activity or do something else. Specifically, the experimenter told the subjects that the only remaining thing in the experiment was for them to complete the questionnaire that they had already been told about. The experimenter pointed out that he or she would have to get a copy of it from the other office and would be back in just a few minutes. Then, the experimenter added very casually:

"By the way, if you want to do some more of the activity you're welcome to do so. All you have to do is press the space bar to activate the program, and press the X key to terminate it."



If the subject worked with the activity at all during this period (which, from hereon, is referred to as the "free-activity period"), the computer recorded and stored the amount of time in seconds that the subject spent on the task.<sup>1</sup> This measure of persistence--referred to as the "engagement time"--constituted the major behavioral measure of internalization.

However, even though both internalized and intrinsically motivated regulations could be behaviorally measured in terms of task engagement in the absence of extrinsic contingencies, a behavior that is regulated by internalization is not an intrinsically motivated behavior. Thus, in the present study, it was important to demonstrate that the motive for task engagement during the free-activity period was not intrinsic, and that those subjects who engaged in the task did so because they believed it was useful and important for them, and not because they became intrinsically interested in it. Accordingly, subjects were asked to answer various questions regarding their interest in the task and the usefulness of the task. It was predicted that while subjects' interest would remain unaffected across different conditions, there would be between-group differences in their perceived usefulness, indicating that those conditions that enhanced internalization also enhanced perceived usefulness without affecting intrinsic motivation.

Additional, but secondary, behavioral measures that were recorded and stored by the computer included:



a) the amount of time in seconds that the subject waited before initiating the task. This measure will be referred to as the "initiation time." Even though the initiation time was mainly included for exploratory purposes, it can be presumed that the sooner the subjects initiated the behavior, the more they had internalized its usefulness and importance.

b) subject's reaction time on each trial (i.e., the time from the onset of the light to the press of the space bar). These entries were recorded during both the task-engagement and the free-activity periods, and their mean scores constituted a performance measure for each of these periods. These measures were also included for exploratory purposes, and therefore, no specific predictions are offered.

#### Self-Report Measures

Causality Orientation Scale. The General Causality Orientation Scale or ACI (See Appendix A) which was administered prior to the experimental procedures consists of 12 short vignettes that present some situation (e.g., being offered a new position; or going to a party). Each situation is followed by three responses: one that is autonomy-oriented (A), one that is control-oriented (C), and one that is impersonally-oriented (I). The responses have Likert-type 7-point scales, and the respondent rates the extent to which each response characterizes his or her reaction to that situation. Subscale scores for each

orientation are then created by summing the 12 responses on the subscales of that orientation. Higher scores indicate that the person has more of the given orientation. The ACI scale has been shown to have internal consistency and temporal stability, and to correlate as predicted with theoretically relevant constructs such as self-esteem and coronary-prone behavior pattern (Deci & Ryan, 1985).

Activity Perception Questionnaire. To assess subjective experiences that might have been associated with the process of internalization, subjects also filled out an Activity Perception Questionnaire following the free-activity period (See Appendix B). This questionnaire which was adapted from the ones used in previous studies (e.g., Ryan, 1982; Ryan & Deci, 1986) consisted of 32 items that were to be rated on Likert-type scales of 1 (highly disagree) to 6 (highly agree). Ten items (#2,5,7,13,14,19,24,26,28,31) assessed perceived self-determination, nine items (#1,6,9,15,18,21,25,27,32) assessed perceived usefulness/importance, and eight items (#3,8,11,16,17,20,23,30) assessed interest in the task. Five additional items (#4,10,12,22,29) were included to assess experience of pressure and tension. These items were added for exploratory purposes. Following completion of these items, subjects also answered two additional questions that were attached to the end of the Activity Perception Questionnaire. The first question asked subjects whether they perceived the task as being useful, fun, both useful and

fun, or neither. This question was added to further differentiate between intrinsically motivated and internalized regulations. The last question asked subjects to indicate whether or not they worked on the activity when the experimenter left the room.

Post Questionnaires. Finally, subjects filled out a Post Questionnaire which was designed to explore subjects' own reasons as to why they did or did not perform the task when the experimenter left the room. Specifically, whereas the Activity Perception Questionnaire measured subjective experiences that were associated with task engagement during the process of internalization, this Post Questionnaire was employed to measure subjects' attributions of behavior regulation, after the internalization process had taken place.

Accordingly, two versions of the same Post Questionnaire were devised. In one version (See Appendix C), the items were worded such that they would pertain to reasons for having performed the activity (for example: because I was interested in the activity, or because I thought doing this activity would be useful for me). In the other version (See Appendix D), the same items pertained to reasons for not having performed the activity (for example: because I was not interested in the activity, or because I thought doing this activity would be useless for me). To hand out the appropriate version, the experimenter looked at subjects' response to the last item of the Activity

### Perception Questionnaire.

Aside from differences in phrasing, each version of the Post Questionnaire consisted of the same 15 items that were to be rated on 6 point Likert-type scales (1 = strongly disagree to 6 = strongly agree). There were five usefulness items (#1,7,11,13,15), four interest items (#2,6,9,14), three pressure-tension items (#4,10,12), and three mastery items (#3,5,8).

## RESULTS

### BEHAVIORAL MEASURES

#### Engagement Time

In the present study, the major behavioral measure of internalization was the engagement time; i.e., the number of seconds that the subjects spent performing the uninteresting task during the free-activity period. Engagement time mean scores included the data from all subjects. Thus, a value of 0 was assigned to those subjects who did not engage in the activity, indicating that these subjects spent no time or zero second on the task.

Table 1 presents the engagement time cell means for females and males along with the standard deviations and the frequency of subjects who initiated the task. In a preliminary set of analysis, a  $2 \times 2 \times 2 \times 2$  (Female vs. Male  $\times$  Low-Control vs. High-Control  $\times$  Rationale vs. No-Rationale  $\times$  Acknowledgment vs. No-Acknowledgment) analysis of variance was performed on the engagement time mean scores to check for any possible main and/or interaction effects for gender and the study's three independent variables. The result of this analysis revealed no significant effects for gender,  $F_s \leq 2.12$ . Therefore, the data were collapsed across this variable. The collapsed cell means are presented in Table 2. The 3-way ANOVA of the engagement time revealed a significant interaction for Control  $\times$  Rationale,  $F(1,120) = 4.32$ ,  $p < .03$ , and a significant interaction for Control  $\times$  Acknowledgment,  $F(1,120) = 5.04$ ,  $p < .02$ .

The cell means for the Control x Rationale interaction are presented in Table 3. As can be seen, subjects spent the greatest amount of time with the task when the rationale was presented in the low-controlling setting. A one-way contrast was then performed which confirmed that the engagement time in the Low-Control/Rationale condition (weight assigned was: +3) was significantly greater than the engagement time in the remaining three conditions (weights assigned were: -1s),  $F(1,120) = 5.38$ ,  $P < .025$ .

The pattern of the cell means for the Control x Acknowledgment interaction, as indicated in Table 4, also suggests that the engagement time was the highest when the acknowledgment was presented in the low-controlling setting. Again, a one-way contrast confirmed that the difference between this condition and the remaining three (weights assigned were: +3, -1, -1, and -1, respectively) was statistically significant,  $F(1,120) = 6.43$ ,  $P < .025$ .

Returning to Table 2, an inspection of the engagement time mean scores and the standard deviations indicated that the distribution of these times was non-normal (and differentially so across conditions). Therefore, a log transformation was performed on these data, and then the Gender x Control x Rationale x Acknowledgment ANOVA was conducted on the transformed data. The result of this analysis indicated no effect for gender,  $P_s > .15$ , so the data were collapsed across this variable. The 3-way ANOVA basically revealed the same results that were found when the

raw scores were analyzed. That is, a trend for a Control x Rationale interaction emerged,  $F(1,120) = 2.67$ ,  $P < .10$ . An examination of the means indicated that compared to the Low-Control/No-Rationale ( $M = .28$ ), High-Control/Rationale ( $M = .33$ ), and High-Control/No-Rationale ( $M = .45$ ), the Low-Control/Rationale condition ( $M = .80$ ) led to the highest level of the engagement time. A one-way contrast (weights assigned were: -1, -1, -1, and +3, respectively) confirmed that the Low-Control/Rationale condition led to a higher engagement time, relative to the remaining three conditions,  $F(1,120) = 3.91$ ,  $P < .05$ . The ANOVA also indicated a significant interaction for Control x Acknowledgment,  $F(1,120) = 4.58$ ,  $P < .03$ . Again, an inspection of the means and their comparison (Low-Control/Acknowledgment:  $M = .88$ , weight = +3; Low-Control/No-Acknowledgment:  $M = .19$ , weight = -1; High-Control/Acknowledgment:  $M = .32$ , weight = -1; and High-Control/No-Acknowledgment:  $M = .46$ , weight = -1) confirmed that the Low-Control/Acknowledgment condition produced the greatest amount of the engagement time,  $F(1,120) = 6.05$ ,  $P < .02$ . Thus, it is clear that the analyses of the transformed data basically yielded the same results that were found for the raw data. Accordingly, it was decided to use the raw data in the remaining analyses.

In short, the above findings indicated that high levels of self-regulation occurred when either the rationale or the acknowledgment was presented in the low-control condition. However, the central hypothesis of the present study was

that the greatest amount of self-regulation should occur when the low-controlling setting provided for the person both the rationale and the acknowledgment. As previously stated, the three facilitating variables in the present study (i.e., low-control, rationale, and acknowledgment) were expected to have an additive effect on self-regulation. As can be seen in Table 2, the engagement time mean score was the highest in the Low-Control/Rationale/Acknowledgment condition. A one-way contrast was performed which tested the prediction that engagement time in this condition (weight assigned was: +7) was significantly higher than the engagement time in the remaining seven conditions (weights assigned were: -1s). The result supported this basic prediction,  $F(1,120) = 5.79$ ,  $P < .025$ .

Given the expected additive effect of the independent variables, it was further predicted that the low-control subjects who received either the rationale or the acknowledgment, but not both, would self-regulate to a greater extent than the low-control subjects who did not receive either of these two variables. Additionally, it was predicted that the high-controlling context would induce an overall negative effect, but that those high-control subjects who received either the rationale or the acknowledgment would self-regulate to a lesser extent than those high-control subjects who received both of them, and to a greater extent than the High-Control/No-Rationale/No-Acknowledgment subjects who were expected to demonstrate



the lowest amount of self-regulation.

A cell by cell inspection of Table 2 indicates that for seven of the eight conditions, the engagement time mean scores were ordered exactly as would be expected from the additive model. Moreover, even though the predicted main effects for the facilitating variables did not reach significance, the patterns of marginals were all in the expected direction: low-control subjects self-regulated to a greater extent ( $M=69.40$ ) than high-control subjects ( $M=46.69$ ); rationale subjects self-regulated to a greater extent ( $M=64.37$ ) than no-rationale subjects ( $M=51.73$ ); and acknowledgment subjects self-regulated to a greater extent ( $M=66.42$ ) than no-acknowledgment subjects ( $M=49.68$ ). However, Table 2 reveals one unexpected finding: the engagement time mean score in the High-Control/No-Rationale/No-Acknowledgment condition was quite high. In fact, a comparison of the engagement time mean scores between this and the Low-Control/Rationale/Acknowledgment condition indicated no difference,  $F(1,120) = .3^2$ .

In order to examine more fully the additive effects of the three facilitating variables, a one-way contrast was performed on the engagement time mean scores. The highest weight (+3) was assigned to the condition with all three facilitating factors (i.e., Low-Control/Rationale/Acknowledgment). Thereafter, the three cells with two facilitating factors (i.e., Low-Control/Rationale/No-Acknowledgment, Low-Control/No-Rationale/Acknowledgment, and

High-Control/Rationale/Acknowledgment) were each given the next highest weight (+1). Those three conditions that had only one facilitating factor (i.e., Low-Control/No-Rationale/No-Acknowledgment, High-Control/Rationale/No-Acknowledgment, and High-Control/No-Rationale/Acknowledgment) were each given a weight of -1. Finally, the High-Control/No-Rationale/No-Acknowledgment condition which did not provide any facilitating factor was given the lowest weight (-3). Since this analysis included the High-Control/No-Rationale/No-Acknowledgment condition, the result indicated only a trend for the additive influence of the facilitating factors,  $F(1,120) = 2.75$ ,  $P < .10$ . However, in a different one-way contrast, the High-Control/No-Rationale/No-Acknowledgment cell was excluded from the analysis (weight assigned was: 0). The Low-Control/Rationale/Acknowledgment cell was given the highest weight (+9); the two-facilitating-factors cells were each given the next highest weights (+2s); and the lowest weight (-5) was assigned to each of the one-facilitating-factor cells. The result of this comparison was highly significant,  $F(1,120) = 12.42$ ,  $P < .001$ , confirming the additive influence of the facilitating factors on the three-, two-, and one-facilitating-factor cells.

Parenthetically, several one-way contrasts were also performed to provide tentative tests of the predictions that would be derived from each of the nonmotivational theories of internalization. Specifically, one analysis compared the

experimental conditions on the basis of cognitive dissonance theory which suggests that minimal justification would yield maximal internalization. Thus, low control would be dissonance inducing and high control, which provides a substantial source of external justification, would be dissonance reducing. Rationale also provides external justification so it would be dissonance reducing even though one may assume that relative to this variable, high-control would provide a stronger justification. The theory further predicts that the acknowledgment would enhance conflict and, therefore, promote self-regulation even through again, one may assume that, relative to this variable, low-control would induce a greater dissonance. Thus, compared to the acknowledgment and rationale, the control variable would presumably carry a greater weight in, respectively, inducing or reducing dissonance. Based on this reasoning, it was decided to assign positive weights to all low control conditions, and negative weights to all high control conditions.

Within the low control conditions, the highest weight (+3) was then assigned to the No-Rationale/Acknowledgment condition which provided one dissonance inducing factor (i.e., acknowledgment) and no external justification (i.e., no rationale). The Rationale/Acknowledgment condition provided one dissonance inducing factor (i.e., acknowledgment) but also some degree of external justification (i.e., rationale). Thus, a weight of +2 was

assigned to this condition. The No-Rationale/No-Acknowledgment condition provided neither the rationale which would have somewhat reduced dissonance, nor the acknowledgment which would have somewhat induced dissonance. Thus, it was decided to assign to this condition the same weight (i.e., +2) that was given to the Rationale/Acknowledgment condition, indicating that both conditions should have similar effects in promoting self-regulation. Finally, the Rationale/No-Acknowledgment condition which provided one dissonance reducing variable (i.e., rationale) and no dissonance inducing variable (i.e., no acknowledgment) was given a weight of +1.

Within the high control conditions, the No-Rationale/Acknowledgment condition was given the highest weight (-1), because this condition provided acknowledgment (which would somewhat induce dissonance), at the same time that it did not provide any other source of external justification (i.e., no rationale). The Rationale/Acknowledgment provided one dissonance inducing (i.e., acknowledgment) but also one dissonance reducing (i.e., rationale) factor, and the No-Rationale/No-Acknowledgment cell provided neither a dissonance inducing nor a dissonance reducing factor. Thus, a weight of -2 was assigned to both of these conditions. Finally, the lowest weight (-3) was given to the Rationale/No-Acknowledgment condition. This cell provided the rationale which would have somewhat reduced dissonance at the same time that it did not provide any dissonance inducing

variable (i.e., no acknowledgment). The result of this comparison was not significant,  $F(1,120) = 1.44$ .

