
THE ROLE OF INTENTION IN SELF-REGULATION TOWARD INTENTIONAL SYSTEMIC MINDFULNESS

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There have been substantial developments in theory and research on self-regulation over the past four decades. This chapter explores the progression of self-regulation understanding from nonconscious self-regulation (Wiener's cybernetic homeostatic model) to conscious attentional self-regulation (Schwartz, 1977, 1984, 1990) to the nature of conscious attentional self-regulation (e.g., mindfulness; Kabat-Zinn, 1982). Drawing upon insights from Weiner's and Schwartz's models, as well as the work of Kabat-Zinn and colleagues on mindfulness, we posit an expanded model for self-regulation theory. The purpose of this chapter is to introduce intention explicitly into self-regulation theory (i.e., what is the nature of the attention—"mindfulness qualities"—and what is the framework within which the self-regulation system is practiced—"systemic perspectives?"). Furthermore, this chapter proposes a model, intentional systemic mindfulness (ISM), that provides both the goal for intention as well as the process for implementing it within self-regulation. ISM examines two critical aspects of intention: mindfulness qualities (how we attend) and systemic perspectives (why we attend).

Self-regulation in biology is an ancient notion captured in proverbs such as "The balance of nature" but it became

introduction of Wiener's (1948) cybernetics. Wiener himself applied this engineering concept to living systems. Self-regulation can be defined as the process by which a system regulates itself to achieve specific goals. In his work on human self-regulation, Schwartz (1977, 1984, 1990) expanded self-regulation to include conscious as well as nonconscious regulation. During the past 20 years, Kabat-Zinn and colleagues have added an extremely effective technique for self-regulation by helping to bring "mindfulness," a form of Buddhist meditation, to mainstream Western medicine. Mindfulness is a conscious, impartial self-regulation, defined as "moment-to-moment awareness" (Kabat-Zinn et al., 1992, p. 937). Mindfulness adds to conscious self-regulation by explicitly infusing "attention" with seven mindfulness qualities: acceptance, nonjudging, nonstriving, patience, trust, openness,¹ and letting go (Kabat-Zinn, 1982; Kabat-Zinn et al., 1992). Systems theory extends the range of applications of mindfulness, enlarging its focus to embed the symptom and self in larger systems (the systemic perspectives). Thus, ISM² is a systems theory approach to mindfulness applied to human self-regulation and all self-regulation techniques.

In ISM *intention* is primal, providing the mindfulness qualities and systemic perspectives that should infuse *attention*. However, the majority of current theories of self-regulation, with few exceptions (e.g., Kabat-Zinn, 1982; Kabat-Zinn & Chapman-Waldrop, 1988; Kabat-Zinn et al., 1992), do not explicitly address the multifaceted nature (e.g., physical, emotional, social, spiritual) of restoring or enhancing health and wellness. This chapter discusses an explicit and comprehensive model (ISM) that bridges the theories of East and West and establishes a connected and unifying approach to self-regulation and health. This model provides a contextual perspective for expanding self-regulation theory, as well as a rationale for intention within self-regulation. The core of ISM is intention—the intention to (1) pay attention utilizing the foregoing seven mindfulness qualities as well as five additional affective qualities—generosity, empathy, gratitude, gentleness, and loving kindness—and (2) pay attention within a systems perspective, the simultaneous consciousness of being a whole and being part of a larger whole. The implications of ISM for self-regulation therapies are numerous and suggestions for future research are discussed.

¹ Openness refers to the Buddhist quality of the beginner's mind.

² We have chosen to call this model *intentional systemic mindfulness ISM* to explicitly emphasize the interrelated systemic components that are a part of Kabat-Zinn's mindfulness work.

I. SYSTEMS THEORY, SELF-REGULATION, AND MINDFULNESS

Ecologist, Barry Commoner, captured the essence of systems theory in his teaching that everything is connected to everything else (Commoner, 1990). Systems theory argues that fundamental systemic metaphors exist in nature and can be applied to systems at all levels. A complex system should be regarded as a "whole" rather than as an aggregate of component parts and local relationships to be studied in isolation. The system as a whole regulates the interaction of its parts or subsystems. To interact, these parts must be connected. The connections enable the parts to affect each other's behavior, but, more importantly, allow the system to control the global operation. This interactive organizational process within systems is termed self-regulation. Living systems maintain inner balance, harmony, and order through their capacity to self-regulate via feedback loops between particular functions and systems (Schwartz, 1977, 1984, 1990).

