Self-Determination Theory and Public Policy: Improving the Quality of Consumer Decisions Without Using Coercion

Arlen C. Moller, Richard M. Ryan, and Edward L. Deci

Self-determination theory identifies a basic psychological need for autonomy as a central feature for understanding effective self-regulation and well-being. The authors explain why policy that promotes autonomous choice for behavior change is often more effective than the use of coercion, especially when evaluating policy on a broad level with a long-term perspective.

Self-determination theory (SDT; Deci and Ryan 1985; Ryan and Deci 2000b) is a macro theory of human motivation in which issues related to choice or, more precisely, to human autonomy are in the forefront. Unlike most theories of motivation, which treat motivation as a unitary concept that differs in amount but not in kind, SDT has differentiated the concept of motivation in part by specifying *types* of motivational processes that differ in the degree to which they represent *autonomy* versus *control*. In this article, we use the SDT view of motivation to shed light on issues related to public policy.

The first section of the article introduces SDT and the concept of autonomy as they relate to self-regulation and choice. Because autonomy is a controversial concept about which there are many views, we begin with a clear delineation of the central terms. We then present evidence for understanding autonomy or the experience of choice as a basic psychological need that is essential for people's psychological health and well-being. Furthermore, we explain why the use of autonomy support to motivate behavior change is often more effective than the use of coercion.

To help illustrate the utility of considering SDT in drafting public policy, we offer concrete strategies in two domains: First, we consider how to implement policy that motivates reuse and recycling, endorsing some strategies but not others. Second, we recommend strategies for encouraging healthier eating habits to curb obesity. Finally, we emphasize the importance of evaluating policy on a broad level and with a long-term perspective to understand the benefits of using autonomy-supportive policy.

Arlen C. Moller is a doctoral candidate (e-mail: moller@psych.rochester.edu), *Richard M. Ryan* is a professor (e-mail: ryan@psych.rochester.edu), and *Edward L. Deci* is Professor of Psychology and Gowen Professor in the Social Sciences (e-mail: deci@psych.rochester.edu), Department of Clinical and Social Sciences in Psychology, University of Rochester. The authors thank Glenn T. Moller and Jackson Moller for their helpful comments on prior versions of this article.

SDT and the Concepts of Autonomy and Choice

The SDT approach to motivation differentiates between autonomous or truly volitional actions and heteronomous actions that are controlled by forces experienced as external to the self. To be autonomously motivated involves feeling a sense of choice and volition as a person fully endorses his or her own actions or decisions (Ryan 1995). People are autonomous when they do something they find interesting or personally important. For example, if a woman works to clean up her yard and plant flowers after the winter snow melts, all the time enjoying the work and valuing the outcome, she is acting autonomously. Similarly, a man who thoughtfully buys a product because he reflectively endorses its value and worth is likely acting autonomously. In both cases, the person acts with a true sense of choice or volition.

In contrast, to be controlled is to act because there is pressure to do so. If the woman in the preceding example gardened only because of demands from her spouse or pressure from relatives, she might feel little autonomy in the activity. Similarly, if the man believes that he must buy a product to be accepted by others, his consumptive action would be controlled; in motivational jargon, he would have an external perceived locus of causality (Deci and Ryan 1985). In both of these latter cases, the actors behave intentionally—that is, they make decisions to act—but they do not experience a true sense of choice and endorsement. As such, they are not acting autonomously. Their own vulnerabilities, interacting with the pressures to act, effectively remove their autonomy. According to SDT, choice (i.e., autonomous choice) requires a decision that is accompanied by the experience of endorsement and willingness; thus, to decide is not necessarily to choose. When people are controlled, their motivation can be very high, but evidence indicates that the quality of the experience and performance is not as good in general when people are controlled than when they are autonomous (Deci and Ryan 2000), and controlled motivation tends to be associated with poorer psychological well-being.

ISSN: 0743-9156 (print), 1547-7207 (electronic)

Vol. 25 (1) Spring 2006, 104–116

Intrinsic and Extrinsic Motivation

The concepts of autonomous and controlled motivation evolved from a prior distinction between intrinsic and extrinsic motivation (see Ryan and Deci 2000a). "Intrinsic motivation" means doing something because the activity itself is interesting, spontaneously enjoyable, and satisfying. For example, leisure pursuits are frequently intrinsically motivated. Because such behaviors are fully endorsed and volitional, intrinsically motivated behaviors are the prototype of autonomous motivation. In contrast, "extrinsic motivation" means doing something because it is instrumental to some separable consequence. Behaving to forestall a threatened punishment or to achieve a self-selected long-term goal are examples of extrinsic motivation. It is important to recognize that extrinsically motivated behaviors vary widely in the level of autonomy that accompanies them; some extrinsic motives are relatively controlled, and others are relatively autonomous (Ryan and Connell 1989).

The least autonomous form of extrinsic motivation is "external regulation," in which case a person's behavior is motivated by external reward and punishment contingencies. For example, the worker whose only motivation for work is to get a paycheck on Friday is externally regulated. Somewhat more autonomous is "introjected regulation," in which internal, self-esteem-based contingencies drive behavior; people feel proud or worthwhile when they behave in accordance with an introjected value or standard, but they feel self-derogating, guilty, or ashamed when they do not. Thus, introjects are motivations that are within the person, but their operation is primarily controlled rather than autonomous. An example would be a man who introjects the belief that he is worthy only if he has expensive possessions. Therefore, he is likely to feel compelled to buy certain products, especially when he believes that having them yields approval. This decision to buy is controlled by internal pressures and is not informed by a reflective endorsement. Finally, the most autonomous form of extrinsic motivation is evident when people identify with the importance of the behavior and integrate it with their sense of self. Self-determination theory refers to behavioral regulation as "identified" when a person values and identifies with the importance of the behaviors.

A person might consume (or refuse to consume) a product reflectively and thoughtfully and fully self-endorse doing so, in which case the behavior is regulated through identification, which is an example of autonomous motivation. This is most likely to occur when the person is informed about the product's actual uses or value and is free from excess pressure to buy. When a person's interests and sensibilities concur, he or she experiences volition or autonomy. Thus, identified extrinsic motivation represents a second type of autonomous motivation, which is similar to intrinsic motivation in that both are volitional but differs from it because intrinsic motivation is based on interest whereas autonomous extrinsic motivation is based on valuing the behavior as meaningful. These two forms of autonomous motivation contrast with external and introjected regulations, which are forms of controlled motivation. We emphasize the importance of this distinction in light of more than three decades of research that suggests that more autonomous forms of motivation lead to greater maintained health behavior change, better conceptual understanding and deeper learning, greater job satisfaction and performance, higher creativity, and better psychological health across both individualistic and collectivist cultures (for a review, see Deci and Ryan 2000).

Social-Context Effects on Motivation

Dozens of studies over the past three decades have examined factors in the social context that diminish and enhance autonomous motivation (Deci and Ryan 2000). We focus primarily on contextual factors that support autonomy.

Many studies have shown that when people are motivated by tangible extrinsic rewards, their autonomous motivation is often undermined (Deci, Koestner, and Ryan 1999). Similarly, when people experience threats of punishment, surveillance, deadlines, controlling evaluations, goal imposition, and pressure to win a competition, their sense of autonomy is diminished. In contrast, under conditions in which actors are provided with meaningful choices and are free from controlling rewards or punishments, autonomy is typically enhanced (Ryan and Deci 2000b). Even more important for the current discussion, interpersonal climates and communication styles that pressure people to behave, dictating what they *should* do or how they *should* do it, have also been found to undermine autonomous motivation, whereas interpersonal climates and communication styles that are supportive and encouraging of volition and choice tend to enhance autonomous motivation. For example, when managers or physicians communicate with a controlling style, their employees or patients tend to become less autonomous in doing their work or maintaining their health (Baard, Deci, and Ryan 2004; Williams et al. 1998).

In the context of controlling communications, people often lose their own sense of value, and rather than self-regulating, they may simply succumb to the controlling influences on them. Conversely, contextual supports have the potential to enhance autonomous motivation. Under conditions in which motivators provide a meaningful rationale for a behavior, show responsiveness to the actors' perspectives or feelings, and offer opportunities for choice, a more autonomous orientation is facilitated (e.g., Deci et al. 1994). An interpersonal climate that supports autonomy also tends to enhance well-being (Ryan and Deci 2000b).