The second one-way contrast compared the experimental conditions on the basis of the self-perception theory which would basically make similar predictions regarding the functions of control and rationale as sources of justification. However, this theory predicts that acknowledgment would minimize self-regulation by means of providing a source of information that would interrupt deductions from overt behavior. Again, positive weights were assigned to all low control conditions, and negative weights to all high control cells.

Within the low control conditions, the No-Rationale/No-Acknowledgment cell was given the highest weight (+3). In this condition, there was neither the rationale which would have provided some degree of justification, nor the acknowledgment which would have interfered with the self-attribution process. The Rationale/No-Acknowledgment and the No-Rationale/Acknowledgment cells each provided one variable (i.e., rationale and acknowledgment, respectively) that the theory would predict to inhibit self-regulation. Thus, a weight of +2 was assigned to both conditions. Finally, the Rationale/Acknowledgment condition which presented two inhibiting factors was given a weight of +1.

Within the high control cells, the highest weight (-1) was given to the No-Rationale/No-Acknowledgment condition which did not provide any inhibiting factor (except the high

control, of course). The Rationale/No-Acknowledgment and the No-Rationale/Acknowledgment cells which each provided one inhibiting variable (i.e., rationale and acknowledgment, respectively) were given lower but equal weights (-2). Finally, the lowest weight (-3) was assigned to the Rationale/Acknowledgment condition which presented the two inhibiting factors of rationale and acknowledgment (in addition to the high control, of course). This comparison also indicated a nonsignificant effect,  $F(1,120) = .63$ .

A final one-way contrast tested learning theories which would predict that high level of control and the rationale would each provide extrinsic contingencies for task performance, and would therefore reinforce self-regulation. However, the issue of acknowledgment would be irrelevant to these theories, so those conditions which provided this factor were collapsed on their corresponding no-acknowledgment cells. Thus, the two High-Control/Rationale cells were given the highest weights (+3). These conditions provided the greatest amount of reinforcement. The two High-Control/No-Rationale conditions which would lead to the next highest levels of self-regulation were given weights of +1s, and the two Low-Control/Rationale conditions which only presented the rationale were given weights of -1s. Finally, the lowest weights (-3s) were assigned to the two Low-Control/No-Rationale conditions which did not provide any extrinsic contingencies. Again, the result of this comparison was not significant,  $F(1,120) = .64$ .

In sum, the analyses of the engagement time data failed to confirm the nonmotivational theories of internalization. However, the data provided support for the basic prediction derived from the motivational theory which suggests that the greatest amount of self-regulation will occur in a context that provides autonomy or minimal control, a meaningful rationale for engaging in the uninteresting task, and an acknowledgment of the conflict that is inherent in performing such an activity. The results further indicated that as any one of the facilitating factors was removed, and then as any two were removed, the level of internalization decreased accordingly. However, a high degree of internalization was also found in the condition that removed all three facilitating factors. The nature of this unexpected finding will be further explored in the following sections.

#### Initiation Time and Performance

The initiation time which was mainly included for exploratory purposes was the length of time in seconds from the outset of the free-activity period (i.e., when the experimenter left the room) to the first press of the space bar by the subject to activate the task.<sup>3</sup> Condition mean scores for initiation time included data from all subjects. Those subjects who did not engage in the activity were given the value of 300, indicating that they waited for 300 seconds without working on the task.

Table 5 presents the cell means and the standard deviations for the initiation time. A comparison between the



initiation time and the engagement time mean scores (See Table 2) across the eight experimental conditions reveals that the condition means for the initiation time closely, but inversely, corresponded to the engagement time cell means, indicating that the longer the subjects persisted on the task, the sooner they initiated it, and vice versa. This close, cell by cell, correspondence between the initiation time and the engagement time was further supported by a high correlation that existed between the two measures,  $r(126) = -.79$ ,  $P < .0001$ , suggesting that they measured conceptually similar constructs.

Moreover, the Gender x Control x Rationale x Acknowledgment analysis of variance of the initiation time yielded the exact same 2 x 2 interactions that were found for the engagement time: a significant Control x Rationale interaction,  $F(1,112) = 4.06$ ,  $P < .04$ , and a significant Control x Acknowledgment interaction,  $F(1,112) = 4.72$ ,  $P < .03$ . An inspection of the cell means for these two interactions revealed that their patterns replicated (although inversely) those interaction patterns that were found for the engagement time data, indicating that the lowest amount of initiation time occurred when either the rationale or the acknowledgment was presented in the low-controlling setting.

The two remaining behavioral measures that were also included for exploratory purposes were the reaction times (i.e., the time in milliseconds from the onset of the light



to the press of the space bar on each trial) during both the task-engagement and the free-activity periods. Reaction time mean scores constituted a performance measure for each of these periods.

During the initial, task-engagement period, reaction time mean scores included data from all subjects. A Gender x Control x Rationale x Acknowledgment ANOVA of the reaction time during this period revealed a significant gender effect,  $F(1,112) = 4.1, P < .03$ . Males ( $M=.5976$ ) reacted to the task and performed it faster than did females ( $M=.6223$ ). No other significant main effects or interactions were found,  $F_s < 2.0$ . During the free-activity period, reaction time data existed only for those subjects who engaged in the task. Again, the 4-way ANOVA was performed on the reaction time mean scores during this period. However, no main effects or interactions approaching significance were found,  $P_s > .12$ .

In short, the analyses of the initiation time data indicated that this measure was basically a conceptual replication of the engagement time, and that the two were highly similar constructs. The analyses of the performance measures revealed no significant effects for these measures (with the exception of gender differences during the task-engagement period). Consequently, it was decided to exclude these measures from the remaining analyses.

#### SELF-REPORT MEASURES

##### Activity Perception Questionnaire

The Activity Perception Questionnaire was administered

to assess various subjective experiences that may have been associated with the process of internalization. Two separate factor analyses (principal components analyses followed by varimax rotation) were performed on the 32 items of this questionnaire. The first factor analysis was performed on the partial correlations among the items, holding constant the independent variables (i.e., gender, control, rationale, acknowledgment). In the second analysis, the effects of the independent variables were included. The two analyses revealed an identical set of factors with an identical set of items loading on each factor. Therefore, only the results of the second factor analysis will be reported.

As expected, four subscales emerged from this factor analysis: (a) interest/enjoyment (eigenvalue=12.31; items with loading  $\geq .7$  were #3,8,11,17,20,23,30); (b) perceived usefulness (eigenvalue=4.28; items with loading  $\geq .66$  were #1,6,9,15,18,21,25,27,32); (c) perceived freedom or self-determination (eigenvalue=3.31; items with loading  $\geq .6$  were #2,13,14,19,24,26,28,31); and (d) perceived pressure/tension (eigenvalue=1.90; items with loading  $\geq .75$  were #4,10,12,22,29). Items #5,7, and 16 did not load on any of the factors, so they were excluded from further analysis.

For each subscale, mean scores were created by averaging the scores of those items that loaded on that subscale. Table 6 presents correlations between the subscales, and Table 7 presents the subscales' mean scores

by condition. To check for the main and/or interaction effects of the independent variables, a Gender x Control x Rationale x Acknowledgment ANOVA was performed on each of the four subscales.

Interest/Enjoyment. The 4-way ANOVA of the interest/enjoyment subscale revealed a highly significant rationale effect,  $F(1,112) = 12.22$ ,  $p < .0007$ . Compared to the no-rationale subjects ( $M=2.095$ ), those who were presented with the rationale perceived the task to be more interesting ( $M=2.705$ ). The ANOVA also revealed a significant interaction for Gender x Rationale,  $F(1,112) = 4.25$ ,  $p < .04$ . Table 8 presents the cell means for this interaction. As can be seen, not having a rationale had a much greater effect on interest of the females than the males, such that the no-rationale females experienced the least degree of interest in the task.

Perceived Usefulness. The 4-way ANOVA of the perceived usefulness subscale revealed a highly significant main effect for the rationale,  $F(1,112) = 32.0$ ,  $p < .0001$ . Rationale subjects perceived the task to be more useful ( $M=3.638$ ) than did the no-rationale subjects ( $M=2.313$ ). The ANOVA also yielded a significant interaction for Control x Acknowledgment,  $F(1,112) = 4.53$ ,  $p < .03$ . As can be seen in Table 9, the only difference in the means was found between the Low-Control/Acknowledgment and the High-Control/Acknowledgment subjects. Nonetheless, the pattern of cell means suggested that perception of usefulness was the

greatest in the Low-Control/Acknowledgment condition. Therefore, a one-way contrast was performed which compared this condition (weight assigned was: +3) with the remaining three conditions (weights assigned were: -1s). The result of this comparison was significant,  $F(1,112) = 5.13$ ,  $p < .05$ .

Perceived Freedom. The 4-way ANOVA of perceived freedom indicated a highly significant main effect for control,  $F(1,112) = 45.75$ ,  $p < .0001$ . Compared to the high-control subjects ( $M=3.77$ ), those in the low-control condition ( $M=4.84$ ) experienced a greater degree of self-determination. There were no other significant effects for this subscale,  $F_s < 1.5$ .

Perceived Pressure/Tension. The 4-way ANOVA of the perceived pressure/tension subscale yielded no main effects or interactions that reached a conventional level of significance,  $F_s \leq 3.15$ .

Cell Contrasts of Subscales. The next series of analyses examined the more focused question of cell by cell differences for each of the subscales. Especially, in light of the unexpected finding of no difference in the engagement time between the High-Control/No-Rationale/No-Acknowledgment and the Low-Control/Rationale/Acknowledgment conditions, it was important to unravel the nature of subjective experiences that were reported in each of those conditions. Table 10 presents the results of the pair-wise comparisons of these two conditions for interest/enjoyment, perceived usefulness, perceived freedom, and perceived pressure/

tension subscales. As the table indicates, the Low-Control/Rationale/Acknowledgment subjects reported significantly greater experience of interest, task usefulness, and freedom than did the High-Control/No-Rationale/No-Acknowledgment subjects. Differences in perceived pressure/tension did not reach significance, even though the means were in the expected direction of the Low-Control/Rationale/Acknowledgment subjects feeling less pressure/tension.

Additionally, three sets of one-way contrasts were performed. One set examined that interest/enjoyment, perceived usefulness, and perceived freedom would each be significantly greater in the Low-Control/Rationale/Acknowledgment condition (weight assigned was: +7) than in the remaining seven conditions (weights assigned were: -1s). Note that for the perceived pressure/tension subscale, directions of the contrast weights were reversed. With the exception of perceived pressure/tension, all comparisons were statistically significant: for interest/enjoyment,  $F(1,120) = 8.72$ ,  $P < .005$ ; for perceived usefulness,  $F(1,120) = 17.85$ ,  $P < .001$ ; and for perceived freedom,  $F(1,120) = 10.38$ ,  $P < .005$ .

The second set of one-way contrasts compared the High-Control/No-Rationale/No-Acknowledgment condition with the remaining seven conditions. Specifically, this set examined whether, as one would expect, interest/enjoyment, perceived usefulness, and perceived freedom were each significantly lower in this condition (weight assigned was: -7) than in

the other ones (weights assigned were: +1s). For the perceived pressure/tension, directions of the weights were reversed. The result of the comparison for interest/enjoyment did not indicate any effect,  $F < 1.0$ . However, a significant effect was found for perceived usefulness,  $F(1,120) = 5.39$ ,  $P < .025$ , and for perceived freedom,  $F(1,120) = 18.33$ ,  $P < .001$ , and a trend was found for perceived pressure/tension,  $F(1,120) = 1.92$ ,  $P < .20$ .

The third set of contrasts compared the experimental conditions on the basis of the predicted additive model. That is, the Low-Control/Rationale/Acknowledgment condition which presented all three facilitating variables was expected to result in the highest level of interest/enjoyment, perceived usefulness, and perceived freedom. Thus, a weight of +3 was assigned to this condition. The two-facilitating-factors conditions were expected to result in a lower level of the three subscales, so weights assigned to these conditions were +1s. The one-facilitating-factor conditions were each given a weight of -1, indicating that compared to the two-facilitating-factors conditions, they would lead to a lower experience of interest/enjoyment, usefulness, and freedom. Finally, the High-Control/No-Rationale/No-Acknowledgment condition was expected to result in the lowest level of the subscales and was given a weight of -3. Again, directions of the weights were reversed for the perceived pressure/tension subscale. The results of these comparisons indicated a significant effect for interest/

enjoyment,  $F(1,120) = 6.83$ ,  $P < .025$ , a significant effect for perceived usefulness,  $F(1,120) = 16.53$ ,  $P < .001$ , a highly significant effect for perceived freedom,  $F(1,120) = 28.30$ ,  $P < .0001$ , and a trend for perceived pressure/tension,  $F(1,120) = 2.98$ ,  $P < .10$ .

Within-Cell Correlations for Perceived Freedom. The analyses of the subscale scores reported thus far indicated theoretically consistent differences in the subjective experiences of the Low-Control/Rationale/Acknowledgment and the High-Control/No-Rationale/No-Acknowledgment conditions. These analyses also supported the additive effect of the facilitating events on these experiences. However, it still remained to be demonstrated that the self-regulation which occurred in the Low-Control/Rationale/Acknowledgment condition was more integrated (which means that it would be positively associated with the experience of freedom), while the self-regulation which occurred in the High-Control/No-Rationale/No-Acknowledgment condition was more internally controlling or introjected (which means that it would be negatively associated with the experience of freedom). Therefore, partial within-cell correlations (after removing the gender effect) were computed between perceived freedom and the engagement time mean scores.

The results of these analyses are presented in Table 11. The table also lists the within-cell correlations between the engagement time and the remaining subscales of interest/enjoyment, perceived usefulness, and perceived



pressure/tension. As can be seen, the correlations for perceived freedom did not lend themselves to a readily interpretable pattern. For instance, the only negative associations occurred in two of the one-facilitating-factor conditions. There was hardly any association between perceived freedom and self-regulation in the Low-Control/Rationale/Acknowledgment cell and contrary to what could be expected, in the High-Control/No-Rationale/No-Acknowledgment condition the correlation was positive and relatively high. Similarly, the patterns of the correlations for the remaining subscales were uninterpretable. The correlations between perceived freedom and engagement time were also computed for females and for males. In the three-facilitating-factors cell, no correlation emerged for males,  $r(6) = .03$ , and the correlation for females was positive but far from significant,  $r(6) = .30$ . Also, the correlations that emerged in the no-facilitating-factor cell were positive but nonsignificant (for females:  $r(6) = .39$ , for males:  $r(6) = .32$ .)

Since these analyses did not provide any information regarding the differential nature of the self-regulation that occurred across different conditions, it was decided to re-do the correlations, this time investigating the more focused issue of different processes that would be associated with the occurrence of self-regulation (i.e., if the subject self-regulated the task at all). Thus, these remaining analyses employed the engagement time mean scores



of only those subjects who had actually engaged in the task during the free-activity period. Table 12 presents the within-cell correlations for the Low-Control/Rationale/Acknowledgment and the High-Control/No-Rationale/No-Acknowledgment conditions by gender. As can be seen, for both females and males correlations in the Low-Control/Rationale/Acknowledgment condition were positive and high, even though small number of subjects prevented these correlations from reaching the conventional levels of significance. In the High-Control/No-Rationale/No-Acknowledgment condition, the correlation was quite high and negative, but only for females. Interestingly enough, in this condition, males' self-regulation was not associated with the experience of freedom.

The within-cell correlations between perceived freedom and the engagement time of those who had self-regulated the task were also computed for each of the remaining experimental conditions. However, a very small number of subjects in most of those conditions (especially when they were divided by gender) made it impossible to compute many of the correlations, or prevented them from reaching significance. Therefore, it was decided to combine into one group those conditions that presented two of the three facilitating variables, and into another group those that presented only one facilitating variable. Partial within-cell correlations (after the removal of the gender effect) were then computed between perceived freedom and the engagement time for: a)

the three-facilitating-factors condition (Low-Control/Rationale/Acknowledgment); b) the group composed of the two-facilitating-factors conditions; c) the group composed of the one-facilitating-factor conditions; and d) the no-facilitating-factor condition (High-Control/No-Rationale/No-Acknowledgment). Table 13 presents the results of this analysis. As can be seen, the highest positive correlation between the occurrence of engagement time and perceived freedom was found in the Low-Control/Rationale/Acknowledgment condition. A lower, but positive correlation was found in the group that combined the two-facilitating-factor conditions. The two remaining within-cell correlations were both negative, and although the additive model would have predicted that the highest negative correlation would occur in the High-Control/No-Rationale/No-Acknowledgment condition, Table 13 indicates otherwise. However, as the bottom portion of the table shows, there was no statistically significant difference between these two correlations. Moreover, based on the predictions derived from the additive model, a one-way contrast was performed which directly compared the four correlations. Thus, a weight of +3 was assigned to the Low-Control/Rationale/Acknowledgment condition. The group composed of the two-facilitating-factors conditions was given a weight of +1, and the group composed of the one-facilitating-factor conditions was given a weight of -1. Finally, a weight of -3 was assigned to the High-Control/No-Rationale/No-Acknowledgment

condition. The result of this comparison was statistically significant,  $Z = 2.41$ ,  $P < .02$ .

Within-Cell Correlations for Other Subscales. Partial within-cell correlations were also computed between the engagement time of those subjects who had self-regulated and each of the remaining three subscales of interest/enjoyment, perceived usefulness, and perceived pressure/tension for: a) Low-Control/Rationale/Acknowledgment condition; b) group composed of two-facilitating-factors conditions; c) group composed of one-facilitating-factor conditions; and d) High-Control/No-Rationale/No-Acknowledgment condition. The results are presented in Table 14. As the table indicates, the patterns of correlations for each of the subscales of interest/enjoyment and perceived usefulness, in general, fell into the expected additive model. The correlations for perceived pressure/tension were very low and uninterpretable. However, as can be seen, the highest correlations between the engagement time and either the interest/enjoyment or the perceived usefulness subscales were found in the group with the two-facilitating-factors conditions. Nonetheless, as Table 15 indicates, the differences between this group and the Low-Control/Rationale/Acknowledgment condition were not significant. Moreover, the same one-way contrast that was performed on the within-cell correlations of perceived freedom was also applied to the interest/enjoyment and the perceived usefulness subscales. The results revealed a

significant effect for interest/enjoyment,  $Z = 3.45$ ,  $P < .0001$ , and a trend for perceived usefulness,  $Z = 1.47$ ,  $P < .14$ .

Usefulness versus Fun. The last set of analyses on the Activity Perception Questionnaire was performed on the item that was included to differentiate perceived usefulness from enjoyment. This item was structured in such a way that each subject could endorse only one of the following four options: (1) fun but not useful; (2) fun and useful; (3) not fun but useful; and (4) neither fun nor useful. To analyze this item, it was first decided to employ the four-grouping categorization that was used for the within-cell correlations (i.e., three-facilitating-factors, two-facilitating-factors, one-facilitating-factor, and no-facilitating-factor conditions). Then, for each of these four conditions, the percentages of subjects who endorsed any of the four options were calculated. These percentages are presented in Table 16. As can be seen, the highest percentage of subjects who believed that the task was useful but not fun were in the Low-Control/Rationale/Acknowledgment condition, and the lowest percentage were in the High-Control/No-Rationale/No-Acknowledgment condition. Several one-way contrasts were then performed to compare the percentages of this option.<sup>4</sup> The first analysis compared the Low-Control/Rationale/Acknowledgment condition (weight assigned was: +3) with the remaining three conditions (weights assigned were: -1). The result of this analysis

was significant,  $Z = 2.66$ ,  $P < .006$ . The second analysis compared the High-Control/No-Rationale/No-Acknowledgment with the remaining three conditions (weights assigned were: -3, +1, +1, and +1, respectively). This comparison also indicated a significant result,  $Z = 2.66$ ,  $P < .006$ . The last analysis compared the experimental conditions on the basis of the additive model. Thus, weights assigned were: +3 to the three-facilitating-factors condition, +1 to the two-facilitating-factors conditions, -1 to the one-facilitating-factor conditions, and -3 to the no-facilitating-factor cell. The result of this comparison was also significant,  $Z = 3.12$ ,  $P < .002$ .

Table 16 also indicates that the highest percentage of subjects who believed that the task was neither fun nor useful were in the High-Control/No-Rational/No-Acknowledgment condition, and the lowest percentage were in the Low-Control/Rationale/Acknowledgment condition. Again, the above three contrasts were applied to these percentages. Note that for this option, the directions of the above contrast weights were reversed. The results of each of these comparisons yielded a significant effect: for the Low-Control/Rationale/Acknowledgment versus other conditions,  $Z = 6.94$ ,  $P < .0001$ ; for the High-Control/No-Rationale/No-Acknowledgment versus other conditions,  $Z = 2.78$ ,  $P < .004$ ; and for the additive pattern,  $Z = 4.60$ ,  $P < .0001$ .

For the fun and useful option, Table 16 indicates that the highest endorsement was made by the Low-Control/

Rationale/Acknowledgment subjects. In contrast, none of the subjects in the High-Control/No-Rationale/No-Acknowledgment condition endorsed this option; thus, this condition was excluded from the comparisons. The contrast which compared the Low-Control/Rationale/Acknowledgment condition (weight assigned was: +2) with the remaining two conditions (weights assigned were: -1s) did not indicate a significant effect,  $Z = 1.19$ ,  $P < .22$ . The contrast which tested the additive pattern (weights assigned were: +3, -1, and -2 to three-, two-, and one-facilitating-factor cells, respectively) also indicated a nonsignificant effect,  $Z = 1.35$ ,  $P < .16$ .

Finally, none of the Low-Control/Rationale/Acknowledgment subjects endorsed the fun but not useful option. However, contrary to what could be expected, the highest endorsement for this option came from the High-Control/No-Rationale/No-Acknowledgment subjects. For the other two conditions, the percentages were quite low. Such a pattern was uninterpretable so no additional analyses were performed on this option.

#### Post Questionnaires

The two Post Questionnaires were administered to explore subjects' perceptions of why they did or did not engage in the task during the free-activity period. Each version of the two Post Questionnaires was factor analyzed separately.

Doers' Post Questionnaire. Two factors emerged from the factor analysis of the doers' Post Questionnaire (i.e.,

the version that was used for those subjects who engaged in the task).<sup>5</sup> The first factor will be referred to as the internalization factor (eigenvalue=6.72). Interestingly enough, those items that were expected to assess the three separate constructs of usefulness, interest/enjoyment, and mastery were all clustered around the internalization factor (items' loadings were  $\geq .56$ . The only exception was item #9 which did not load on any factor). The second factor that emerged was the pressure factor (eigenvalue=1.95; items were #4,10,12; items' loadings were  $\geq .55$ ). Factor scores were then created by averaging the scores of those items that loaded on each of the factors. Table 17 presents the cell means and the standard deviations for the internalization and the pressure factors. To check for the effects of the independent variables, the Gender x Control x Rationale x Acknowledgment ANOVA was performed on each of the two factors.

Internalization Factor. The 4-way ANOVA of this factor revealed no gender effects. Therefore, the data were collapsed across this variable. The 3-way ANOVA indicated a significant rationale effect,  $F(1,34) = 4.21$ ,  $P < .04$ . Those subjects who were given the rationale ( $M=3.32$ ) attributed their self-regulation to the internalization factor to a greater extent than did the no-rationale subjects ( $M=2.52$ ). The 3-way ANOVA also yielded a significant Control x Acknowledgment interaction,  $F(1,34) = 5.42$ ,  $P < .02$ . As can be seen in Table 18, the Low-



Control/Acknowledgment subjects made the highest attribution to the internalization factor, and although the difference between this and the High-Control/No-Acknowledgment condition did not reach significance, a one-way contrast was performed which compared this condition (weight assigned was: +3) with the remaining three conditions (weights assigned were: -1s). The result of this comparison revealed a trend,  $F(1,34) = 3.52$ ,  $p < .07$ .

Pressure Factor. The Gender x Control x Rationale x Acknowledgment ANOVA of the pressure factor indicated a marginal main effect for gender,  $F(1,28) = 3.56$ ,  $p < .06$ . Females attributed their self-regulation to pressure ( $M=2.61$ ) more than did males ( $M=1.94$ ). A marginal main effect for control was also found,  $F(1,28) = 3.40$ ,  $p < .08$ . Compared to the low-control subjects ( $M=2.06$ ), those in the high-controlling setting perceived that a greater degree of pressure underlied their self-regulation ( $M=2.50$ ). A significant Rationale x Acknowledgment interaction was also found,  $F(1,28) = 4.52$ ,  $p < .04$ . As Table 19 indicates, the highest attribution to pressure was made by the no-rationale/no-acknowledgment subjects. Finally, a highly significant Gender x Control x Acknowledgment interaction emerged,  $F(1,28) = 9.60$ ,  $p < .004$ . Table 20 presents the cell means and the interaction residuals after the grand mean, the three main effects, and the three 2-way interactions were removed from the means. An examination of the residuals indicates that in the high-



controlling setting, acknowledgment enhanced females' and minimized males' attribution of self-regulation to pressure. In the low-controlling setting, the opposite effect was found.

Cell Contrasts. An examination of the pattern of means across the experimental conditions (see Table 17) indicates that the highest degree of attribution to the internalization factor occurred in the Low-Control/Rationale/Acknowledgment condition. However, contrary to what might have been expected, the lowest degree of attribution to this factor did not take place in the High-Control/No-Rationale/No-Acknowledgment condition. Nonetheless, the difference between this and the Low-Control/Rationale/Acknowledgment condition was statistically significant,  $F(1,34) = 5.11$ ,  $p < .05$ .

Moreover, a one-way contrast which compared the Low-Control/Rationale/Acknowledgment condition (weight assigned was: +7) with the remaining ones (weights assigned were: -1s) yielded a significant result,  $F(1,34) = 7.10$ ,  $p < .025$ . However, when the High-Control/No-Rationale/No-Acknowledgment condition (weight assigned was: -7) was compared with the remaining ones (weights assigned were: +1s), no effect was found,  $F < 1$ . An additional contrast was also performed which tested the additive model. Thus, a weight of +3 was assigned to the Low-Control/Rationale/Acknowledgment condition, and a weight of -3 to the High-Control/No-Rationale/No-Acknowledgment condition. The two-facilitating-factors

conditions were each given a weight of +1, and the one-facilitating-factor conditions were each given a weight of -1. The result of this analysis indicated a marginal effect,  $F(1,34) = 3.85$ ,  $P < .07$ .

An examination of the pattern of the means for the pressure factor indicates that compared to the Low-Control/Rationale/Acknowledgment condition, the High-Control/No-Rationale/No-Acknowledgment subjects perceived a greater degree of pressure to have underlied their self-regulation. The comparison of the two means indicated a trend,  $F(1,34) = 2.93$ ,  $P < .10$ .

Moreover, the same one-way contrast which tested the additive effects of the facilitating variables on the internalization factor was also performed on the pressure factor (note that directions of the weights were reversed). The result of this analysis indicated a marginal effect,  $F(1,34) = 3.78$ ,  $P < .07$ . The one-way contrast that compared the High-Control/No-Rationale/No-Acknowledgment condition (weight assigned was: +7) with the remaining ones (weights assigned were: -1s) also yielded a trend,  $F(1,34) = 2.88$ ,  $P < .10$ . However, no effect was found when the Low-Control/Rationale/Acknowledgment condition (weight assigned was: -7) was compared with the remaining cells (weights assigned were: +1s),  $F < 1.0$ .

Nondoers' Post Questionnaire. As expected, the factor analysis of the nondoers' version yielded the following four factors: (a) the uselessness factor (eigenvalue=5.47, items

with loadings  $\geq .52$  were #1,7,11,13,15); (b) the dullness factor (eigenvalue=1.71, items with loadings  $\geq .79$  were #2, 6,14); (c) the competence factor (eigenvalue=1.51, items with loadings  $\geq .87$  were #3,5); and (d) the no-pressure factor (eigenvalue=1.02, items with loadings  $\geq .77$  were #4, 10). Items #8,9 and 12 did not load on any factor and were excluded from further analysis. For each factor, mean scores were created by averaging the score of items that loaded on that factor. Table 21 presents the condition mean scores for each of the above four factors. The 4-way ANOVA was then performed on each factor to check for the effects of the independent variables.

Uselessness Factor. The Gender x Control x Rationale x Acknowledgment analysis of variance of the uselessness factor indicated a strong main effect for the rationale,  $F(1,70) = 8.29$ ,  $P < .005$ . Compared to those nondoers who were given the rationale ( $M=3.48$ ), those who did not receive it ( $M=4.17$ ) believed that the task uselessness underlied their nonengagement in the activity. The 4-way ANOVA also yielded a significant Gender x Rationale interaction,  $F(1,70) = 6.91$ ,  $P < .01$ . Table 22 presents the cell means for this interaction. As can be seen, the greatest attribution to uselessness was made by the female nondoers who did not receive the rationale.

Dullness Factor. The 4-way ANOVA of the dullness factor indicated no effects of gender, so the data were collapsed across this variable. The 3-way ANOVA indicated a

trend toward a main effect for the rationale,  $F(1,78) = 2.86$ ,  $p < .09$ . The no-rationale nondoers made a greater attribution to dullness ( $M=4.84$ ) than did the rationale nondoers ( $M=4.38$ ). No other main or interaction effects were found,  $F_s < 2.0$ .

Competence Factor. The 4-way ANOVA of the competence factor also did not reveal any gender effect, and the 3-way ANOVA only indicated a trend toward a rationale main effect,  $F(1,78) = 2.73$ ,  $p < .10$ . The rationale nondoers made a greater attribution to competence ( $M=4.59$ ) than did the no-rationale nondoers ( $M=4.14$ ).

No-Pressure Factor. The 4-way ANOVA of the no-pressure factor revealed a strong main effect for gender,  $F(1,70) = 10.55$ ,  $p < .001$ . Female nondoers attributed their nonengagement to the lack of pressure ( $M=4.92$ ) more so than did the male nondoers ( $M=3.17$ ).