The Meaning and Effects of Choice

Consistently, research related to SDT has shown that when people experience choice about some behavior, the experience is accompanied by autonomous motivation, personal endorsement of the behavior, and a fuller engagement with it. Studies have also shown that the opportunity to select from among multiple options can enhance people's experience of choice, assuming that the activities are somewhat interesting or valuable to them. However, the concept of choice has received considerable attention in recent years, leading to varied conclusions. Importantly, however, the concept of choice has been interpreted differently by different writers, so the conclusions can be confusing.

As evidenced in Zuckerman and colleagues' (1978) study, it is clear that choice can enhance autonomy. In that study, some participants were given the opportunity to select three of six problems they would work on and how to appor-

tion their time among the three chosen problems. Other participants had no choice; they were assigned puzzles and time limits by the experimenter. A yoking procedure ensured that the activities were the same across the two groups. The results showed that participants who were given a choice were more intrinsically motivated than those who were told what to do by the experimenter; Iyengar and Lepper (1999) replicated these results across cultural groups.

From the perspective of SDT, the critical factor for the enhancement of autonomous motivation is the *experience* of autonomy or choice, and in Zuckerman and colleagues' (1978) study, participants who were given the opportunity to make choices experienced a greater sense of choice with respect to the activity. Because participants were allowed to make decisions that were free from pressures, and thus were allowed mindful consideration of the options, they experienced a greater sense of choice and more autonomous motivation. However, from the perspective of SDT, if the selection had been done in a controlled or pressured context or did not involve meaningful options, it would not be expected to facilitate autonomy or to have other positive consequences.

Although SDT's predictions about both the experience of choice and the opportunity to make choices are clear, there has been considerable controversy about the meaning and functions of choice. For example, Baumeister and colleagues (1998) suggest that making choices is ego depleting or fatiguing; in other words, the act of choosing is difficult and uses up limited psychological resources. Iyengar and Lepper (2000) suggest that when people make a purchasing decision, a large number of options is demotivating, especially with respect to purchasing. Schwartz (2000) echoes this idea by suggesting that many people have too many choices and options in the industrialized, modern world. Such commentaries and studies led Iyengar and DeVoe (2003, p. 130) to claim that "a wealth of psychological theory and research has challenged the predictions of self-determination theory." However, we have found no research that challenges the SDT predictions about choice when that concept is defined and interpreted exactingly. However, we believe that pseudochoice (making people believe that they have choice when they really do not), excessive options (giving people too many options to sort through), and forced decision making (coercing people into making a decision), all of which are considered "choice" by some writers but are unlikely to result in the experience of choice, are unlikely to enhance volition or autonomous motivation.

Experiments on Choice

An autonomous choice is defined in terms of the experience or feeling of volition and thus has an internal perceived locus of causality (DeCharms 1968; Heider 1958) for the selected option. We expect autonomous choice to enhance the experience of choice and volition, but various recent experiments on choice have involved manipulations that lack this critical, volitional component.

For example, consider Baumeister and colleagues' (1998, Study 2) study. In their experiment, participants in a so-called high-choice condition persisted for less time on a puzzle-solving task than did participants in low-choice and no-choice conditions. The researchers interpreted this as evidence that those in the high-choice condition were ego depleted (i.e., lost energy) by making the choice (i.e., by being self-regulating), so they persisted less on a subsequent task. However, a closer examination of the methods in this study reveals that these participants were not given high choice at all but were subtly coerced. Participants in this condition were told that they would be recording a speech either for or against the issue of a tuition increase at their university and that they could choose which side to take, but then the experimenter added that most participants had chosen one side, so it would be helpful to the experimenter if the participants would choose the other side to argue. Every participant selected the option the experimenter requested (suggesting that they did not perceive real choice). In support of this view, Pittman and colleagues (1980) use a nearly identical manipulation as a "controlling" manipulation, predicting and finding, in accord with SDT, that it undermines autonomy. That is, their study shows that suggesting to participants that they do something because it would really help the experimenter decreases their intrinsic motivation.

In SDT, this condition is referred to as a "pressured-decision-making" (or "controlled-choice") condition rather than a high-choice or autonomous-choice condition, and in line with the work of Pitman and colleagues (1980), we expect it to have undermining effects on subsequent volitional motivation. Indeed, the results can be understood as an instance in which the experimenter played into participants' introjects about the importance of helping others, especially when it does not "cost" them (the helpers) much. This resulted in prompting the desired behavior, but in the process, it undermined participants' experience of volition and choice.

In a recent series of studies, Moller, Deci, and Ryan (in press) tested this reasoning and confirmed that offering controlled choice, as Baumeister and colleagues (1998) did, undermined subsequent persistence relative to low-choice or no-choice conditions; however, offering participants true or autonomous choice—that is, choice without the subtle pressure to select a particular option—did not diminish participants' energy or motivation. Thus, the results indicate that when people are told they have a choice but are then pressured not to enact it (i.e., to pick a particular option), their motivation is undermined because they do not experience autonomy. However, when people are provided with the opportunity to choose without additional pressure, they are likely to experience greater choice and to persist significantly longer than those whose "choices" were controlled. Importantly, self-reported perceptions of choice, volition, and internal perceived locus of causality were shown to mediate the effect of the autonomous- versus controlled-choice conditions on ego depletion. In short, these studies illustrate that "selecting among options" does not necessarily represent autonomous choice; indeed, when there is pressure to select particular options, the experience is simply not one of choice.

Another example of how the term "choice" is used in a way that does not represent autonomous choice involves equating the mere proliferation of options with enhanced choice (Beattie et al. 1994; Iyengar and Lepper 2000; Loewenstein 1999; Schwartz 2000). From an SDT perspective, the number of options is theoretically independent of

whether people experience autonomous choice (Deci and Ryan 1985). Consider the following extreme cases: A person could have only one option, but if it were truly self-endorsed, he or she would be autonomous in enacting it; that is, the person would experience choice. In contrast, a person might have to choose among many trivial, meaningless options, in which case there would be no experience of autonomy. The former case has only one option and the latter has many, but the experience of autonomy is not necessarily aligned with the number of options.

Iyengar and Lepper (2000) find that when participants were confronted with two dozen options (rather than six options), the situation was overwhelming. Subsequently, the "excessive-choice" participants were less likely to purchase any of the offered products. The experience of endless shelves full of nearly identical though unfamiliar products is common to most consumers today. Therefore, having fewer options to consider could be less overwhelming, particularly when the differences among the options are trivial, as they were in Iyengar and Lepper's study. In this case, more options did not imply greater volition or autonomy, though people's patience, attention spans, and competence were likely tried.

Similarly, forcing people to make decisions (see Mick, Broniarczyk, and Haidt 2004) does not constitute choice. Indeed, feeling forced or pressured to make a decision is antithetical to the experience of choice. As with the case of "too many" options, the negative experience that accrues from feeling forced to decide is compounded when the decisions are trivial in nature.

In the literature, the concept of choice has been used to convey a sense of something actively chosen and therefore endorsed and backed by the self (i.e., autonomous choice), but it has also been used to refer either to having to select among trivial options or to being pressured to choose a specific option (i.e., controlled choice). Evidence that the latter is not enhancing for well-being is not in any way a contradiction to SDT, as some have claimed; indeed, the details of the experiments confirm the aversiveness of not experiencing true or meaningful choice.

Autonomous choice can also be understood as being concerned with personal values. As Kultgen (1995, p. 95) states, "significant forms of autonomy begin to occur when the possibilities that spring up are shaped by one's beliefs and goals." Similarly, Sen (1999, p. 9) states that "the exercise of freedom is mediated by values." We argue that a prototypical autonomous choice reflects a person's integrated personal values and that when freely choosing, people select options that are consistent with (as opposed to in conflict with) the satisfaction of their basic psychological needs (Deci and Ryan 2000). Thus, the degree to which the choices afforded to people reflect their needs, interests, or values is a critical issue in understanding when and why the behavior that follows is autonomous versus controlled.