Cell Contrasts. A cell by cell examination of each factor's mean scores (see Table 21) indicates that the nondoers in the Low-Control/Rationale/Acknowledgment condition made a lower degree of attribution to the uselessness factor than did the nondoers in the High-Control/No-Rationale/No-Acknowledgment condition. The difference between the two conditions was statistically significant,  $F(1,78) = 4.41$ ,  $p < .05$ . A similar effect is also evident for the dullness factor. Again, the difference between the two conditions on this factor was significant,  $F(1,78) = 4.09$ ,  $p < .05$ . These findings suggest that, despite their nonengagement in the

task, the nondoers of the two conditions believed that different reasons underlied their nonregulation of the activity.

Moreover, a one-way contrast which tested the additive effects of the facilitating variables was performed on the uselessness factor (weights assigned were: -3 to the Low-Control/Rationale/Acknowledgment condition, -1s to the two-facilitating-factors conditions, +1s to the one-facilitating-factor conditions, and +3 to the High-Control/No-Rationale/No-Acknowledgment condition). The result of this comparison was significant,  $F(1,78) = 6.31$ ,  $P < .025$ . An additional one-way contrast indicated that relative to the other experimental conditions (weights assigned were: -1s), attribution to uselessness was the highest in the High-Control/No-Rationale/No-Acknowledgment condition (weight assigned was: +7),  $F(1,78) = 6.96$ ,  $P < .05$ . Another one-way contrast (weights in the preceding comparison were reversed) also indicated that the lowest attribution to the uselessness took place in the Low-Control/Rationale/Acknowledgment condition even though this effect was marginal,  $F(1,78) = 3.76$ ,  $P < .07$ . The same set of one-way contrasts were also performed on the dullness factor. However, the results did not reach significance,  $F_s < 2.0$ .

The comparison of the competence mean scores between the Low-Control/Rationale/Acknowledgment and the High-Control/No-Rationale/No-Acknowledgment conditions did not indicate a significant difference,  $F(1,78) = .4$ , even

though the means were in the expected direction of the Low-Control/Rationale/Acknowledgment nondoers making greater attribution to competence. The difference between the two conditions in the no-pressure factor was only a trend,  $F(1,78) = 2.13$ ,  $p < .20$ , even though again these means were in the expected direction of the Low-Control/Rationale/Acknowledgment nondoers making less attribution to this factor. Moreover, the same set of one-way contrasts that were performed on the uselessness and the dullness factors were also applied to these two factors. However, no significant effects emerged from these analyses,  $F_s < 2.1$ .

In sum, the analysis of the Post Questionnaires' data indicated that the doers in the Low-Control/Rationale/Acknowledgment condition attributed their self-regulation to a combination of constructs that converged at the internalization factor, while their counterparts in the High-Control/No-Rationale/No-Acknowledgment condition mostly perceived pressure as the reason behind their self-regulation. The findings further supported the additive impact of the facilitating variables on the doers' attributions across the various conditions. Moreover, the results indicated that the nondoers across different conditions viewed their nonengagement in different lights, with the Low-Control/Rationale/Acknowledgment nondoers invoking task uselessness and dullness to the least extent.

### Doers versus Nondoers

Thus far, the analyses of the Activity Perception Questionnaire mainly focused on the question of the overall between-group differences in the subjective experiences and as such, they were only based on the responses from all subjects in a given condition. Thus, these analyses did not allow to explore the possibility of differences in the psychological states of those subjects who self-regulated the task versus those who did not. Moreover, the analyses of the two Post Questionnaires treated doers and nondoers in terms of two separate groups without assessing the differences between them in the attributions of their free-activity behavior. Therefore, it was decided to explore the differences that may have existed between the doers and the nondoers. To do so, several ANOVAs were performed which included the doer-nondoer as an additional between-group factor.

Activity Perception Questionnaire. The Gender x Control x Rationale x Acknowledgment x Do ANOVA of the four subscales of this questionnaire did not indicate any Gender x Do interaction for any of the subscales,  $F_s \leq 1.08$ , so the data were collapsed across gender. The collapsed cell means for each of the four subscales are presented in Table 23. The 4-way ANOVA of the interest/enjoyment subscale only indicated a significant main effect for the do variable,  $F(1,112) = 5.67$ ,  $P < .01$ . Doers ( $M = 2.59$ ) perceived the task to be more interesting than did the



nondoers ( $M = 2.48$ ). The 4-way ANOVA of perceived usefulness did not indicate any do effect for this subscale,  $F_s \leq .56$ .

The 4-way ANOVA of the perceived freedom subscale indicated a significant Control x Do interaction,  $F(1,112) = 4.05$ ,  $P < .05$ . The cell means for this interaction are presented in Table 24. As the table indicates, in the low-controlling setting both the doers and the nondoers evidenced the same degree of perceived freedom. In contrast, the nondoers in the high-controlling setting experienced a significantly lower degree of freedom, relative to the doers. Such a pattern suggests that these nondoers were perhaps experiencing psychological reactance (Brehm, 1966) in reaction to the high control manipulation; thus, their lower report of freedom, and their subsequent resistance against performing the task during the free-activity period. The ANOVA of the perceived pressure/tension did not indicate any significant effect of do for this subscale,  $F_s \leq 1.64$ .

The last set of analyses concerned the more focused question of the differences in the perceived freedom between the doers and the nondoers in the Low-Control/Rationale/Acknowledgment versus the High-Control/No-Rationale/No-Acknowledgment conditions. Thus, a 2-way ANOVA was conducted which included the doer vs. nondoer as the first between-group factor, and the three-facilitating-factor vs. no-facilitating-factor cell as the



second between-group factor. The results basically replicated the Control x Do interaction that was found when all conditions were included. That is, a marginal Condition x Do interaction emerged,  $F(1,28) = 3.80$ ,  $p < .06$ . Inspection of the means for this interaction indicated that in the three-facilitating-factors cell, there was no significant difference between the doers ( $M = 4.78$ ) and the nondoers ( $M = 5.21$ ),  $F(1,28) = .88$ . In contrast, the nondoers of the no-facilitating-factor cell ( $M = 3.05$ ) evidenced a trend for a lower perceived freedom, relative to the doers of that condition ( $M = 3.91$ ),  $F(1,28) = 3.52$ ,  $p < .08$ . Again, this pattern suggested a possible reactance effect for these nondoers. Although the no-facilitating-factor doers experienced more freedom than the nondoers, they also evidenced, as would be expected, a trend for a lower perceived freedom relative to the three-facilitating-factors doers (i.e.,  $M = 3.91$  vs.  $M = 4.78$ , respectively,  $F(1,28) = 3.60$ ,  $p < .07$ ). An additional ANOVA with the gender as the third between-group factor was also performed. However, no effect for gender emerged,  $F < .32$ .

The Do x Condition ANOVA was also performed on the perceived pressure/tension factor, and although no significant effect emerged,  $ps > .12$ , the pattern of the cell means is worth mentioning. For instance, no-facilitating-factor doers ( $M = 3.00$ ) experienced more pressure than the three-facilitating-factors doers ( $M = 2.20$ ),  $F(1,28) = 4.00$ ,  $p < .06$ . However, there was no

difference between the nondoers in the two conditions ( $M = 2.35$  vs.  $M = 2.23$ , respectively). There was also no significant difference between the doers and the nondoers in either condition.

Post Questionnaires. To analyze the differences between the doers and the nondoers attributions, first it was decided to combine their responses, with the nondoers' items being reversed in the direction of the doers' items. Then, the items were factor analyzed. As could be expected, the result of this factor analysis revealed the same set of factors that was found when the nondoers' version was factor analyzed separately: (a) the usefulness factor (eigenvalue=5.22, items with loadings  $\geq .52$  were #1,7,11,13,15); (b) the interest/enjoyment factor (eigenvalue=2.16, items with loadings  $\geq .68$  were #2,6,14); (c) the perceived competency factor (eigenvalue=1.37, items with loadings  $\geq .86$  were #3,5); and (d) the pressure factor (eigenvalue=1.02, items with loadings  $\geq .77$  were #4,10). Factor scores were created by averaging the score of items that loaded on a given factor. The Gender x Control X Rationale x Acknowledgment x Do ANOVA was then performed on each of the four factors. Table 25 presents the factors mean scores by condition and by do.

The 5-way ANOVA of the usefulness factor did not reveal any significant main and/or interaction effects for the do variable on this factor,  $F_s \leq 2.0$ . The 5-way ANOVA of the interest/enjoyment factor indicated no significant

gender effect  $F_s \leq 2.5$ . Therefore, the data were collapsed across gender. The 4-way ANOVA of this factor indicated a highly significant main effect for the do variable,  $F(1,112) = 25.73$ ,  $p < .001$ . The doers ( $M = 3.41$ ) attributed their task engagement to interest in doing the task more so than the nondoers ( $M = 2.38$ ) attributed their nonengagement to interest in not doing the task. The 5-way ANOVA of the perceived competency factor did not indicate any significant gender effect,  $F_s < 1$ . The 4-way ANOVA revealed a significant main effect for do,  $F(1,112) = 5.36$ ,  $p < .02$ . Again, the doers ( $M = 2.93$ ) attributed their task engagement to becoming more competent by doing the task to a greater extent than the nondoers ( $M = 2.61$ ) attributed their nonengagement to becoming more competent by not doing the task.

The 5-way ANOVA of the pressure factor indicated a significant main effect for the do variable,  $F(1,97) = 5.61$ ,  $p < .01$ . The nondoers ( $M = 2.45$ ) perceived that pressure underlied their nonengagement to a greater extent than the doers ( $M = 2.03$ ) perceived that it underlied their task engagement. The 5-way ANOVA also indicated a Gender x Do interaction,  $F(1,97) = 9.00$ ,  $p < .003$ . The cell means for this interaction are presented in Table 26. Note that the pattern of these means replicated the gender differences that were found, when each version of the Post Questionnaire was analyzed separately. That is, female doers attributed their engagement to pressure more than did

the male doers, and the female nondoers attributed their nonengagement to pressure to a lesser extent than did the male nondoers. The 5-way ANOVA also indicated a significant Rationale x Do interaction,  $F(1,97) = 4.98$ ,  $P < .02$ . The cell means are listed on Table 27. As can be seen, the rationale/doers made a lower attribution to pressure for their task engagement than the rationale/nondoers made for their nonengagement.

Additional Condition x Do (Low-Control/Rationale/Acknowledgment vs. High-Control/No-Rationale/No-Acknowledgment x Doer vs. Nondoer) ANOVAs were also performed on the subjects attributions of their free-activity behaviors. The 2-way ANOVA indicated a significant Condition x Do interaction for attributions to the pressure factor,  $F(1,28) = 7.98$ ,  $P < .008$ . An examination of the mean scores indicated that the no-facilitating-factor doers ( $M = 2.64$ ) made a marginally greater attribution to pressure than did the three-facilitating-factor doers ( $M = 1.83$ ),  $F(1,28) = 4.10$ ,  $P < .06$ . In contrast, the three-facilitating-factors nondopers ( $M = 2.86$ ) made a marginally greater attribution to pressure than did the no-facilitating-factor nondopers ( $M = 2.05$ ),  $F(1,28) = 4.10$ ,  $P < .06$ . There was no difference between the doers and nondopers in the no-facilitating-factor cell (i.e.,  $M = 2.64$  vs.  $M = 2.05$ , respectively), whereas in the three-facilitating-factor cell nondopers made a significantly greater attribution to pressure than did the doers (i.e.,  $M = 2.86$  vs.  $M = 1.83$ ,

respectively,  $F(1,28) = 6.63$ ,  $p < .02$ ).

#### Causality Orientation Scale

In order to examine the role of causality orientations in self-regulation, it was decided to divide subjects into the three orientation groups. To do so, subjects' scores on each orientation were transformed into standardized Z scores. Subjects were then classified as (a) autonomy-oriented ( $n=44$ ) if their standardized autonomy scores were greater than their standardized control and impersonality scores, (b) control-oriented ( $n=44$ ) if their standardized control scores were greater than their standardized autonomy and impersonality scores, and (c) impersonally-oriented ( $n=44$ ) if their standardized impersonality scores were greater than their standardized autonomy and control scores. Several ANOVAs which included orientation as an additional between-group factor were then performed on the various dependent measures of the present study.

Engagement Time. A  $2 \times 2 \times 2 \times 2 \times 3$  (Gender x Control x Rationale x Acknowledgment x Orientation) ANOVA of the engagement time did not reveal any significant main or interaction effects for gender,  $F_s < 2.0$ . Moreover, removal of gender would allow for a more balanced design matrix. Therefore, it was decided to exclude this variable from all of the remaining analyses. The 4-way ANOVA of the engagement time indicated a trend toward a Control x Rationale x Orientation interaction,  $F(2,104) = 2.51$ ,  $p < .08$ . The cell means and residuals for this interaction

are presented in Table 28. The ANOVA indicated no other effects of orientation for engagement time,  $F_s < 1.2$ .

Activity Perception Questionnaire. The 4-way ANOVA of the four subscales of the Activity Perception Questionnaire did not reveal any significant main effects or interactions for interest/enjoyment, perceived usefulness, and perceived freedom,  $F_s < 2.0$ . The ANOVA of the perceived pressure/tension subscale only suggested a marginal Control x Acknowledgment x Orientation interaction,  $F(2,104) = 2.85$ ,  $P < .06$ . The means and residuals are indicated in Table 29.

Doers' Post-Questionnaire. The 4-way ANOVA of the internalization factor of this questionnaire did not indicate any significant main or interaction effects for orientation,  $F_s < 2.0$ . The ANOVA of the pressure factor indicated a significant Control x Orientation interaction,  $F(2,22) = 4.62$ ,  $P < .02$ . Table 30 presents the cell means for this interaction. As the pattern of the means suggests, in the low-controlling setting the lowest, and in the high-controlling setting the highest attributions to pressure were made by the impersonally-oriented doers. Accordingly, a one-way contrast was performed which tested this pattern. Thus, a weight of -2 was assigned to the low-control/impersonal doers and a weight of +2 to the high-control/impersonal doers. In the low-controlling setting, autonomy- and control-oriented doers were given weights of +1s and in the high-controlling setting, they were given weights of -1s. The result of this comparison was highly significant,

$F(1,22) = 10.89$ ,  $P < .005$ . The 4-way ANOVA also indicated a significant Control x Acknowledgment x Orientation interaction,  $F(2,22) = 4.78$ ,  $P < .02$ . The means and the residuals are presented in Table 31.

Nondoers' Post-Questionnaire. The 4-way ANOVA of this questionnaire did not indicate any effects of orientation for dullness and competence factors,  $F_s < 1.9$ . The ANOVA of the uselessness factor indicated a significant Control x Rationale x Orientation interaction,  $F(2,63) = 3.22$ ,  $P < .04$ . Table 32 presents the cell means and the residuals for this interaction. No other effects were found for this factor,  $F_s < 1.5$ . The 4-way ANOVA of the no-pressure factor revealed a significant Rationale x Orientation interaction,  $F(2,63) = 3.12$ ,  $P < .05$ . The means are presented in Table 33. The ANOVA also indicated a significant interaction for Control x Acknowledgment x Orientation,  $F(2,63) = 4.92$ ,  $P < .01$ , and a significant interaction for Rationale x Acknowledgment x Orientation,  $F(2,63) = 5.13$ ,  $P < .008$ . The cell means and residuals for these interaction are presented, respectively, in Table 34 and Table 35.



## Discussion

The motivational theory of internalization predicts that internal regulation for an uninteresting activity is most likely to occur in a context that uses minimal control in initially eliciting engagement in the uninteresting target activity, and provides an acknowledgment that reflects on the person's disinterest in performing such an activity, as well as a meaningful rationale that explains the activity's value for effective functioning. In the present study, the analyses of the behavioral measure of self-regulation (i.e., engagement time) supported this basic prediction: subjects displayed the highest level of self-regulation in the condition that presented all three facilitating factors; i.e., the Low-Control/Rationale/Acknowledgment condition.

Further comparison of the engagement time mean scores across the experimental conditions revealed that for seven of the eight conditions, the three facilitating factors conformed to an additive pattern of effect such that the three conditions that presented any two of the three facilitating factors led to a less self-regulation, relative to the Low-Control/Rationale/Acknowledgment condition, and to a greater self-regulation, compared to the one-facilitating-factor conditions. The one condition that did not conform to predictions was the no-facilitating-factor cell in which behavioral self-regulation was quite high--a finding which will be



discussed in more depth later.

While these findings supported the motivational theory's predictions, no significant effect was found when the experimental conditions were compared to tentatively test the predictions that would be derived from the nonmotivational theories of internalization. This suggests that only those variables that are called for by the motivational perspective are the most predictive of self-regulation. However, the design of the present study could only allow for a rough experimental analysis of these alternative perspectives. Therefore, these findings should be considered suggestive rather than definitive.

The analyses of the subscales of the Activity Perception Questionnaire also revealed theoretically consistent differences in the various subjective experiences that were expected to accompany internalization. Those subjects who received all three facilitating factors reported the highest degree of interest/enjoyment, perceived task usefulness, and perceived freedom. Additional comparisons which tested the additive model indicated that these experiences decreased accordingly, as any one of the facilitating factors, and then as any two were removed, with the lowest report made by those subjects who did not receive any of the facilitating factors. A similar, though inverse, pattern was also evident in the experience of pressure/tension, even though this effect was only a trend.

Thus, it is clear that the pattern of between-group

differences that emerged for these subjective experiences followed the engagement time pattern in theoretically meaningful ways. The highest experience of interest/enjoyment, task usefulness, and freedom were each reported in the condition that also promoted the highest level of self-regulation. The two-facilitating-factors and the one-facilitating-factor conditions which resulted, respectively, in moderately high and in moderately low levels of task engagement, promoted also the corresponding levels of interest/enjoyment, perceived task usefulness, and perceived freedom. The lowest level of these experiences was reported in the condition which was also expected to promote the lowest level of self-regulation.

The analyses of the Post Questionnaires also revealed theoretically consistent pattern of differences in the attributions of the free-activity behavior. When asked to explain why they self-regulated the task, those doers who had received all three facilitating factors, compared to those who had not, made the greatest attribution to the internalization factor. Further comparison of the experimental conditions also suggested a trend for the additive effect of the facilitating variables on attributions to the internalization factor. Interestingly enough, all those items that loaded on this factor were originally expected to assess the three separate, but conceptually related, constructs of interest/enjoyment, usefulness, and mastery. However, this convergence

occurred only for the doers, and not for the nondoers (for whom each construct emerged as a separate factor), suggesting that the doers had more concretized and solidified cognitions regarding their self-regulation than the nondoers had regarding their nonregulation.

The analysis of the pressure factor also indicated that those doers who had not received any facilitating factor tended to make the highest attribution to pressure as the reason behind their self-regulation. Attribution to pressure then decreased accordingly, as more facilitating factors were added. Thus, even though all these subjects had self-regulated the task, depending on the context, they interpreted their self-regulation in meaningfully different ways: as any one, and then as more facilitating factors were eliminated from the context, the subject's attribution of self-regulation to pressure enhanced. On the contrary, as the context presented more facilitating factors, the subject invoked to a greater extent an aggregate of constructs that would be expected to be recognized by the person, when he or she self-regulates for more adaptive reasons: interest, usefulness, and mastery.

The analysis of the four factors that emerged from the nondoers' Post Questionnaire also revealed a similar pattern for the uselessness factor, indicating that attribution of nonregulation to task uselessness decreased accordingly, as more facilitating factors were added. However, for the dullness, competence, and no-pressure

factors the expected pattern of between-group differences did not emerge. This suggests that of all these constructs, task utility was probably the most important dimension that the person considered in order to explain his or her noninvolvement with the task.

To summarize, the analyses of each of the several measures of internalization provided results that were consistent with each other in theoretically meaningful ways, suggesting that the facilitating factors not only influenced the behavioral outcome of internalization, but also affected the various experiential processes in ways that were consistent with the actual behavioral outcomes. Thus, the highest perceptions of interest/enjoyment, usefulness, and freedom were each reported in the context that also promoted the highest level of self-regulation. Such a consistent covariation between behavior and experience continued to exist across all contexts, except the one which did not provide any of the facilitating factors. Taken together, these findings lend a strong support to the motivational theory's prediction that such situational events as control, rationale, and acknowledgment play a crucial role in determining internal regulation and its psychological concomitants. And while the effect of these situational factors was unequivocally evident, the impact of the individual differences, namely the causality orientations, was less clear-cut. This is reflected in the fact that whereas no orientation main effects were found

for any of the dependent measures, several three-way interactions emerged between orientation and any two of the contextual factors, suggesting that the interaction of the causality orientations with the situational events in affecting internalization is a complicated process which warrants further investigation.

A set of intriguing, but unexpected, findings that consistently emerged throughout this study was the between-group differences in the experience of interest/enjoyment. It was originally predicted that because internalization involves that domain of activities which are inherently uninteresting, the self-regulation which occurs during the free-activity period should reflect a greater identification with the activity's value and importance, rather than a higher intrinsic motivation for the task. This differentiation was expected to be empirically demonstrated in terms of theoretically meaningful differences in perceived usefulness, at the same time that interest/enjoyment would remain unaffected across conditions. However, the data indicated that the rationale, which would be expected to only affect perceived usefulness, also led to a significantly greater experience of interest/enjoyment such that across all conditions, the report of interest/enjoyment covaried (i.e., increased or decreased) consistently with the perceived task usefulness. Further, the interest/enjoyment and the usefulness factors were highly correlated.

These findings suggest that provision of the rationale

had a similar effect on both of these processes. However, a close inspection of the two subscales' mean scores indicates that in all conditions, subjects reported a greater degree of task usefulness than the experience of interest/enjoyment. This relatively lower experience of interest/enjoyment suggests that perceived usefulness, which is more theoretically relevant to internalization, was affected by the rationale more strongly than the interest/enjoyment was. Moreover, the analyses that were performed on the four options of the usefulness versus fun item of the Activity Perception Questionnaire indicated theoretically meaningful pattern of differences in the useful-but-not-fun option. Thus, the highest endorsement of this option was done by the Low-Control/Rationale/Acknowledgment subjects, and the endorsement decreased accordingly, as more facilitating factors were removed. In contrast, the analyses of the useful-and-fun option did not indicate any significant pattern of between-group differences. Further, no interpretable pattern emerged for the the fun-but-not-useful option. Again, such findings imply a greater variation in the perceived task usefulness, relative to the experience of interest/enjoyment. Finally, over 80% (see Table 15) of all subjects endorsed that the task was not fun, thus indicating that there was little intrinsic motivation for the activity.

The data also indicated that in each of the four rationale conditions where a higher interest/enjoyment was

reported, the interest mean scores remained below the midpoint (i.e., 3.5) of the scale which measured this experience. In fact, if one were to assume that the average rating for an intrinsically motivating activity would, at least, fall on the midpoint, and then compared the midpoint with the rationale subjects' total interest/enjoyment mean score (i.e., 2.705), the difference would emerge as statistically significant.<sup>6</sup> However, the assumption of midpoint as the interest/enjoyment rating for an intrinsically interesting task is highly hypothetical and this difference should not be taken at face value. A more conclusive evidence can emerge from a study that would employ both interesting and uninteresting activities and would then compare the interest/enjoyment ratings of each of these activities.

Moreover, despite this seemingly low level of interest/enjoyment, the data clearly indicated that the rationale enhanced this experience. One possible explanation is that the rationale promoted the interest in carrying out the uninteresting activity, without having necessarily enhanced the feeling of enjoyment that is usually experienced while a person is engaged in an interesting task. Stated differently, the rationale affected only the motivation or inclination to perform the task, and not the sense of pleasure or fun that would be associated with performance, if the task were intrinsically interesting. In retrospect, it is not surprising that the



rationale would enhance the person's interest in performing the uninteresting activity. When an individual understands an activity's importance and identifies with its value for effective functioning, he or she is more likely to become interested in the activity and want to carry it out, not because of the activity's intrinsic reward, but because performing the activity would promote the person's competency and ensure his or her adaptation. Thus, the rationale subjects' greater interest in performing the activity was probably reflected in their higher interest/enjoyment ratings. However, the measurement of interest/enjoyment, as it was carried out in the present research, does not allow to differentiate between interest in an activity for its utility on the one hand, and feelings of enjoyment on the other hand. The empirical demonstration of this distinction would require a wider range of questionnaire items that can measure each construct in terms of a separate dimension. This, of course, awaits future research.

Perhaps the most striking finding of the present research was the high level of self-regulation which occurred in the condition that did not present any of the facilitating factors, and was therefore expected to result in the lowest level of self-regulation; namely, the High-Control/No-Rationale/No-Acknowledgment condition. In fact, the comparison of the engagement time mean scores indicated that there was no significant difference between this and

the Low-Control/Rationale/Acknowledgment condition. Since the actual behavioral outcome was inconsistent with the prediction that the High-Control/No-Rationale/No-Acknowledgment condition would produce the lowest degree of self-regulation, it was important to understand the nature of the psychological processes that surrounded the self-regulation which occurred in this condition.

As previously mentioned, the motivational perspective has differentiated between an internally controlling self-regulation which is associated with feelings of being controlled and not having a choice, and a self-determined self-regulation which is associated with perceptions of choice and freedom. In light of these theoretical considerations, it was deemed necessary to demonstrate, especially in relation to the Low-Control/Rationale/Acknowledgment condition, that the self-regulation which occurred in the High-Control/No-Rationale/No-Acknowledgment condition mostly reflected feelings of pressure and not having a choice rather than feelings of choice or self-determination. The assumption that self-regulation in this condition was internally controlling (or introjected) was implicated by the fact that of all the various contexts, this one was the most controlling: the experimenter presented a substantial source of control and there was neither the rationale, nor the acknowledgment, either of which could have mitigated some of that pressure. Accordingly, it was expected that the High-Control/No-

Rationale/No-Acknowledgment subjects would mostly report a set of experiences that are conceptually related to the feelings of being controlled.

The results of the one-way contrasts which tested the additive model indicated that compared to the three-facilitating-factors, two-facilitating-factors, and one-facilitating-factor conditions, the High-Control/No-Rationale/No-Acknowledgment subjects reported a significantly lower experience of interest/enjoyment, task usefulness, and freedom. The same comparison also indicated a trend for a greater experience of pressure/tension in that condition. The comparisons of the subjects' attributions of the free-activity behavior also indicated a trend for the lowest attribution to the internalization factor, and the highest attribution to the pressure factor. Additional one-way contrasts which compared the High-Control/No-Rationale/No-Acknowledgment condition to all of the remaining seven cells also indicated similar results; namely that in the High-Control/No-Rationale/No-Acknowledgment condition, there were lower perceptions of task usefulness and freedom. There was also a trend that in this condition, subjects experienced a higher degree of pressure and tension during the experimental period, and then they attributed their free-activity behavior to this felt pressure. Other analyses which directly compared the High-Control/No-Rationale/No-Acknowledgment and the Low-Control/

Rationale/Acknowledgment conditions also indicated similar results. Again, the High-Control/No-Rationale/No-Acknowledgment subjects reported a significantly lower experience of interest/enjoyment, task usefulness, and freedom. These subjects also made a significantly lower attribution to the internalization factor, and displayed a trend for a higher attribution to the pressure factor. The comparisons of the nondoers in the two conditions also indicated greater attributions to the uselessness and dullness factors. Taken together, these findings indicate that relative to all other contexts, and especially, compared to the Low-Control/Rationale/Acknowledgment condition, the High-Control/No-Rationale/No-Acknowledgment condition led to a greater degree of feelings that are indicative of being controlled. This condition also led to a lower report of those constructs that can be expected to be experienced, when a context facilitates a more integrated self-regulation.

An interpretation of these findings would be that during the experimental period, the High-Control/No-Rationale/No-Acknowledgment subjects experienced a great deal of pressure that was imposed by the experimenter's controlling request; that is to say that these subjects felt obliged to comply with the experimenter's demand. Furthermore, because this demand was overly controlling, even after the situation was over and the experimenter was no longer around (i.e., during the free-activity period),

the subjects continued to feel that they should do this activity, as the experimenter had said they should; hence, they self-regulated the task.

Thus, the next thing to demonstrate was that for the High-Control/No-Rationale/No-Acknowledgment subjects, self-regulation was associated with feelings of not having a choice. Such an association would indicate that the more obligated these subjects felt to comply with the experimenter's demand during the experimental period, the more they self-regulated the task during the free-activity period, as if these subjects were now responding to these already introjected demands. The opposite was predicted to emerge for the Low-Control/Rationale/Acknowledgment subjects whose self-regulation was expected to reflect a greater feeling of identification with the task's value, and thus, a greater experience of choice to perform the task.

In general, the results of the within-cell correlations which included only those subjects who had self-regulated the task supported these conjectures. The analyses indicated that for both females and males, the self-regulation which occurred in the Low-Control/Rationale/Acknowledgment condition was positively associated with the experience of freedom. In the High-Control/No-Rationale/No-Acknowledgment condition, the expected negative association occurred only for females. Additional analyses also indicated that a high degree of positive

association existed between these females' self-regulation and perceived pressure/tension ( $r = .96$ ,  $P < .17$ ). The fact that these findings emerged only for females, and not for males, is theoretically consistent with many past studies which have documented that, due to differences in socialization practices, women tend to be more susceptible to being controlled by the environmental contingencies (See Deci & Ryan, 1985, for review). The nature of the males' self-regulation in the High-Control/No-Rationale/No-Acknowledgment condition is less clear-cut from the present findings. For instance, for these males, self-regulation was unassociated with perceived freedom and negatively associated with perceived pressure/tension ( $r = -.85$ ,  $P < .14$ ). At the same time, however, these males' self-regulation was negatively associated with the experience of interest/enjoyment ( $r = -.91$ ,  $P < .08$ ). Such a pattern suggests that perhaps feelings of boredom led these males to self-regulate the activity during the free-activity period. This interpretation, however, is highly speculative and additional information is required to fully understand the nature of these males' self-regulation.