Other authors have examined the issues associated with the proliferation of options and decisions at a more macro level, defining choice in terms of number of options or decisions, and they have arrived at the conclusion that there are negative consequences of "enhanced choice" (e.g., Loewenstein 1999; Schwartz 2000), a conclusion that may be true given their definition of choice but does not apply to the concepts of choice or self-determination as we use them. For example, Schwartz (2000) speaks of the tyranny of self-determination and freedom, a statement that is nonsensical from an SDT perspective, even if it were the case that the proliferation of options and decisions in modern society were overwhelming and had negative consequences for well-being. The problem is not that people have options; it is that they feel pressured to make a decision or to select a particular option, that they feel ill-equipped to make the decision, that the options are trivial, or that they do not value any of the options.

Intrinsic and Extrinsic Goals

The constructs of autonomous and controlled regulation refer to distinct forms of motivation underlying goal pursuits. In addition, SDT has examined the content of a person's goals, especially overarching life goals and aspirations, as a factor that is separate from whether the pursuit of those goals is autonomous or controlled (Ryan et al. 1996). Kasser and Ryan (1996) find that when people rated the importance of varied life goals, their answers tended to cluster into two types. One factor included goals such as wealth, fame, and image and was labeled "extrinsic goals" because these goals tend to be instrumental to other ends rather than inherently satisfying basic psychological needs. The second factor included personal growth, affiliation, and generativity and was labeled "intrinsic goals" because these goals are gratifying in their own right and tend to satisfy people's basic psychological needs directly. For example, numerous studies have shown that people who are focused primarily on extrinsic life goals are less happy and more depressed than those who are focused more on intrinsic goals (Kasser and Ryan 1996). Importantly, in several studies, Sheldon and colleagues (2004) find that having strong extrinsic aspirations predicted independent variance in people's ill-being beyond that predicted by autonomous versus controlled motivation for pursuing the goals. Subsequent studies have also shown that framing messages in terms of intrinsic (rather than extrinsic) goals results in greater long-term behavior change.

Summary

Self-determination theory maintains, and research in many life domains confirms, that autonomous motivation and choice, as opposed to controlled motivation and choice, are positively associated with maintained behavior change, effective performance (especially when flexibility or insight is required), and psychological well-being. Furthermore, and particularly relevant for policy, when people attempt to motivate others by communicating in a pressuring and controlling way, whether through seduction, subtle or blatant coercion, or scare tactics, the communication tends to yield less maintained behavior change and poorer well-being than when the communication is done in a way that supports choice, minimizes pressure, and acknowledges and respects the others' viewpoints and feelings. Choice is understood within SDT as meaning autonomous choice, that is, as providing options that allow values and interests to be engaged and expressed rather than as forcing selections or offering excessive options. When choice is understood as such, evi-

dence suggests that supporting autonomy and providing choice rather than pressuring or controlling people result in more positive outcomes. This is not to say that coercion and control are always ineffective ways to motivate; they can be effective over the short term for narrowly defined behavior change (Ryan and Deci 2000a). However, autonomous motivation has many unique benefits, without the inimical consequences associated with control. Furthermore, SDT research has shown that the content of people's goals—namely, whether they are intrinsic or extrinsic—affects behavioral and well-being outcomes beyond the effects of the regulation being autonomous versus controlled.

The Merits of Supporting Autonomy for Its Own Sake

Many authors have asserted that autonomy is a basic "right" to be valued and protected (Kultgen 1995; Mill 1963; VanDeVeer 1986). Sen (1999, p. xii), the Nobel laureate in economics, has argued for considering "the intrinsic importance of human freedom, in general, as the preeminent objective of development."

We argue that the experience of autonomy is a basic and universal human need. As we already noted, countless studies have confirmed that supporting people's experience of autonomy facilitates both psychological and physical well-being across diverse settings and cultures. A poignant illustration of this is the empirically documented positive relationship between staff autonomy support and the life expectancy of adult nursing home residents, when a variety of factors are controlled for (Kasser and Ryan 1999; Rodin and Langer 1977). Furthermore, the well-being benefits of supporting autonomy have been documented in settings such as education, religion, work, sport, and health care (see Deci and Ryan 2000). This positive relationship has been established at the within-person level by means of daily assessments (e.g., Reis et al. 2000) and at the between-person level using experimental interventions and longitudinal designs (e.g., Williams et al. 2002). It has also been established in cultures as diverse as the United States, Bulgaria, South Korea, Russia, and Turkey (Chirkov et al. 2003; Deci et al. 2001).

Similarly, autonomy support has been shown to be important for promoting conceptual learning (Vansteenkiste et al. 2004), effective job performance (Baard, Deci, and Ryan 2004), and maintained health behavior change (Williams et al. 1996). The merits of autonomy support for effective functioning and well-being are far-reaching, and thus autonomy support can be viewed as a worthy priority in any context.

Policy, Motivation, and Communications

Whether a policy is related to the health of all people or to the protection of certain groups within society, it is important to consider how it is implemented. Often, the objective of a policy is to change people's behavior, which means that all the research on internalization and the promotion of maintained behavior change is highly pertinent.

A common assumption in the implementation of many policies is that people are most effectively motivated through contingencies of reward and punishment or through stimulating image-related introjects. These methods, all of which fall within the controlling approach to influence or communication, are often used with the best of intentions. An example of how threats might be used to affect people's behavior with the intention of helping them change would be the use of photographs that show lungs full of tumors in a campaign to convince teenagers not to begin smoking. The use of inducements or rewards to facilitate regular exercise or to prompt reusing or recycling discarded consumer goods is another example. However, the question is, How effectively do these methods work? An answer suggested by the abundance of research we reviewed thus far is that controlling methods are not very effective as an approach to maintained behavior change and well-being. We now consider this matter in more detail.

Controlling Approaches in Policy

Coercive policies (e.g., policies that involve inducements for changing or threats of punishment for not changing) can motivate change; decades of research within the behaviorist tradition have confirmed this (e.g., Skinner 1971). However, there are several disadvantages associated with controlling methods or communications. They have been linked to poorer psychological health (Ryan and Deci 2000b); they tend to prompt defiance and resentment (e.g., Assor, Roth, and Deci 2004; Ryan and Grolnick 1986); and they have been shown to be relatively ineffective over the long run—that is, they tend not to be maintained over time or to transfer when contexts change (Deci and Ryan 1985). In the SDT view, this poor maintenance reflects the idea that the type of motivation they foster is external regulation. Because external regulations are not internalized, the controlling contingencies must remain in effect indefinitely. When policy makers rely on the use of external controls to promote change, they essentially create a long-term process of using contingencies and policing people's behavior to administer the consequences to those who fail to comply. Examples of policies that use the external, coercive methods are laws intended to control driving behavior. These laws are reasonably effective, but the contingencies and policing of behavior remain in effect, making such methods enormously expensive and, thus, inappropriate for most policy change.

Another example of controlling methods is the use of incentives. Notably, empirical evidence indicates that when contingencies involve controlling incentives rather than threats (e.g., deposits for recycling aluminum cans), the incentives tend to lose their appeal over time, making them inadequate for instilling lasting change even when the contingencies are still in effect (DeYoung 1993; Geller, Winnett, and Everett 1982; Katzev and Johnson 1984; Pelletier 2002). Furthermore, research shows that with external controls, such as punishments or incentives, there is a tendency for people to take the shortest path to the desired outcome, which often means some form of cheating, as has been found with the No Child Left Behind high-stakes testing (see Ryan and Brown 2005).

Indeed, the use of controlling approaches often, though by no means always, prompts compliance; that is, people often follow the policies to gain rewards or to avoid punishments, with the caveats that the approaches require policing and their effects tend to wear off, especially when the con-

sequences are relatively weak. However, there is a flip side to control that is problematic for policy makers. Because people have an innate need to feel autonomous and because the use of controlling approaches tends to thwart this need, people also have a tendency to defy these controls and do the opposite of what policy demands simply because policy demands it. Reactance theory (Brehm and Brehm 1981) and commodity theory (Brock 1968) similarly suggest that when an option is removed, people tend to find it more attractive and to be more motivated to attain it. Thus, when policies are aimed at forbidding various behaviors, they run the risk of making the behaviors more attractive. Bushman and Stack's (1996) analysis of warning labels on violent television helps illustrate this point. In their study, warning labels increased interest in violent programs, especially when the label source was authoritative. A follow-up study confirmed that the warning labels increased interest in the violent programs more than did informational labels.