Despite the above gender differences, the correlation between the engagement time and perceived freedom continued to remain negative, after the data were combined and the gender effect was covaried out. Moreover, the comparison of the partial within-cell correlations across the experimental conditions supported the additive model: as

one moved away from the three-facilitating-factors condition and towards the no-facilitating-factor cell, there was a relative decrease in the positive association or a relative increase in the negative association between the engagement time and perceived freedom. This indicates that the highest level of introjected self-regulation had occurred in the High-Control/No-Rationale/No-Acknowledgment condition.

In short, these findings indicate that, depending on the context, the same behavioral outcome can reflect different psychological processes. To differentiate these processes, the effects of the contexts on subjective experiences were assessed. The findings indicated theoretically meaningful differences in these experiences. In the High-Control/No-Rationale/No-Acknowledgment condition, feelings of obligation and being controlled mostly characterized subjective experiences, while the opposite was true in the Low-Control/Rationale/Acknowledgment condition. Furthermore, the within-cell correlations indicated that the high level of obligation that was experienced in the High-Control/No-Rationale/No-Acknowledgment condition basically underlay the self-regulation which occurred in that context. In contrast, self-regulation in the Low-Control/Rational/Acknowledgment condition basically reflected perceptions of choice and self-determination.



### Implications

Findings of the present research would have implications that are relevant to many domains of activities. A wide range of important behaviors are not intrinsically motivated, and yet effective functioning in the social world requires that individuals take on personal responsibility to perform them. The present findings indicated that a choiceful self-regulation for such activities is most likely to develop in a socialization context that supports autonomy, explains the activity's social utility, and reflects on the person's disinterest.

The findings would be especially relevant to the domain of child socialization. It is of considerable value for parents or other primary caretakers that their children develop capacities to self-regulate uninteresting behaviors in a choiceful way. These findings imply that this goal would be most likely achieved, when parents support autonomy, provide a meaningful reason, and acknowledge the child's dislike for such activities. Another domain that can be addressed by the present findings is learning and education. Many aspects of the academic curriculum are not inherently appealing, and yet the educational system requires that children and young adolescents learn and master them. Again, the present findings implicate the optimal conditions under which the motivation for learning can be enhanced. These findings also bear relevance to the domain of psychotherapy and

behavior change. One desirable outcome of therapy is known to be the maintenance of change after the therapeutic procedure is terminated. That is to say that the person must be able to choicefully self-regulate the newly acquired changes, when the therapist is no longer available. The present findings imply that this goal is most likely attainable in a therapeutic context that would support the person's autonomy and would address the person's conflictful feelings regarding the change. The results are especially relevant to the behavioral theories which assume that a high degree of environmental contingencies is necessary for behavior change. It may be true, as it was found in the High-Control/No-Rationale/No-Acknowledgment condition, that overly controlling settings lead to the desired behavioral outcome. However, by strictly relying on overt behaviors, one may inadvertently neglect the maladaptive nature of such changes. Finally, the present findings would have direct implications for the domain of work. Individuals are required by their jobs to perform many tasks and chores that are dull and boring. It seems that a greater motivation to perform such activities can be fostered in those work settings that would support the worker's autonomy and would provide means to minimize some of the conflict that is inherent in carrying out these uninteresting activities.

In light of these implications, it seems that the future research on internalization should be directed

towards testing the impact of the facilitating variables on a self-regulation that develops under more realistic settings. The context of the present research made it possible to test theory-derived predictions without losing experimental control. A stronger support for the predictions can emerge when the present findings are replicated in a field setting. Such settings could include classrooms, work situations, medical or psychological therapy programs, as well as parent-child interaction contexts.

### Footnotes

<sup>1</sup>The program was set in such a way that once the subject terminated it, he or she could not re-activate the program to return to the activity.

<sup>2</sup>In the present study, all pair-wise comparisons between conditions were conducted by the Scheffe's method of multiple comparisons. This method is conservative and therefore, protects against capitalizing on chance. To employ the test, the following procedure is used:

$$(a) \quad F = \frac{(M_1 - M_2)^2}{\frac{S_w^2}{n_1} + \frac{S_w^2}{n_2}}$$

(b) The F value for  $\underline{P} < .05$  or  $\underline{P} < .01$  is multiplied by  $df_1$ .

(c) The difference between the means is significant at the .05 or .01 levels, if  $(a) \geq (b)$ .

<sup>3</sup>Immediately prior to leaving the room, the experimenter pressed the "shift" "@" keys. This was recorded by the computer as the beginning of the free-activity period.

<sup>4</sup>To apply contrasts to proportions, the following formula is used (Rosenthal & Rosnow, 1984):

$$Z = \frac{\sum (\%) (\text{contrast weights})}{\sqrt{\sum (S^2) (\text{contrast weights})}}$$

where

$$S^2 = \frac{\% (1 - \%)}{n}$$

<sup>5</sup>Two separate factor analyses were performed on each version of the two Post Questionnaires. In the first analysis, the partial correlations between the items (after the removal of the independent variables) were factor analyzed. In the second analysis, the effects of the independent variables were included. For each version, the two factor analyses yielded identical results and therefore, only the results of the second analysis are reported.

$$6 \quad t = \frac{X - M}{\sqrt{S^2/n}}$$

$$t = \frac{2.705 - 3.5}{\sqrt{.13/64}}$$

$$t(63) = 19.87, P < .0001$$

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Table 1

Engagement Time in Seconds by Gender and Condition

	Low-Control		High-Control	
	Female	Male	Female	Male
Acknowledgment	146.72	84.15	18.48	73.41
	(154.87)	(128.38)	(34.36)	(104.03)
	n = 5	n = 4	n = 2	n = 4
Rationale				
No-	110.04	37.73	13.74	30.64
Acknowledgment	(151.57)	(94.21)	(38.86)	(81.23)
	n = 4	n = 2	n = 1	n = 2
No-Rationale				
Acknowledgment	53.08	108.96	8.82	37.74
	(103.17)	(149.55)	(24.94)	(104.07)
	n = 3	n = 4	n = 1	n = 2
No-Rationale				
No-	14.59	0.0	85.52	105.12
Acknowledgment	(41.28)	(0.0)	(128.57)	(131.04)
	n = 1	n = 0	n = 3	n = 4

Note. Numbers in the parentheses are the standard deviations. The ns below the standard deviations are the frequency of subjects who engaged in the activity.



Table 2

Engagement Time in Seconds by Condition

	Low-Control	High-Control
Acknowledgment	115.44 <sub>a</sub>	45.95 <sub>ae</sub>
Rationale	(141.17)	(80.04)
No-Acknowledgment	73.88 <sub>ac</sub>	22.19 <sub>bcde</sub>
	(127.50)	(62.13)
Acknowledgment	80.99 <sub>ad</sub>	23.28 <sub>bcde</sub>
No-Rationale	(127.43)	(74.62)
No-Acknowledgement	7.30 <sub>bce</sub>	95.43 <sub>a</sub>
	(29.19)	(125.82)

Note. n = 16 per cell. Numbers in the parentheses are the standard deviations. Cells having a common transcript are not significantly different at the .05 level by the Scheffe's test.

Table 3

Engagement Time in Seconds by Control and Rationale

	Low-Control	High-Control
Rationale	94.66 <sub>a</sub>	34.07 <sub>bc</sub>
No-Rationale	44.15 <sub>bc</sub>	59.31 <sub>ac</sub>

Note. n = 32 per cell. Cells having a common transcript are not significantly different at the .05 level by the Scheffe's test.

Table 4

Engagement Time in Seconds by Control and Acknowledgment

	Low-Control	High-Control
Acknowledgment	98.22 <sub>a</sub>	34.62 <sub>bc</sub>
No-Acknowledgment	40.59 <sub>bc</sub>	58.77 <sub>ac</sub>

Note. n = 32 per cell. Cells having a common transcript are not significantly different at the .05 level by the Scheffe's test.

Table 5

Initiation Time in Seconds by Condition

	Low-Control	High-Control
Acknowledgment	136.17 (149.27)	220.57 (118.67)
Rationale		
No-Acknowledgment	191.38 (144.89)	245.11 (118.01)
Acknowledgment	184.32 (142.78)	245.24 (117.74)
No-Rationale		
No-Acknowledgment	281.73 (73.08)	173.76 (147.90)

Note. n = 16 per cell. Numbers in the parentheses are the standard deviations.

Table 6

Partial Correlations of the Subscales of the Activity  
Perception Questionnaire Removing the Linear Effects of the  
Independent Variables

	Interest/ Enjoyment	Usefulness	Freedom
Usefulness	$r = .67$ $\underline{P} < .0001$	-	-
Freedom	$r = .33$ $\underline{P} < .0001$	$r = .41$ $\underline{P} < .0001$	-
Pressure/ Tension	$r = -.02$ ns.	$r = .09$ ns.	$r = -.07$ ns.

Note. N = 128.

Table 7

Interest/Enjoyment, Perceived Usefulness, Perceived Freedom,  
and Perceived Pressure/Tension by Condition

	Low-Control	High-Control
Acknowledgment	Interest = 3.08	Interest = 2.12
	Usefulness = 4.13	Usefulness = 3.12
	Freedom = 4.97	Freedom = 3.91
	Pressure = 2.22	Pressure = 2.51
Rationale		
No-	Interest = 2.89	Interest = 2.73
Acknowledgment	Usefulness = 3.49	Usefulness = 3.81
	Freedom = 4.97	Freedom = 3.85
	Pressure = 1.74	Pressure = 2.39
Acknowledgment	Interest = 2.14	Interest = 2.14
	Usefulness = 2.77	Usefulness = 2.72
	Freedom = 4.83	Freedom = 3.29
	Pressure = 2.31	Pressure = 2.31
No-Rationale		
No-	Interest = 1.97	Interest = 2.13
Acknowledgment	Usefulness = 2.46	Usefulness = 2.59
	Freedom = 4.59	Freedom = 3.43
	Pressure = 2.57	Pressure = 2.64

Note. n = 16 per cell.

Table 8

Interest/Enjoyment by Gender and Rationale

	Rationale	No-Rationale
Female	2.82 <sub>a</sub>	1.84 <sub>b</sub>
Male	2.58 <sub>a</sub>	2.33 <sub>a</sub>

Note. n = 32 per cell. Cells having a common transcript are not significantly different at the .05 level by the Scheffe's test.

Table 9

Perceived Usefulness by Control and Acknowledgment

	Low-Control	High-Control
Acknowledgement	3.45 <sub>a</sub>	2.92 <sub>b</sub>
No-Acknowledgment	2.98 <sub>ab</sub>	3.20 <sub>ab</sub>

Note. n = 32 per cell. Cells having a common transcript are not significantly different at the .05 level by the Scheffe's test.



Table 10

Differences in Interest/Enjoyment, Perceived Usefulness,  
Perceived Freedom, and Perceived Pressure/Tension between the  
Low-Control/Rationale/Acknowledgment and High-Control/No-  
Rationale/No-Acknowledgment Conditions

Interest/Enjoyment:	7.52, $P < .01$
Perceived Usefulness:	19.76, $P < .001$
Perceived Freedom:	23.72, $P < .0001$
Perceived Pressure/Tension:	-

Note. Numbers to the left of the  $P$  values are the Scheffe's values.

Table 11

Partial Within-Cell Correlation between the Engagement Time of All Subjects and Perceived Freedom, Perceived Usefulness, Interest/Enjoyment, and Perceived Pressure/Tension by Experimental Conditions

	F	U	I/E	P/T
L-Cont/Rat/Ack	.11	.29	.35	.01
L-Cont/Rat/N-Ack	.33	.26	.62 <sup>a</sup>	-.09
L-Cont/N-Rat/Ack	.20	.40	.45 <sup>a</sup>	.19
L-Cont/N-Rat/N-Ack	-.42 <sup>a</sup>	-.04	-.08	-.30
H-Cont/Rat/Ack	.14	-.009	.28	.13
H-Cont/Rat/N-Ack	.26	.27	.25	.07
H-Cont/N-Rat/Ack	-.36	-.21	.43 <sup>a</sup>	-.21
H-Cont/N-Rat/N-Ack	.35	.21	.31	.24

Note. n = 16 per cell. Transcript indicates that the r is significant at .10 or a lower probability level.

Table 12

Within-Cell Correlations between the Engagement Time and Perceived Freedom by Gender and by the Low-Control/Rationale/Acknowledgment and the Low-Control/Rationale/No-Acknowledgment Conditions

Females		Males	
L-Cont/ Rat/ Ack	H-Cont/ N-Rat/ N-Ack	L-Cont/ Rat/ Ack	H-Cont/ N-Rat/ N-Ack
(n = 5)	(n = 3)	(n = 4)	(n = 4)
r = .82	r = -.99	r = .61	r = -.07
$\underline{p} < .08$	$\underline{p} < .07$	$\underline{p} < .3$	-

Table 13

Partial Within-Cell Correlations between the Engagement Time and Perceived Freedom by Low-Control/Rationale/Acknowledgment, Two-Facilitating-Factors, One-Facilitating-Factor, and High-Control/No-Rationale/No-Acknowledgment Conditions

L-Cont/ Rat/ Ack	Two- Facilitating- Factors	One- Facilitating- Factor	H-Cont/ N-Rat/ N-Ack
(n = 9)	(n = 19)	(n = 7)	(n = 7)
r = .66	r = .55	r = -.55	r = -.39
P < .05	P < .02	-	-

Differences in the above Correlations:

L-Cont/Rat/Ack <u>vs.</u> Two-F-F:	Z = .31, ns.
L-Cont/Rat/Ack <u>vs.</u> One-F-F:	Z = 2.17, <u>P</u> < .03
L-Cont/Rat/Ack <u>vs.</u> H-Cont/N-Rat/N-Ack:	Z = 1.85, <u>P</u> < .06
Two-F-F <u>vs.</u> One-F-F:	Z = 2.21, <u>P</u> < .02
Two-F-F <u>vs.</u> H-Cont/N-Rat/N-Ack:	Z = 1.86, <u>P</u> < .06
One-F-F <u>vs.</u> H-Cont/N-Rat/N-Ack:	Z = .29, ns.

Table 14

Partial Within-Cell Correlations between the Engagement Time and Interest/Enjoyment, Perceived Usefulness, and Perceived Pressure/Tension by Low-Control/Rationale/Acknowledgment, Two-Facilitating-Factors, One-Facilitating-Factor, and High-Control/No-Rationale/No-Acknowledgment Conditions

	L-Cont/ Rat/ Ack  (n = 9)	Two- F-F  (n = 19)	One- F-F  (n = 7)	H-Cont/ N-Rat/ N-Ack  (n = 7)
I/E	r = .53	r = .77 P < .001	r = .11	r = -.89 P < .01
U	r = .41	r = .65 P < .01	r = .05	r = -.27
P/T	r = .08	r = .17	r = -.01	r = -.28

Note. P values > .10 are not reported.

Table 15

Differences in the Partial Within-Cell Correlations ofTable 13

		L-Cont/ Rat/ Ack	Two- F-F	One- F-F
Two- F-F	I/E:	.89 ns.	-	-
	U:	.71 ns.	-	-
	P/T:	.19 ns.	-	-
One- F-F	I/E:	.74 ns.	1.62 $\underline{P} < .10$	-
	U:	.74 ns.	1.47 $\underline{P} < .14$	-
	P/T:	.14 ns.	.32 ns.	-
H-Cont/ N-Rat/ N-Ack	I/E:	3.09 $\underline{P} < .0002$	4.36 $\underline{P} < .0001$	2.16 $\underline{P} < .03$
	U:	1.10 ns.	1.88 $\underline{P} < .06$	.32 ns.
	P/T:	.57 ns.	.82 ns.	.39 ns

Note. Numbers above the  $\underline{P}$  values are the Z scores. Test of differences was conducted only within each subscale.