More subtle forms of control, such as those investigated in research on attitude change, often appear effective when they are evaluated in a constrained context (Bem 1972; Festinger and Carlsmith 1959). For example, Boster and Mongeau's (1984) meta-analysis indicates that, overall, stimulating fear is associated with change in attitudes and behavior. However, these studies fail to compare such subtly controlling approaches with those that feature autonomy support, and even more important, they do not examine the level of well-being that accompanies such change. Other literature on subtle coercion suggests that these approaches tend to deplete energy and prompt negative affect and tension (Moller, Deci, and Ryan, in press; Nix et al. 1999). Thus, we maintain that even when subtle forms of coercion are effective at changing attitudes and behavior, the resulting costs in terms of well-being make this strategy less than optimal.

To summarize, one approach to policy is to use coercion and control. However, research and theory suggest that there tend to be negative consequences associated with controlling approaches, including that (1) external control tends not to yield maintained behavior change unless the contingencies (with their policing component) remain in effect over the long term; (2) they sometimes prompt defiance rather than compliance, yielding the opposite of what a policy was intended to promote; and (3) both external and more subtle forms of control are likely to have negative well-being consequences for the recipients of the communications. Therefore, we consider an alternative.

Policy Change Through Autonomy Support

In terms of strategy for motivating behavior change or implementing policy change, the alternative to control is autonomy support. As an approach, autonomy support refrains from using pressure to manipulate people's experience or behavior, instead helping them make choices for themselves in contexts in which they are provided with relevant information and structure.

A policy that is autonomy supportive provides meaningful information in a way that is not intended to frighten or to pressure. For example, policies that are aimed at preventing the use of cigarettes, alcohol, or illegal drugs among adolescents frequently present information that is explicitly intended to shock and scare. The underlying assumption behind this approach is that youths would not make thoughtful and healthy decisions if they were not manipulated to do so. However, SDT maintains that, indeed, people (including teens) have the capacity to make quality choices for themselves and are likely to do so if they are provided with information that is evidence based and relevant. In addition, SDT recognizes both that there are developmental limits to the kinds of decisions people are able to make and, as we have noted throughout this article, that there are many forces operating on people that may undermine thoughtful decision making.

Autonomy-supportive communications are intended to let people engage in mindful consideration of what is right for them. This allows and encourages people to be guided by their own interests and values, and it has the important advantage of prompting change that is more likely to be maintained over time because the approach facilitates full internalization and autonomous self-regulation. As such, the autonomy-supportive approach does not require the same level of external monitoring and enforcing by government agencies that is required by the externally controlling approach, and thus it tends to be less expensive. Furthermore, the quality of these autonomous choices is a direct function of the quality of information available.

As we already noted, enhancing autonomous motivation has been explored empirically, and the results are readily applicable for the design of public policy. Several factors have been found to support autonomy. Most straightforwardly, support of autonomy means refraining from the use of coercive or seductive contingencies because these factors have been consistently found to undermine the experience of autonomy. Another factor, which we explore in more detail subsequently, involves providing a rationale, that is, information about the value of the behavior change. Next, factors that communicate the rationale in an autonomy-supportive manner must be used. This involves using language that is autonomy supportive (e.g., "could," "may," and "if you like") as opposed to controlling (e.g., "must," "should," and "have to"). Effective, autonomy-supportive communication also involves conveying respect for the target individuals by acknowledging their general perspectives. Finally, autonomy can be supported by providing meaningful options and autonomous choice. We elaborate on issues related to providing choice and meaningful rationale in ways that will support autonomy because these represent the two factors that are most commonly misunderstood.

Providing Choice

Research has consistently shown that when people experience choice, they are more likely to internalize the regulation of behavior change. Furthermore, providing people the opportunity to make decisions about what to do often leads to the experience of greater choice. However, as we noted previously, a larger number of options does not necessarily increase the experience of choice; indeed, it can even be cognitively taxing. As Moller, Deci, and Ryan (in press) demonstrate, enhancing autonomous motivation through providing choice is effective only if the choice is not presented in the context of pressure to select one of the options. Thus, when possible, granting people the freedom to choose

freely among a set of options that have meaning and value is important for satisfying the basic need for autonomy and promoting both effective functioning and psychological well-being. Providing quality options is one way to facilitate the experience of choice, but for options and information to be useful, policy makers must consider what is being provided from the perspective of the people who will use it. Otherwise, it is all too easy to provide options and information in ways that are not relevant or are overwhelming. Finally, if people are to experience autonomy and be more likely to make changes that are good either for them or for the collective, choice must be presented in a way that will be interpreted as an opportunity and not an imposition.

The Importance of a Meaningful Rationale

Providing a meaningful rationale rather than using pressure or fear when attempting to motivate change is important for policy. Research suggests that providing a rationale for doing an uninteresting activity can increase autonomous motivation for the activity by facilitating internalization and integration (Deci et al. 1994; Joussemet et al. 2004; Reeve et al. 2002). That is, providing people with information about the value of an activity from their perspective helps increase internalization of the regulation for the relevant behavior. Rationales that are credible and consistent with people's personal values and with the satisfaction of basic psychological needs are likely to be internalized most easily (Deci and Ryan 2000).

For example, Williams and colleagues (1999) demonstrate that change is less likely to occur when the rationale given for change is based on fear. In their study on the framing of messages about the dangers of smoking to adolescents, they compared the effectiveness of two messages delivered by a physician for smoking prevention and cessation. In one condition, a threatening message was framed in terms of the "black lungs" and tumors that can result from smoking, whereas in the other condition, the message was framed in terms of smoking being an important choice for teenagers to make in a well-informed way. Relevant information was then presented in a nonpressuring and respectful way. The results showed that the coercive, threatening approach was less effective than the more autonomy-supportive approach. Whereas the autonomy-supportive messaging led to increased interest in smoking information and counseling among teenagers exposed to it, the controlling, fear-inducing approach did not; ironically, it led to an immediate desire among smokers to "light up." Indeed, a growing body of research suggests that autonomy-supportive messages are typically more effective than controlling ones for facilitating internalization of behavioral change (Ryan and Deci 2000b).

Furthermore, Vansteenkiste and colleagues (2004) show that when the rationale given for learning about business communications is an intrinsic goal (i.e., it will facilitate personal growth) rather than an extrinsic goal (i.e., it will help you earn more money), people persisted longer at learning the material and performed better when they put the learning to use.

The Relationship of Structure to Autonomy and Control

A misconception that some people have about SDT is that it advocates removal of all structure, thus leaving people without guidelines for action. This is not so. Structure involves information about the relationship between behaviors and outcomes, and a rationale is one form of structure. Limits and rules are also forms of structure. The SDT recognizes the need for structure to provide relevant information and to maintain a well-functioning household, workplace, or society. From an SDT perspective, the issues at hand are how these structures are presented and how they are experienced. It is often the case that structures are presented in controlling ways, as pressures on people to do particular behaviors. Indeed, people often think about structure and control interchangeably, speaking of adding structure when they are actually adding control. However, structure can be presented in an autonomy-supportive way, and when this is the case, the structure tends to facilitate autonomy rather than diminish it. When structure is presented in an autonomy-supportive way, people are able to internalize the structure (e.g., the rationale or limit), so they do not experience the structure as controlling but rather as a useful guide for autonomous functioning.

There are many structures that are used to change behavior that have not yet received careful psychological research to determine how people experience them. For example, the use of speed bumps to slow traffic in residential areas is an interesting case in point. It would be expected that people experience them as controlling, but is this necessarily the case? In many cities, speed bumps can be installed only after a majority of people living on the street have signed a petition endorsing them. In such a case, it is possible, even likely, that the residents who live on such a street would feel empowered by having them and would willingly slow down to accommodate. However, consider a motorist who is passing through this neighborhood for the first time. He or she might not understand or have internalized any rationale for the use of speed bumps. In this case, the motorist would be likely to experience the speed bumps as controlling. As a result, the motorist might react negatively to feeling controlled, driving very fast between each speed bump before slamming on the brakes. We might also predict that he or she would be more likely to speed on the next street over, after he or she were clear of the pesky speed bumps. We know very little about people's experience of these structures; however, the National Highway Traffic Safety Administration (1999) recommends that municipalities move away from using speed bumps in favor of "rumple strips" (i.e., grooves in the pavement that signal to drivers that they should exercise caution without requiring them to slow down). This approach seems more effective at communicating information and less likely to be experienced as psychologically controlling by motorists.

Some Concrete Illustrations

Environmental Conservation: Strategies for Encouraging Reuse and Recycling

Few would argue with the assertion that the United States is currently among the most wasteful societies on the planet. The average American discards approximately 1.5 to 2.0 pounds of trash every day, yet experts agree that the volume of municipal solid waste produced could be significantly reduced if consumers were effectively encouraged to reuse and recycle more (Rathje and Murphy 2001; U.S. Environ-

mental Protection Agency Municipal and Industrial Solid Waste Division 1997). Several programs designed to encourage greater participation in recycling programs have already been instituted to varying degrees across the country. For example, state-sponsored programs offer returnable deposits on aluminum cans. Some municipalities have policed curbside recycling programs, levying fines for noncompliance. These programs have resulted in mixed success. However, we posit that such tactics are likely to be experienced as controlling on a psychological level and thus represent less than optimal strategies.

Empirical Support

Pelletier (2002) and colleagues (Pelletier, Green-Demers, and Beland 1997; Pelletier et al. 1998) used SDT to guide a program of research on environmental conservation. These researchers examined change in proenvironmental behavior by considering the types of motivation underlying the behaviors. Their results confirmed that more autonomous motivation for conservation is related to greater breadth and persistence of proenvironmental behaviors, such as recycling, reusing products, purchasing environmentally friendly products, and conserving energy and resources.

For example, Pelletier and Bellier (1999) considered how to facilitate recycling behaviors across situations. They found that policy that simply made recycling easier by providing curbside bins was effective for promoting recycling at home, but the behaviors did not generalize well to other situations. It seemed important to facilitate internalization of proenvironmental values, and indeed, they found that autonomous motivation for recycling was positively related to performing a much broader range of proenvironmental behaviors. Autonomous motivation also related to the perceived importance of ecological issues and to dissatisfaction with current environmental conditions. Furthermore, autonomous motivation seemed to be even more positively related to the frequency of proenvironmental behaviors when the behaviors were *more* difficult (Green-Demers, Pelletier, and Menard 1997; Pelletier and Bellier 1999). This suggests that an important focus for policy is to encourage generalized recycling (or proenvironmental) behaviors through educational communications that are done in an autonomy-supportive way.

Recent research by Vansteenkiste and colleagues (2004) showed that when college students were learning about reusing and recycling as part of a class, they learned more and persisted longer if the relevant material was said to be instrumental to an intrinsic value (helping save the environment) rather than an extrinsic value (helping save money). Furthermore, introducing the topic and learning material in an autonomy-supportive way rather than a controlling way also significantly improved learning and persistence. Thus, this study showed that both intrinsic message framing and autonomy-supportive communication styles are effective means for promoting actions and new choices over the long run.

Providing Quality Options

The most straightforward action that can be taken is to make positive choices available to citizens. Even if members of a community are highly autonomously motivated to reuse and recycle, without the appropriate structures in place, this motivation, in and of itself, may be futile. The government (at every level) can do much more to provide opportunities for citizens to choose reuse and recycling rather than waste. For example, many consumer items in good condition are regularly discarded (e.g., furniture, appliances, clothes, toys). These could all be put to good use, and the public sector could help make this happen. The hundreds of thousands of cell phones and computer components that are discarded each year could be fed into a reuse system if one were readily available. The government could do more to help ensure that more positive options for behaving in environmentally friendly ways were available to people.

Providing Rationale, and Communicating It Effectively

Another strategy for encouraging autonomous choice with regard to reuse and recycling involves a sustained public education program. Such a campaign would ideally employ autonomy-supportive communication styles. This would involve respectfully communicating information about the merits and rationales behind adopting ecologically oriented behaviors. Such information would ideally incorporate facts and figures that encourage citizens to feel as though they can draw their own conclusions.

How much information (i.e., facts and figures) should be presented? As we have argued, autonomous motivation can be undermined by people feeling overwhelmed with information. For this reason, the simplest solution is to err on the side of providing a smaller amount of information than the average person is capable of absorbing, while providing easy access to additional information. For example, an effective advertising campaign that was instituted to help curb drunk driving provided a single statistic. Furthermore, we believe that the less threateningly worded statistics are the most effective because when people feel less threatened, they are more likely to consider the message genuinely and deeply. The key is to find ways to facilitate autonomous consideration and provoke the public to seek out more information.

A way to spark interest in the relevant information is to pose questions rather than just provide answers. For example, a campaign to encourage recycling might involve posing questions such as, Can you guess how many pounds of recyclable material the average American throws away each year? How does this figure compare to citizens in England, Japan, or Sweden? The answers could then be presented in an interesting, noncondescending way. Web sites could be used for such things as making interchanges (e.g., question games) more personalized and providing links that would afford people choice about the quantity of information they wanted. This process of providing information that promotes active engagement and internalization is self-supporting because autonomous motivation toward environmental conservation has also been linked to seeking out further sources of information and having greater confidence in those sources (Seguin, Pelletier, and Hunsley 1999).

Educational programs that disseminate general information in an autonomy-supportive way can encourage people to become more aware of issues related to excessive waste and to consider their own contributions to this problem. We suggest that, to a large degree, awareness of the problem

will naturally lead to internalization and integration of new attitudes about conservation, which will establish a foundation for autonomously motivated behavior. After setting up structures that give people choices about how to manage their waste, public officials should encourage people to value conservationism on their own accord (i.e., by providing intrinsic rationale).

Addressing Obesity: Strategies for Encouraging Healthier Eating Habits

In recent decades, public officials and health care professions have become increasingly alarmed by the rising rate of obesity among children and adults in the United States. According to the U.S. Center for Disease Control, an estimated 64% of U.S. adults are either overweight (33%) or obese (31%). This problem has costs both for the people who are overweight and, on a larger scale, for society. For example, a recent study suggests that obese middle-age men spend three times as much on prescription drugs than normal-weight men (Warner 2004). Furthermore, on a national level, total medical expenditures attributable to obesity reached $75 billion in 2003, and taxpayers financed about half of these costs (approximately $37 billion) through Medicare and Medicaid (Finkelstein, Fiebelkorn, and Wang 2004). The scale of this social problem has led some public officials to consider relatively coercive measures, such as placing warning labels (Seiders and Petty 2004) or instituting "fat taxes" on certain food products (Beil 2002; Prewitt 2001). However, research on communication approaches suggests that strategies such as these are likely to be experienced as controlling and thus are less than optimally effective. Instead, we offer several concrete suggestions for how healthier eating habits could be encouraged in a more autonomy-supportive manner.

Empirical Support

An SDT-based research program led by Williams and colleagues (1996) suggests that when it comes to motivating weight loss, and particularly weight-loss maintenance, promoting autonomous motivation is more effective than trying to control people's behavior. In one study, Williams and colleagues followed patients' adherence and weight loss during a six-month, very-low-calorie weight-loss program. The results suggested that when participants perceived the health care staff as communicating in a more autonomy-supportive way (e.g., "I feel that the staff has provided me with choices and options"), they attended the program more regularly and lost more weight. Their weight loss was also maintained to a greater degree at a 23-month follow-up.