Table 16

Percentages of the Usefulness versus Fun by Low-Control/Rationale/Acknowledgment, two-facilitating-factors, one-facilitating-factor, and High-Control/No-Rationale/No-Acknowledgment conditions.

	L-Cont/ Rat/ Ack	Two- F-F	One- F-F	H-Cont/ N-Rat/ N-Ack
Not fun but useful	69%	48%	46%	25%
Neither fun nor useful	6%	31%	42%	56%
Fun and useful	25%	17%	8%	-
Fun but not useful	-	4%	4%	19%

Table 17

Internalization and Pressure by Condition

	Low-Control		High-Control	
	I	P	I	P
Acknowledgment	4.17	2.22	2.47	2.11
	(.99)	(.67)	(1.03)	(1.02)
Rationale	n = 9		n = 6	
No-	3.25	1.78	3.37	2.22
Acknowledgment	(1.35)	(.65)	(.71)	(.38)
	n = 6		n = 3	
Acknowledgment	3.00	1.86	2.40	2.22
	(1.11)	(.63)	(1.23)	(1.35)
No-Rationale	n = 7		n = 3	
No-	1.80	3.00	3.08	2.86
Acknowledgment	(0.0)	(0.0)	(.71)	(.77)
	n = 1		n = 7	

Note. I and P are the factors' initials. Numbers in the parentheses are the standard deviations.



Table 18

Internalization by Control and Acknowledgment

	Low-Control	High-Control
Acknowledgment	3.56 <sub>a</sub> n = 16	2.45 <sub>bc</sub> n = 9
No-Acknowledgment	2.49 <sub>bc</sub> n = 7	3.20 <sub>ac</sub> n = 10

Note. Cells having a common transcript are not significantly different at the .05 level by the Scheffe's test.

Table 19

Pressure by Rationale and Acknowledgment

	Rationale	No-Rationale
Acknowledgment	2.31 <sub>b</sub> n = 15	2.22 <sub>b</sub> n = 10
No-Acknowledgment	1.89 <sub>b</sub> n = 9	2.92 <sub>a</sub> n = 8

Note. Cells having a common transcript are not significantly different at the .05 level by the Scheffe's test.

Table 20

Pressure by Gender, Control, and Acknowledgment

	Low-Control		High-Control	
	Female	Male	Female	Male
Acknowledgment	1.98	2.12	3.42	1.54
	(-.43)	(.43)	(.43)	(-.43)
	n = 8	n = 8	n = 4	n = 6
No-Acknowledgment	2.54	1.17	2.50	2.54
	(.42)	(-.43)	(-.43)	(.43)
	n = 5	n = 2	n = 4	n = 6

Note. Numbers in the parentheses are the interaction residuals after the grand mean, the main effects, and the 2-way interactions were removed.

Table 21

Uselessness, Dullness, Competence, and No-Pressure by Condition

	Low-Control	High-Control
Acknowledgment	Uselessness = 3.34	Uselessness = 3.94
	Dullness = 4.14	Dullness = 4.80
	Competence = 4.54	Competence = 5.00
	No-Pressure = 4.14	No-Pressure = 4.5
	n = 7	n = 10
Rationale		
No-Acknowledgment	Uselessness = 3.56	Uselessness = 3.17
	Dullness = 4.40	Dullness = 4.20
	Competence = 4.50	Competence = 4.27
	No-Pressure = 4.10	No-Pressure = 4.65
	n = 10	n = 13
Acknowledgment	Uselessness = 3.84	Uselessness = 4.03
	Dullness = 4.52	Dullness = 4.67
	Competence = 4.17	Competence = 4.00
	No-Pressure = 5.00	No-Pressure = 4.38
	n = 9	n = 13
No-Rationale		
No-Acknowledgment	Uselessness = 4.25	Uselessness = 4.69
	Dullness = 4.80	Dullness = 5.37
	Competence = 4.27	Competence = 4.28
	No-Pressure = 4.76	No-Pressure = 4.94
	n = 15	n = 9

Table 22

Uselessness by Gender and Rationale

	Rationale	No-Rationale
Female	3.28 <sub>b</sub> n = 20	4.61 <sub>a</sub> n = 24
Male	3.67 <sub>b</sub> n = 20	3.73 <sub>b</sub> n = 22

Note. Cells having a common transcript are not significantly different at the .05 level by the Scheffe's test.

Table 23

Interest/Enjoyment, Perceived Usefulness, Perceived Freedom,  
and Perceived Pressure/Tension by Condition and Do

		Low-Control		High-Control	
		Do	Nondo	Do	Nondo
Ack	I	3.14	3.00	2.02	2.17
	U	4.27	3.94	2.72	3.35
	F	4.78	5.21	4.10	3.79
	P	2.20	2.23	2.23	2.68
Rationale					
No-Ack	I	3.24	2.67	3.28	2.58
	U	3.24	3.63	4.18	3.72
	F	4.92	5.00	4.50	3.70
	P	1.96	1.60	2.53	2.35
Ack	I	2.51	1.84	2.71	2.00
	U	3.21	2.42	2.30	2.82
	F	4.91	4.82	3.96	3.90
	P	2.40	2.22	1.67	2.44
No-Rationale					
No-Ack	I	1.28	2.00	2.59	1.76
	U	2.00	2.48	2.87	2.37
	F	3.37	4.67	3.91	3.05
	P	1.60	2.62	3.00	2.35

Table 24

Perceived Freedom by Control and Do

	Low-Control	High-Control
Do	4.95 <sub>a</sub>	4.12 <sub>b</sub>
	n = 23	n = 19
Nondo	4.92 <sub>a</sub>	3.61 <sub>c</sub>
	n = 41	n = 45

Note. Cells having a common transcript are not significantly different at the .05 level by the Scheffe's test.

Table 25

Perceived Usefulness, Interest/Enjoyment, Perceived Competence, and Pressure by Condition and Do

		Low-Control		High-Control	
		Do	Nondo	Do	Nondo
Ack	U	4.24	3.66	2.63	3.06
	I	3.48	2.86	2.94	2.20
	C	4.39	2.36	2.17	2.00
	P	1.83	2.86	2.08	2.55
Rationale					
No-Ack	U	3.03	3.44	3.73	3.83
	I	3.44	2.60	3.55	2.79
	C	3.42	2.50	2.50	2.73
	P	1.58	2.90	2.00	2.35
Ack	U	3.00	3.15	2.06	2.97
	I	3.67	2.48	3.44	2.33
	C	2.78	2.83	2.33	3.00
	P	1.71	2.00	2.33	2.61
No-Rationale					
No-Ack	U	1.80	2.75	2.80	2.31
	I	3.00	2.20	3.76	1.63
	C	2.50	2.73	3.36	2.72
	P	3.00	2.30	2.64	2.05



Table 26

Pressure by Gender and Do

	Female	Male
Do	2.49 <sub>bd</sub>	1.80 <sub>a</sub>
	n = 20	n = 22
Nondo	2.07 <sub>ad</sub>	2.83 <sub>bc</sub>
	n = 44	n = 42

Note. Cells having a common transcript are not significantly different at the .05 level by the Scheffe's test.

Table 27

Pressure by Rationale and Do

	Rationale	No-Rationale
Do	1.92 <sub>ac</sub> n = 24	2.45 <sub>abc</sub> n = 19
Nondo	2.64 <sub>b</sub> n = 40	2.27 <sub>c</sub> n = 46

Note. Cells having a common transcript are not significantly different at the .05 level by the Scheffe's test.

Table 28

Engagement Time in Seconds by Control, Rationale, and Orientation

		Low-Control	High-Control
Rationale	A	71.09	33.23
		(-19.50)	(19.50)
		n = 13	n = 9
	C	105.19	75.87
		(-10.77)	(10.77)
		n = 12	n = 7
No-Rationale	I	135.25	26.90
		(30.28)	(-30.28)
		n = 7	n = 16
	A	77.70	22.71
		(19.50)	(-19.50)
		n = 13	n = 9
No-Rationale	C	49.37	48.64
		(10.77)	(-10.77)
		n = 9	n = 12
	I	4.00	88.39
		(-30.28)	(30.28)
		n = 10	n = 11

Note. Numbers in the parentheses are the interaction residuals after the grand mean, the main effects, and the 2-way interactions were removed.

Table 29

Perceived Pressure/Tension by Control, Acknowledgment, and Orientation

		Low-Control	High-Control
Acknowledgment	A	2.66	2.07
		(.21)	(-.21)
		n = 13	n = 12
	C	1.84	2.06
		(.07)	(-.07)
		n = 8	n = 8
No-Acknowledgment	I	2.04	3.03
		(-.28)	(.28)
		n = 11	n = 12
	A	2.05	2.30
		(-.21)	(.21)
		n = 13	n = 6
	C	1.95	2.47
		(-.07)	(.07)
		n = 13	n = 11
	I	2.65	2.51
		(.28)	(-.28)
		n = 6	n = 15

Note. Numbers in the parentheses are the interaction residuals after the grand mean, the main effects, and the 2-way interactions were removed.

Table 30

Pressure by Control and Orientation

	Orientation		
	Autonomy	Control	Impersonal
Low-Control	2.12 <sub>a</sub> n = 10	2.26 <sub>a</sub> n = 7	1.85 <sub>a</sub> n = 6
High-Control	1.75 <sub>a</sub> n = 3	1.81 <sub>a</sub> n = 8	2.72 <sub>a</sub> n = 8

Note. Cells having a common transcript are not significantly different at the .05 level by the Scheffe's test.

Table 31

Pressure by Control, Acknowledgment, and Orientation

		Low-Control	High-Control
Acknowledgment	A	1.94	1.5
		(-.12)	(.12)
		n = 6	n = 2
	C	2.47	1.00
		(.42)	(-.42)
		n = 5	n = 2
No-Acknowledgment	I	1.77	2.86
		(-.28)	(.28)
		n = 5	n = 5
	A	2.33	2.00
		(.12)	(-.12)
		n = 4	n = 1
	C	1.83	2.62
		(-.42)	(.42)
		n = 2	n = 6
	I	2.00	2.58
		(.28)	(-.28)
		n = 1	n = 3

Note. Numbers in the parentheses are the interaction residuals after the grand mean, the main effects, and the 2-way interactions were removed.

Table 32

Uselessness by Control, Rationale, and Orientation

		Low-Control	High-Control
Rationale	A	2.67	3.78
		(-.32)	(.32)
		n = 6	n = 7
	C	3.57	3.95
		(-.16)	(.16)
		n = 8	n = 4
No-Rationale	I	4.80	3.30
		(.48)	(-.48)
		n = 3	n = 12
	A	4.53	4.91
		(.32)	(-.32)
		n = 8	n = 8
	C	4.01	4.37
		(.16)	(-.16)
		n = 9	n = 7
	I	3.59	4.57
		(-.48)	(.48)
		n = 7	n = 7

Note. Numbers in the parentheses are the interaction residuals after the grand mean, the main effects, and the 2-way interactions were removed.

Table 33

No-Pressure by Rationale and Orientation

	Orientation		
	Autonomy	Control	Impersonal
Rationale	4.00 <sub>a</sub> n = 13	4.56 <sub>ab</sub> n = 12	4.33 <sub>ab</sub> n = 15
No-Rationale	4.86 <sub>ab</sub> n = 16	4.76 <sub>ab</sub> n = 16	5.05 <sub>b</sub> n = 14

Note. Cells having a common transcript are not significantly different at the .05 level by the Scheffe's test.



Table 34

No-Pressure by Control, Acknowledgment, and Orientation

		Low-Control	High-Control
Acknowledgment	A	4.75	4.30
		(.52)	(-.52)
		n = 6	n = 10
	C	4.71	4.56
		(-.12)	(.12)
		n = 5	n = 6
No-Acknowledgment	I	4.16	4.66
		(-.38)	(.38)
		n = 5	n = 7
	A	3.16	5.50
		(-.52)	(.52)
		n = 8	n = 5
No-Acknowledgment	C	4.75	4.76
		(.12)	(-.12)
		n = 12	n = 5
	I	5.18	4.75
		(.38)	(-.38)
		n = 5	n = 12

Note. Numbers in the parentheses are the interaction residuals after the grand mean, the main effects, and the 2-way interactions were removed.

Table 35

No-Pressure by Acknowledgment, Rationale, and Orientation

		Rationale	No-Rationale
Acknowledgment	A	4.58	4.46
		(.48)	(-.48)
		n = 6	n = 10
	C	4.31	4.96
		(-.31)	(.31)
		n = 6	n = 5
No-Acknowledgment	I	3.91	4.91
		(-.16)	(.16)
		n = 5	n = 7
	A	3.41	5.25
		(-.48)	(.48)
		n = 7	n = 6
No-Acknowledgment	C	5.08	4.56
		(.31)	(-.31)
		n = 6	n = 11
	I	4.75	5.18
		(.16)	(-.16)
		n = 10	n = 7

Note. Numbers in the parentheses are the interaction residuals after the grand mean, the main effects, and the 2-way interactions were removed.

## Appendix A

# Individual Styles Questionnaire

On the following pages you will find a series of vignettes. Each one describes an incident and lists three ways of responding to it. Please read each vignette and then consider the responses in turn. Think of each response option in terms of how likely it is that you would respond in that way. We all respond in a variety of ways to situations, and probably each response is at least slightly likely for you. If it is very unlikely that you would respond the way described in a given response, you would circle numbers 1 or 2. If it is moderately likely, you would respond in the mid range of numbers; and if it is very likely that you would respond as described, you would circle the 6 or 7. You should circle one number for each of the three responses on each vignette. Below is a sample item. The actual items begin on the next page.

Sample

You are discussing politics with a friend and find yourself in sharp disagreement. It is likely that you would:

Press forward with your viewpoint and try to get him/her to understand it.

1 . . . 2 . . . 3 . . . 4 . . . 5 . . . 6 . . . 7  
very                      moderately                      very  
likely                      likely                      likely

Change the topic since you would feel unable to make your point understood.

1 . . . 2 . . . 3 . . . 4 . . . 5 . . . 6 . . . 7 .  
very                      moderately                      very  
likely                      likely                      likely

Try to understand your friend's position to figure out why you disagree.

1 . . . 2 . . . 3 . . . 4 . . . 5 . . . 6 . . . 7  
very                      moderately                      very  
likely                      likely                      likely

1. You have been offered a new position in a company where you have worked for some time. The first question that is likely to come to mind is:

What if I can't live up to the new responsibility?

1 . . . 2 . . . 3 . . . 4 . . . 5 . . . 6 . . . 7  
very                      moderately                      very  
likely                      likely                      likely

Will I make more at this position?

	1 . . .	2 . . .	3 . . .	4 . . .	5 . . .	6 . . .	7
	very			moderately			very
likely				likely			likely

I wonder if the new work will be interesting?