Consistent with Williams and colleagues' (1996) results, in a sample of university students, Pelletier and colleagues (2004) demonstrated that autonomous versus controlled regulation of eating behaviors was associated with healthier and less dysfunctional eating and with higher well-being and lower ill-being. In a second sample of people at risk for coronary artery disease, Pelletier and colleagues found that more self-determined regulation of eating behaviors positively predicted dietary behavior change over a 26-week period, which in turn related to improvements in weight and lipids profiles. Vansteenkiste and colleagues (2005) examined eating behaviors, exercise patterns, and weight of seriously obese 11- and 12 year-old children. All were exposed to a message about the importance of changes in diet and exercise, but for some, the rationale was long-term fitness and health (an intrinsic goal), whereas for the others, the rationale was long-term image and attractiveness (an extrinsic goal). Furthermore, these two rationales were crossed with the communication being done in an autonomy-supportive versus controlling way. In the autonomy-supportive condition, children were told that "a lot of children decide to follow the (program) in order to become more fit and active; so, a reason you might choose to follow the (program) guidelines is to become more active and healthy." In contrast, in the controlling-communication condition, children were told that "a lot of children follow the guidelines of the (program) to feel that they are good people and to avoid feeling guilty, so following the (program) might be important for your own good." The results showed that children who were given a more intrinsic rationale showed long-term change in their eating and dieting and greater two-year maintained weight loss than those who were given the extrinsic rationale. For example, there were immediate and maintained changes in the number of soft drinks purchased (lower for the intrinsic group) and the amount of fruits consumed (higher for the intrinsic group). The results suggest that a rationale involving health may be more effective than one involving physical attractiveness. Furthermore, children for whom the communication was done in an autonomy-supportive way also showed greater behavior change and long-term weight loss than those for whom the communications were controlling. An interaction between the rationale and the communication style revealed that an unusually large change occurred in the condition with both an intrinsic rationale and an autonomy-supportive style. Notably, there was nearly as much short-term behavior change when the communications were controlling as when they were autonomy supportive, but recidivism set in quickly with the controlling communications. In other words, approaches that pressure people to change may get an immediate change, but the change soon dissipates, making it clear that for long-term change, autonomy support has an advantage. On the basis on this research, we now consider some concrete strategies that public officials and policy makers might consider for addressing obesity in the United States.

Providing Quality Options

If encouraging healthier eating habits is the goal, quality options should be made available to consumers. This challenge can be met at various levels of intervention. For example, rather than levy additional taxes on unhealthful foods (Beil 2002), it makes more sense to subsidize healthful options so people experience a greater sense of choice. This can be achieved with state or federal legislation that targets the fast-food industry in the United States. Employers could also be encouraged to spend more resources on providing healthier meal options to their employees as a cost-saving preventative health intervention. In 1994, the total cost of obesity to U.S. private-sector companies was $12.7 billion. The indirect costs of obesity in the workforce include many

standard employee benefits, including health insurance, life insurance, disability, and sick leave (*HR Focus* 1999). The data suggest that such an investment would pay dividends both in terms of workers' well-being and the company's bottom line.

Providing Rationale, and Communicating It Effectively

Again, we find that the best way to encourage healthier choices, in this case with regard to eating habits, is to provide consumers with more relevant information. However, the way this information is framed can take various forms. For example, health statistics related to obesity could be presented with the intention of scaring consumers into changing their behavior, but as we have argued, these fear tactics are likely to be experienced as controlling and thus are less than optimal in terms of both long-term effectiveness and people's emotional well-being (Williams et al. 1999). Educational campaigns initiated by teachers and health care providers should help consumers appreciate the causes and consequences of obesity. Blumenthal, Hendi, and Marsillo (2002) report that most people do not view excess body weight as a major health concern. Researchers also find that consumers tend to underestimate the role of calories and large portion sizes in causing weight gain (Calle et al. 2003; Hodges 2003). The Improved Nutrition and Physical Activity Act (H.R. 716, 2003) represents the first large-scale legislation to address obesity and is focused on intervention at the level of education. This represents a positive step from an SDT perspective, but SDT maintains that the manner in which the same information is communicated by public officials, teachers, and physicians can vary greatly and will make a significant difference. To the extent that these educators are able to take the perspective of their target audience and treat people respectfully, their message will be more likely to be absorbed and incorporated into autonomous decisions in the future. To the degree that educators are unsympathetic or authoritarian in delivering their message, this information is less likely to be internalized and may even result in a reactive resistance to the message. Educators should be trained to ask questions to assess what people already know. In addition, those engaged in the dissemination of information to the public need to be cognizant of individual differences in terms of the amount of information that will be overwhelming versus optimally challenging. To the extent that the target audience can be offered opportunities and encouraged to seek out additional information about the risks and contributing factors associated with obesity, the greater will be the internalization and resulting autonomous motivation for behavior change.

An additional policy measure that we endorse and that could be designed to facilitate healthier, more autonomous choices with regard to eating habits involves legislating changes in terms of nutritional disclosure (Beales et al. 1981; Petty 1992; Seiders and Petty 2004). Again, a critical feature to approaches consistent with SDT is to put greater information in the hands of consumers and trust them to make healthier decisions after they are well informed. Consumers should have more relevant information available to them with regard to the food they purchase. Although legislation already mandates that some nutritional information be provided on packaged foods, such legislation could be expanded in scope. Currently required nutrition-labeling disclosure is focused on information related to receiving recommended levels of micronutrients (e.g., vitamins). However, required labels could be designed to make factors that are relevant to obesity, such as calorie and fat content, more salient. Furthermore, we advocate proposed intervention by the Food and Drug Administration that would mandate full-package information to supplement the often-misleading "per-serving" information (Seiders and Petty 2004). We also support legislation that would expand the scope of required nutritional disclosure to meals served at restaurants. The Menu Education and Labeling bill, currently before congress, would require restaurant chains with 20 or more outlets to display calorie, fat, and sodium information. Self-determination theory maintains that being informed is a critical feature of an autonomous decision. A person cannot endorse a decision if he or she feels ill-equipped to consider it or ill-informed of the relevant information.

To summarize, the strategies most consistent with facilitating autonomous motivation for healthier eating habits involve educating and informing consumers. Our research suggests that to the extent that this is done in a way that is autonomy supportive as opposed to controlling, the message is more likely to be internalized by consumers and to result in more enduring behavior change and, in turn, greater psychological well-being.

Conclusions

This article represents an analysis of public policy in the light of the SDT of motivation. As we have articulated, SDT posits that to understand human motivation, quality must be considered in addition to quantity. That is, this theory draws a fundamental distinction between two types of motivation: autonomous and controlled. On the basis of this distinction, we argue that any policy initiative designed to motivate behavior change should consider the numerous merits of fostering autonomous, as opposed to controlled, motivation for change. Specifically, we advocate some strategies for addressing two issues: (1) environmental conservation and (2) promotion of healthier eating. The specific strategies we recommend could be easily adapted for motivating behavior in a wide range of policy domains.

We also argue that on the most fundamental level, public policy makers are responsible for maximizing the collective welfare of the group. Murray (1994) maintains that, ultimately, the responsibility of good government is to maximize "happiness of the people" in the eudaimonic sense of happiness (Ryan and Deci 2001). To honor this responsibility, officials must take into consideration not only the direct impact of a policy decision but also the short- and long-term indirect consequences for both the subpopulation of interest and the greater population. This is relevant to selecting the issues that should be address and to considering how best to motivate relevant change. We find that the relative advantage of using autonomy-supportive, as opposed to coercive, policies is most emphatic when analyzed on a broad scale, that is, when considering not only the sustainability and breadth of behavior change but also people's health and well-being, which may be the best measures of success in public policy and in life.

References

Assor, Avi, Guy Roth, and Edward L. Deci (2004), "The Emotional Costs of Parents' Conditional Regard: A Self-Determination Theory Analysis," *Journal of Personality*, 72 (1), 47–88.

Baard, Paul P., Edward L. Deci, and Richard M. Ryan (2004), "Intrinsic Need Satisfaction: A Motivational Basis of Performance and Well-Being in Two Work Settings," *Journal of Applied Social Psychology*, 34 (10), 2045–2068.

Baumeister, Roy F., Ellen Bratslavsky, Mark Muraven, and Diane M. Tice (1998), "Ego Depletion: Is the Active Self a Limited Resource?" *Journal of Personality and Social Psychology*, 74 (5), 1252–65.

Beales, Howard, Michael B. Mazis, Steven C. Salop, and Richard Staelin (1981), "Consumer Search and Public Policy," *Journal of Consumer Research*, 8 (1), 11–22.

Beattie, Jane, Jonathan Baron, Jack C. Hershey, and Mark D. Spranca (1994), "Psychological Determinants of Decision Attitude," *Journal of Behavioral Decision Making*, 7, 129–44.

Beil, Laura (2002), "Money Seen as Motive to Eschew Junk Snacks," *Boston Globe*, (January 2), A3.

Bem, Daryl J. (1972), "Self-Perception Theory," in *Advances in Experimental Social Psychology*, Vol. 6, Leonard Berkowitz, ed. New York: Academic Press, 1–62.

Blumenthal, Susan J., Jennifer M. Hendi, and Lauren Marsillo (2002), "A Public Health Approach to Decreasing Obesity," *Journal of the American Medical Association*, 288, 2178.

Boster, Frank J. and Paul Mongeau (1984), "Fear-Arousing Persuasive Messages," in *Communication Yearbook*, Vol. 8, Robert E. Bostrom, ed. Beverly Hills, CA: Sage Publications, 330–75.

Brehm, Sharon S. and Jack W. Brehm (1981), *Psychological Reactance*. New York: John Wiley & Sons.

Brock, Timothy C. (1968), "Implications of Commodity Theory for Value Changing," in *Psychological Foundations of Attitudes*, Anthony G. Greenwald, Timonthy C. Brock, and Thomas M. Ostrom, eds. New York: Academic Press, 243–75.

Bushman, Brad J. and Angela D. Stack (1996), "Forbidden Fruit Versus Tainted Fruit: Effects of Warning Labels on Attraction to Television Violence," *Journal of Experimental Psychology*; *Applied*, 2 (3), 207–226.

Calle, Eugenia, Carmen Rodriguez, Kimberly Walker-Thurmond, and Michael J. Thun (2003), "Overweight, Obesity, and Mortality from Cancer in a Prospective Studied Cohort of U.S. Adults," *New England Journal of Medicine*, 348 (17), 1625–38.

Chirkov, Valery I., Richard M. Ryan, Youngmee Kim, and Ulas Kaplan (2003), "Differentiating Autonomy from Individualism and Independence: A Self-Determination Theory Perspective on Internalization of Cultural Orientations and Well-Being," *Journal of Personality and Social Psychology*, 84 (1), 97–110.

DeCharms, Richard (1968), *Personal Causation: The Internal Affective Determinants of Behavior*. New York: Academic Press.

Deci, Edward L., Halah Eghrari, Brian C. Patrick, and Dean Leone (1994), "Facilitating Internalization: The Self-Determination Theory Perspective," *Journal of Personality*, 62 (1), 119–42.

———, Richard Koestner, and Richard M. Ryan (1999), "A Meta-Analytic Review of Experiments Examining the Effects of Extrinsic Rewards on Intrinsic Motivation," *Psychological Bulletin*, 125 (6), 627–68.

——— and Richard M. Ryan (1985), "The General Causality Orientations Scale: Self-Determination in Personality," *Journal of Research in Personality*, 19 (2), 109–134.

——— and ——— (2000), "The 'What' and 'Why' of Goal Pursuits: Human Needs and the Self-Determination of Behavior," *Psychological Inquiry*, 11 (4), 227–68.

———, ———, Marylène Gagné, Dean R. Leone, Julian Usunov, and Boyanka P. Kornazheva (2001), "Need Satisfaction, Motivation, and Well-Being in the Work Organizations of a Former Eastern Bloc Country," *Personality and Social Psychology Bulletin*, 27 (8), 930–42.

DeYoung, Raymond (1993), "Changing Behavior and Making It Stick: The Conceptualization and Management of Conservation Behavior," *Environment and Behavior*, 25 (4), 485–505.

Festinger, Leon and James M. Carlsmith (1959), "Cognitive Consequences of Forced Compliance," *Journal of Abnormal Psychology*, 58 (2), 203–210.

Finkelstein, Eric A., Ian C. Fiebelkorn, and Guijing Wang (2004), "State-Level Estimates of Annual Medical Expenditures Attributable to Obesity," *Obesity Research*, 12 (1), 18–24.

Geller, E. Scott, Richard A. Winnett, and Peter B. Everett (1982), *Preserving the Environment: New Strategies for Behavior Change*. Elmsford, NY: Pergamon.

Green-Demers, Isabelle, Luc G. Pelletier, and S. Menard (1997), "The Impact of Behavioural Difficulty on the Saliency of the Association Between Self-Determined Motivation and Environmental Behaviours," *Canadian Journal of Behavioural Science*, 29 (3), 157–66.

Heider, Fritz (1958), *The Psychology of Interpersonal Relations*. New York: John Wiley & Sons.

Hodges, Kris (2003), "Do or Diet Time," *American Demographics*, (December 21), 33–36.

HR Focus (1999), "Obesity Costs Companies Billions," 72 (February), 4.

Iyengar, Sheena S. and Sandford E. DeVoe (2003), "Rethinking the Value of Choice: Considering Cultural Mediators of Intrinsic Motivation," in *Nebraska Symposium on Motivation: Cross-Cultural Differences in Perspectives on the Self*, Vol. 49, V. Murphy-Berman and J. Berman, eds. London: University of Nebraska Press, 149–91.

——— and Mark R. Lepper (1999), "Rethinking the Value of Choice: A Cultural Perspective on Intrinsic Motivation," *Journal of Personality and Social Psychology*, 76 (3), 349–66.

——— and ——— (2000), "When Choice Is Demotivating: Can One Desire Too Much of a Good Thing?" *Journal of Personality and Social Psychology*, 79 (6), 995–1006.

Joussemet, Mireille, Richard Koestner, Natasha Lekes, and Nathalie Houlfort (2004), "Introducing Uninteresting Tasks to Children: A Comparison of the Effects of Rewards and Autonomy Support," *Journal of Personality*, 72 (1), 141–69.

Kasser, Tim and Richard M. Ryan (1996), "Further Examining the American Dream: Differential Correlates of Intrinsic and Extrinsic Goals," *Personality and Social Psychology Bulletin*, 22 (3), 280–87.

Kasser, Virginia G. and Richard M. Ryan (1999), "The Relation of Psychological Needs for Autonomy and Relatedness to Vitality, Well-Being, and Mortality in a Nursing Home," *Journal of Applied Social Psychology*, 29 (5), 935–54.

Katzev, Richard D. and T. Johnson (1984), "Comparing the Effects of Monetary Incentives and Foot-in-the-Door Strategies in Promoting Residential Electricity Conservation," *Journal of Applied Social Psychology*, 14 (1), 12–27.

Kultgen, John (1995), *Autonomy and Intervention: Parentalism in the Caring Life*. New York: Oxford University Press.

Loewenstein, George (1999), "Is More Choice Always Better?" in *Social Security Brief*, Vol. 7 (October). Washington, DC: National Academy of Social Insurance, 1–8.

Mick, David G., Susan M. Broniarczyk, and Jonathan Haidt (2004), "Choose, Choose, Choose, Choose, Choose, Choose, Choose: Emerging and Prospective Research on the Deleterious Effects of Living in Consumer Hyperchoice," *Journal of Business Ethics*, 52 (2), 207–211.

Mill, John Stuart (1963), *On Liberty. Collected Works*, Vol. 18. Toronto: University of Toronto Press.

Moller, Arlen, Edward L. Deci, and Richard M. Ryan (in press), "Choice and Ego-Depletion: The Moderating Role of Autonomy," *Personality and Social Psychology Bulletin*, forthcoming.

Morrill, A.C. and C.D. Chinn (2004), "The Obesity Epidemic in the United States," *Journal of Public Health Policy*, 25 (3–4), 353–66.

Murray, Charles (1994), *In Pursuit of Happiness and Good Government*. San Francisco: Institute of Contemporary Studies Press.

National Highway Traffic Safety Administration (1999), "Literature Review on Vehicle Travel Speeds and Pedestrian Injuries," final report. Washington, DC: U.S. Department of Transportation.

Nix, Glenn A., Richard M. Ryan, John B. Manly, and Edward L. Deci (1999), "Revitalization Through Self-Regulation: The Effects of Autonomous and Controlled Motivation on Happiness and Vitality," *Journal of Experimental Social Psychology*, 35 (3), 266–84.