1 . . . 2 . . . 3 . . . 4 . . . 5 . . . 6 . . . 7  
very                      moderately                      very  
likely                      likely                      likely

2. You have a school age daughter. On parents' night the teacher tells you that your daughter is doing poorly and doesn't seem involved in the work. You are likely to:

Talk it over with your daughter to understand further what the problem is.

1 . . . 2 . . . 3 . . . 4 . . . 5 . . . 6 . . . 7  
very                      moderately                      very  
likely                      likely                      likely

Scold her and hope she does better.

1 . . . 2 . . . 3 . . . 4 . . . 5 . . . 6 . . . 7  
very                      moderately                      very  
likely                      likely                      likely

Make sure she does the assignments, because she should be working harder.

1 . . . 2 . . . 3 . . . 4 . . . 5 . . . 6 . . . 7  
very                      moderately                      very  
likely                      likely                      likely

3. You had a job interview several weeks ago. In the mail you received a form letter which states that the position has been filled. It's likely that you might think:

It's not what you know, but who you know.

1 . . . 2 . . . 3 . . . 4 . . . 5 . . . 6 . . . 7  
very moderately very  
likely likely likely

I'm probably not good enough for the job.

1 . . . 2 . . . 3 . . . 4 . . . 5 . . . 6 . . . 7  
very                      moderately                      very  
likely                      likely                      likely

Somehow they didn't see my qualifications as matching their needs.

1 . . . 2 . . . 3 . . . 4 . . . 5 . . . 6 . . . 7  
very                      moderately                      very  
likely                      likely                      likely

4. You are a plant supervisor and have been charged with the task of allotting coffee breaks to three workers who can not all break at once. You would likely handle this by:

Telling the three workers the situation and having them work with you on the schedule.

1 . . . 2 . . . 3 . . . 4 . . . 5 . . . 6 . . . 7  
very                      moderately                      very  
likely                      likely                      likely

Simply assign the times that each can break to avoid any problems.

1 . . . 2 . . . 3 . . . 4 . . . 5 . . . 6 . . . 7  
very                      moderately                      very  
likely                      likely                      likely

Find out from someone in authority what to do or do what was done in the past.

1 . . . 2 . . . 3 . . . 4 . . . 5 . . . 6 . . . 7  
very                      moderately                      very  
likely                      likely                      likely

5. A close friend of yours has been moody lately, and a couple of times has become very angry with you over "nothing". You might:

Share your observations with him and try to find out what is going on for him.

1 . . .	2 . . .	3 . . .	4 . . .	5 . . .	6 . . .	7
very likely			moderately likely			very likely

Ignore it because there's not much you can do about it anyway.

1 . . . 2 . . . 3 . . . 4 . . . 5 . . . 6 . . . 7  
very                      moderately                      very  
likely                      likely                      likely

Tell him that you're willing to spend time together if and only if he makes more effort to control himself.

1 . . . 2 . . . 3 . . . 4 . . . 5 . . . 6 . . . 7  
very                      moderately                      very  
likely                      likely                      likely



6. You have just received the results of a test you took, and you discovered that you did very poorly. Your initial reaction is likely to be:

"I can't do anything right", and feel sad.

1 . . . 2 . . . 3 . . . 4 . . . 5 . . . 6 . . . 7  
very                      moderately                      very  
likely                      likely                      likely

"I wonder how it is I did so poorly", and feel disappointed.

1 . . . 2 . . . 3 . . . 4 . . . 5 . . . 6 . . . 7  
very                      moderately                      very  
likely                      likely                      likely

"That stupid test doesn't show anything", and feel angry.

1 . . . 2 . . . 3 . . . 4 . . . 5 . . . 6 . . . 7  
very                      moderately                      very  
likely                      likely                      likely



8. You are asked to plan a picnic for yourself and your fellow employees. Your style for approaching this project could most likely be characterized as:

Take charge: that is, you would make most of the major decisions yourself.

1 . . . 2 . . . 3 . . . 4 . . . 5 . . . 6 . . . 7  
very                      moderately                      very  
likely                      likely                      likely

Follow precedent: you're not really up to the task so you'd do it the way it's been done before.

1 . . . 2 . . . 3 . . . 4 . . . 5 . . . 6 . . . 7

very likely	moderately likely	very likely
----------------	----------------------	----------------

Seek participation: get inputs from others who want to make them before you make the final plans.

1 . . . 2 . . . 3 . . . 4 . . . 5 . . . 6 . . . 7  
very                      moderately                      very  
likely                      likely                      likely

9. Recently a position opened up at your place of work that could have meant a promotion for you. However, a person you work with was offered the job rather than you. In evaluating the situation, you are likely to think:

You didn't really expect the job; you frequently get passed over.

1 . . . 2 . . . 3 . . . 4 . . . 5 . . . 6 . . . 7  
very                      moderately                      very  
likely                      likely                      likely

The other person probably "did the right things" politically to get the job.

1 . . . 2 . . . 3 . . . 4 . . . 5 . . . 6 . . . 7  
very                      moderately                      very  
likely                      likely                      likely

You would probably take a look at factors in your own performance that lead you to be passed over.

1 . . . 2 . . . 3 . . . 4 . . . 5 . . . 6 . . . 7  
very                      moderately                      very  
likely                      likely                      likely

10. You are embarking on a new career. The most important consideration is likely to be:

Whether you can do the work without getting in over your head.

1 . . . 2 . . . 3 . . . 4 . . . 5 . . . 6 . . . 7  
very                      moderately                      very  
likely                      likely                      likely

How interested you are in that kind of work.

1 . . . 2 . . . 3 . . . 4 . . . 5 . . . 6 . . . 7  
very                      moderately                      very  
likely                      likely                      likely

Whether there are good possibilities for advancement.

1 . . . 2 . . . 3 . . . 4 . . . 5 . . . 6 . . . 7  
very                      moderately                      very  
likely                      likely                      likely

11. A woman who works for you has generally done an adequate job. However, for the past two weeks her work has not been up to par and she appears to be less actively interested in her work. Your reaction is likely to be:

Tell her that her work is below what is expected and that she should start working harder.

1 . . .	2 . . .	3 . . .	4 . . .	5 . . .	6 . . .	7
very			moderately			very
likely			likely			likely

Ask her about the problem and let her know you are available to help work it out.

1 . . .	2 . . .	3 . . .	4 . . .	5 . . .	6 . . .	7
very			moderately			very
likely			likely			likely

It's hard to know what to do to get her straightened out.

1 . . .	2 . . .	3 . . .	4 . . .	5 . . .	6 . . .	7
very			moderately			very
likely			likely			likely

12. Your company has promoted you to a position in a city far from your present location. As you think about the move you would probably:

Feel interested in the new challenge and a little nervous at the same time.

1 . . . 2 . . . 3 . . . 4 . . . 5 . . . 6 . . . 7  
very                      moderately                      very  
likely                      likely                      likely

Feel excited about the higher status and salary that is involved.

1 . . . 2 . . . 3 . . . 4 . . . 5 . . . 6 . . . 7  
very                      moderately                      very  
likely                      likely                      likely

Feel stressed and anxious about the upcoming changes.

1 . . . 2 . . . 3 . . . 4 . . . 5 . . . 6 . . . 7  
very                      moderately                      very  
likely                      likely                      likely

Appendix B

## Activity Perception Questionnaire

The following items concern your experience with, and your perception of, the task. Please answer all items. For each item, please circle the number that best indicates how strongly you agree or disagree with the statement, using the following scale as a guide:

1	2	3	4	5	6
strongly	disagree	somewhat	somewhat	agree	strongly
disagree		disagree	agree		agree

---

1. I believe that doing this activity could be of some value for me.  

1	2	3	4	5	6
---	---	---	---	---	---
2. I believe I had some choice about doing this activity.  

1	2	3	4	5	6
---	---	---	---	---	---
3. While I was doing this activity, I was thinking about how much I enjoyed it.  

1	2	3	4	5	6
---	---	---	---	---	---
4. I did not feel at all nervous while doing the activity.  

1	2	3	4	5	6
---	---	---	---	---	---
5. I felt pretty free while doing this activity.  

1	2	3	4	5	6
---	---	---	---	---	---
6. I believe that doing this activity is useful for improved concentration.  

1	2	3	4	5	6
---	---	---	---	---	---
7. I felt free to do this activity.  

1	2	3	4	5	6
---	---	---	---	---	---
8. I enjoyed doing this activity very much.  

1	2	3	4	5	6
---	---	---	---	---	---



1	2	3	4	5	6
strongly	disagree	somewhat	somewhat	agree	strongly
disagree		disagree	agree		agree

---

9. I think this activity is important, because it can lead to better grades.

1	2	3	4	5	6
---	---	---	---	---	---

10. I felt very tense while doing this activity.

1	2	3	4	5	6
---	---	---	---	---	---

11. This activity was fun to do.

1	2	3	4	5	6
---	---	---	---	---	---

12. I felt very relaxed while doing this activity.

1	2	3	4	5	6
---	---	---	---	---	---

13. I really did not have a choice about doing this activity.

1	2	3	4	5	6
---	---	---	---	---	---

14. I did this activity, because I wanted to.

1	2	3	4	5	6
---	---	---	---	---	---

15. I think this is an important activity.

1	2	3	4	5	6
---	---	---	---	---	---

16. I felt like I was doing what I wanted to while I was doing this activity.

1	2	3	4	5	6
---	---	---	---	---	---

17. I thought this was a very boring activity.

1	2	3	4	5	6
---	---	---	---	---	---

18. It is possible that this activity could improve my studying habits.

1	2	3	4	5	6
---	---	---	---	---	---

19. I felt like I had no choice but to do this activity.

1	2	3	4	5	6
---	---	---	---	---	---

1	2	3	4	5	6
strongly	disagree	somewhat	somewhat	agree	strongly
disagree		disagree	agree		agree

---

20. I thought this was a very interesting activity.

1 2 3 4 5 6

21. I am willing to do this activity again, because I think it is somewhat useful.

1 2 3 4 5 6

22. I felt pressured while doing this activity.

1 2 3 4 5 6

23. I would describe this activity as very enjoyable.

1 2 3 4 5 6

24. I felt like I had to do this activity.

1 2 3 4 5 6

25. I believe doing this activity could be somewhat beneficial for me.

1 2 3 4 5 6

26. I did this activity, because I had to.

1 2 3 4 5 6

27. I believe doing this activity could help to improve my grades.

1 2 3 4 5 6

28. While doing this activity, I felt like I had a choice.

1 2 3 4 5 6

29. I was anxious while doing this activity.

1 2 3 4 5 6

30. I would describe this activity as very fun.

1 2 3 4 5 6

1	2	3	4	5	6
strongly	disagree	somewhat	somewhat	agree	strongly
disagree		disagree	agree		agree

---

31. I felt like it was not my own choice to do this activity.

1	2	3	4	5	6
---	---	---	---	---	---

32. I would be willing to do this activity again, because it has some value for me.

1	2	3	4	5	6
---	---	---	---	---	---

---

Please answer the following questions by circling what you believe is the right answer.

33. While doing this activity, I primarily thought that it was:

fun but	fun and	not fun but	neither fun
not useful	useful	useful	nor useful

34. When the experimenter left the room, I did work on the activity.

YES

NO

Appendix C

## Post Questionnaire

The following items pertain to: "why you did the activity when the experimenter left the room and you were alone".

Please answer all items by circling the number that best indicates how strongly you agree or disagree with the statement, using the following scale as a guide:

1	2	3	4	5	6
strongly	disagree	somewhat	somewhat	agree	strongly
disagree		disagree	agree		agree

---

1. Because I thought doing this activity would be useful for me.  

1	2	3	4	5	6
---	---	---	---	---	---
2. Because I was bored and had nothing else to do.  

1	2	3	4	5	6
---	---	---	---	---	---
3. Because I wanted to become more competent at the activity.  

1	2	3	4	5	6
---	---	---	---	---	---
4. Because I felt pressured to do the activity some more.  

1	2	3	4	5	6
---	---	---	---	---	---
5. Because I was not completely satisfied with my performance.  

1	2	3	4	5	6
---	---	---	---	---	---
6. Because I was interested in the activity.  

1	2	3	4	5	6
---	---	---	---	---	---
7. Because I thought that doing this activity would be of some value for me.  

1	2	3	4	5	6
---	---	---	---	---	---
8. Because I wanted to master the activity.  

1	2	3	4	5	6
---	---	---	---	---	---

1	2	3	4	5	6
strongly	disagree	somewhat	somewhat	agree	strongly
disagree		disagree	agree		agree

---

9. Because I enjoy working with computers.

1	2	3	4	5	6
---	---	---	---	---	---

10. Because I felt I had to do the activity.

1	2	3	4	5	6
---	---	---	---	---	---

11. Because I thought that doing this activity could somewhat improve my grades.

1	2	3	4	5	6
---	---	---	---	---	---

12. Because there was less pressure when I was alone than when the experimenter was in the room.

1	2	3	4	5	6
---	---	---	---	---	---

13. Because I thought I could learn something positive from this activity.

1	2	3	4	5	6
---	---	---	---	---	---

14. Because I thought this activity was fun.

1	2	3	4	5	6
---	---	---	---	---	---

15. Because I thought that doing this activity could somewhat enhance my concentration.

1	2	3	4	5	6
---	---	---	---	---	---

Appendix D

## Post Questionnaire

The following items pertain to: "why you did not do the activity when the experimenter left the room and you were alone".

Please answer all items by circling the number that best indicates how strongly you agree or disagree with the statement, using the following scale as a guide:

1	2	3	4	5	6
strongly	disagree	somewhat	somewhat	agree	strongly
disagree		disagree	agree		agree

---

1. Because I thought doing this activity would be useless for me.

1                      2                      3                      4                      5                      6

2. Because I was bored with the activity.

1                      2                      3                      4                      5                      6

3. Because I was as competent at it as I could be.

1                      2                      3                      4                      5                      6

4. Because I did not feel any pressure to do the activity.

1                      2                      3                      4                      5                      6

5. Because I was completely satisfied with my performance.

1                      2                      3                      4                      5                      6

6. Because I was very uninterested in the activity.

1                      2                      3                      4                      5                      6

7. Because I did not think that doing this activity would be of any value for me.

1                      2                      3                      4                      5                      6

8. Because I did not care to master the activity.

1                      2                      3                      4                      5                      6

1	2	3	4	5	6
strongly disagree	disagree	somewhat disagree	somewhat agree	agree	strongly agree

---

9. Because I do not enjoy working with the computers.

1	2	3	4	5	6
---	---	---	---	---	---

10. Because I did not feel like I had to do the activity.

1	2	3	4	5	6
---	---	---	---	---	---

11. Because I did not think that doing this activity could improve my grades.

1	2	3	4	5	6
---	---	---	---	---	---

12. Because I had had enough of feeling pressured to do the activity.

1	2	3	4	5	6
---	---	---	---	---	---

13. Because I did not think that I could learn anything positive from this activity.

1	2	3	4	5	6
---	---	---	---	---	---

14. Because I thought this activity was too dull.

1	2	3	4	5	6
---	---	---	---	---	---

15. Because I did not believe that doing this activity could enhance my concentration.

1	2	3	4	5	6
---	---	---	---	---	---