Pelletier, Luc G. (2002), "Motivation Toward the Environment," in *Handbook of Self-Determination Research*, Edward L. Deci and Richard M. Ryan, eds. Rochester, NY: University of Rochester Press, 205–232.

——— and P. Bellier (1999), "How Difficult Is It to Recycle? Self-Determination and the Level of Difficulty of Recycling Behaviors," working paper, Department of Psychology, University of Ottawa.

———, Stephanie C. Dion, Monika Slovinec-D'Angelo, and Robert Reid (2004), "Why Do You Regulate What You Eat? Relationships Between Forms of Regulation, Eating Behaviors, and Sustained Dietary Behavior Change, and Psychological Adjustment," *Motivation and Emotion,* 28 (3), 245–77.

———, Isabelle Green-Demers, and Anik Beland (1997), "Why Are You Performing Ecological Behaviors? Validation in French of the Motivation Towards the Environment Scale," *Canadian Journal of Behavioural Science*, 29, 145–56.

———, Kim, M. Tuson, Isabelle Green-Demers, Kimberly A. Noels, and Ann M. Beaton (1998), "Why Are You Doing Things for the Environment? The Motivation Towards the Environment Scale (MTES)," *Journal of Applied Social Psychology*, 28 (5), 435–68.

Petty, Ross D. (1992), *The Impact of Advertising Law on Business and Public Policy*. Westport, CT: Quorum Books.

Pittman, Thane S., Margaret E. Davey, Kimberly A. Alafat, Katheryn Wetherill, and Nancy A. Kramer (1980), "Informational Versus Controlling Verbal Rewards," *Personality and Social Psychology Bulletin*, 6, 228–33.

Prewitt, Milford (2001), "Feds Chew Fat on U.S. Diet as NRA Wary of 'Obesity Tax,'" *Nation's Restaurant News*, 35 (13), 1.

Rathje, William L. and Cullen Murphy (2001), *Rubbish! The Archaeology of Garbage*. Tucson: University of Arizona Press.

Reeve, Johnmarshall, Hyungshim Jang, Pat Hardré, and Mafumi Omura (2002), "Providing a Rationale in an Autonomy-Supportive Way as a Strategy to Motivate Others During an Uninteresting Task," *Motivation and Emotion*, 26 (3), 183–207.

Reis, Harry T., Kennon M. Sheldon, Shelly L. Gable, Joseph Roscoe, and Richard M. Ryan (2000), "Daily Well-Being: The Role of Autonomy, Competence, and Relatedness," *Personality and Social Psychology Bulletin*, 26 (4), 419–35.

Rodin, Judith and Ellen J. Langer (1977), "Long-Term Effects of a Control-Relevant Intervention with the Institutionalized Aged," *Journal of Personality and Social Psychology*, 35 (12), 897–902.

Ryan, Richard M. (1995), "Psychological Needs and the Facilitation of Integrative Processes," *Journal of Personality*, 63 (3), 397–427.

——— and Kirk W. Brown (2005), "Legislating Competence: The Motivational Impact of High-Stakes Testing as an Educational Reform," in *Handbook of Competence*, Carol Dweck and Andrew E. Elliot, eds. New York: Guilford Press, 354–72.

——— and James P. Connell (1989), "Perceived Locus of Causality and Internalization: Examining Reasons for Acting in Two Domains," *Journal of Personality and Social Psychology*, 57 (5), 749–61.

——— and Edward L. Deci (2000a), "Intrinsic and Extrinsic Motivation: Classic Definitions and New Directions," *Contemporary Educational Psychology*, 25 (1), 54–67.

——— and ——— (2000b), "Self-Determination Theory and the Facilitation of Intrinsic Motivation, Social Development, and Well-Being," *American Psychologist*, 55 (1), 68–78.

——— and ——— (2001), "On Happiness and Human Potentials: A Review of Research on Hedonic and Eudaimonic Well-Being," in *Annual Review of Psychology*, Vol. 52, Susan Fiske, ed. Palo Alto, CA: Annual Reviews, 141–66.

——— and Wendy S. Grolnick (1986), "Origins and Pawns in the Classroom: Self-Report and Projective Assessments of Children's Perceptions," *Journal of Personality and Social Psychology*, 50 (3), 550–58.

———, Kennon M. Sheldon, Tim Kasser, and Edward L. Deci (1996), "All Goals Are Not Created Equal: An Organismic Perspective on the Nature of Goals and Their Regulation," in *The Psychology of Action: Linking Cognition and Motivation to Behavior*, Peter M. Gollwitzer and John A. Bargh, eds. New York: Guilford Press, 7–26.

Schwartz, Barry (2000), "Self-Determination: The Tyranny of Freedom," *American Psychologist*, 55 (1), 79–88.

Seguin, Chantal, Luc G. Pelletier, and John Hunsley (1999), "Predicting Environmental Behaviors: The Influence of Self-Determination and Information About Environmental Health Risks," *Journal of Applied Social Psychology*, 29 (8), 1582–1604.

Seiders, Kathleen and Ross D. Petty (2004), "Obesity and the Role of Food Marketing: A Policy Analysis of Issues and Remedies," *Journal of Public Policy & Marketing*, 23 (Fall), 153–69.

Sen, Amartya (1999), *Development as Freedom*. New York: Alfred A. Knopf.

Sheldon, Kennon M., Richard M. Ryan, Edward L. Deci, and Tim Kasser (2004), "The Independent Effects of Goal Contents and Motives on Well-Being: It's Both What You Pursue and Why You Pursue It," *Personality and Social Psychology Bulletin*, 30 (4), 475–86.

Skinner, B.F. (1971), *Beyond Freedom and Dignity*. New York: Alfred A. Knopf.

U.S. Environmental Protection Agency Municipal and Industrial Solid Waste Division (1997), "Characterization of Municipal Solid Waste in the United States," Report No. EPA530-R-97-015. Prairie Village, KS: Franklin Associates.

VanDeVeer, Donald (1986), *Paternalistic Intervention*. Princeton, NJ: Princeton University Press.

Vansteenkiste, Maarten, Joke Simons, Caroline Braet, Christine Bachman, and Edward L. Deci (2005), "Promoting Maintained Weight Loss Through Healthy Lifestyle Changes Among Severely Obese Children: An Experimental Test of the Self-Determination Theory," working paper, Department of Psychology, University of Leuven, Belgium.

———, ———, Willy Lens, Kennon M. Sheldon, and Edward L. Deci (2004), "Motivating Learning, Performance, and Persistence: The Synergistic Effects of Intrinsic Goal Contents and Autonomy-Supported Contexts," *Journal of Personality and Social Psychology*, 87 (2), 246–60.

Warner, Jennifer (2004), "Obesity Triples Prescription Drug Costs," *WebMD Health*, (accessed November 20, 2005), [available at http://my.webmd.com/content/article/96/103878.html].

Williams, Geoffery C., Elizabeth M. Cox, Ruth Kouides, and Edward L. Deci (1999), "Presenting the Facts About Smoking to Adolescents: The Effects of an Autonomy Supportive Style," *Archives of Pediatrics and Adolescent Medicine*, 153 (9), 959–64.

———, Marylène Gagné, Richard M. Ryan, and Edward L. Deci (2002), "Facilitating Autonomous Motivation for Smoking Cessation," *Health Psychology*, 21 (1), 40–50.

———, Virginia M. Grow, Zachary R. Freedman, Richard M. Ryan, and Edward L. Deci (1996), "Motivational Predictors of Weight Loss and Weight-Loss Maintenance," *Journal of Personality and Social Psychology*, 70 (1), 115–26.

———, Gail C. Rodin, Richard M. Ryan, Wendy S. Grolnick, and Edward L. Deci (1998), "Autonomous Regulation and Adherence to Long-Term Medical Regimens in Adult Outpatients," *Health Psychology*, 17 (3), 269–76.

Zuckerman, Miron, Joseph F. Porac, Drew Lathin, Raymond Smith, and Edward L. Deci (1978), "On the Importance of Self-Determination for Intrinsically Motivated Behavior," *Personality and Social Psychology Bulletin*, 4 (3), 443–46.