Out of the interaction between systems, emergent properties evolve. For example, the interaction between hydrogen and oxygen atoms produces a novel emergent property: water. Every system is a whole composed of subsystems and simultaneously is part of a suprasystem. A human being can be thought of as composed of subsystems (organs), part of larger suprasystems (families, communities, cultures), and as a whole system in and of himself or herself. The same rules apply to humans as they do to atoms. The interaction between hydrogen and oxygen can be seen as a metaphor for relationships. For example, just as hydrogen brings out special properties from oxygen and vice versa, when humans interact they bring out emergent properties in each other.

This chapter draws most from the interconnectedness component of systems theory. In discussing the systems concept of interconnectedness, it is important to go beyond the standard reductionist account that explains connectedness purely as relationships between parts, leaving out governance (regulation) by the whole. Systems theory is the effort to study complex systems holistically, recognizing the interconnectedness of all the parts and the large number of nonlinearly interdependent variables involved. The variables are connected through feedback loops and implement the system's self-regulation. This dynamic synergistic interaction can be observed on all levels from subatomic physics and cellular biology to social, political, and global systems. An example at a biological level is ontogeny, where development of the embryo is regulated by a genetic "plan" that is responsive at every stage to environmental influences transmitted somatically. An example within a family system can be seen when parents are loving and respectful to each other they are engaged in

feedback loops that promote connection and wholeness. These feedback loops affect their individual relationship, as well as their relationships with their children, which in turn affects the dynamics of the family as a whole.

II. SELF-REGULATION

Self-regulation is a systems concept. Self-regulation is based on positive and negative feedback loops. Positive feedback loops engender heterostasis, leading to change, growth, and development. Negative feedback loops engender homeostasis, which is a stable state that a living organism strives to maintain by keeping vital parameters within viable limits. Both positive and negative feedback loops foster learning and memory (Schwartz and Russek, 1997a). When the homeostatic model is extended from fixed to changing environments, the theory of evolution adds the important parameter of adaptability. Watzlawick, Beavin, and Jackson (1967) described both positive and negative feedback loops:

... part of a system's output is reintroduced into the system as information about the output. The difference is that in the case of negative feedback this information is used to decrease the output deviation from a set norm or bias—hence the adjective "negative"—while in the case of positive feedback the same information acts as a measure for amplification of the output deviation, and is thus positive in relation to the already existing trend toward a standstill or disruption. (p. 30)

This definition parallels Carver and Scheier's use of the term "feedback" in social facilitation. For example, they describe the operation of a negative feedback loop in social behavior: "self-directed attention leads to the engagement of a cybernetic feedback loop by which discrepancies between present behavior and a standard of comparison are reduced" (Carver & Scheier, 1981, p. 45). Balance between positive and negative feedback within a system is crucial. If a system has only negative feedback loops, it will remain stagnant; however, if a system contains only positive feedback, then it eventually will explode. Interconnection and wholeness stem from this balance.

One early and foundational model of self-regulation stems from Weiner's (1948) cybernetics. This is based on homeostasis and evolved from his work on anti-aircraft guns in World War I. The idea was that the guns would adjust to changing motion of the target aircraft and make a hit. Another example of self-regulation can be seen when you attempt to touch your finger to your nose. If your eyes are open, you receive continual feedback and it is much easier; if your eyes are closed, then this task is much more difficult.

Schwartz (1984, 1990) expanded the notion of self-regulation from automatic response to conscious self-regulation. When system parameters exceed performance limits, the system self-regulates either nonconsciously

or consciously. Conscious self-regulation requires that the human being pay attention to the process. Self-regulation automatically (nonconsciously) occurs all the time; however, by bringing conscious attention, the feedback is amplified. This increased feedback leads to greater connection and subsequent self-regulation. For example, if individuals are requested simply to pay attention to their breathing, with no intention to alter their breathing in a particular way (e.g., increase or decrease respiration rate, respiration amplitude, or respiration regularity), typically respiration becomes slower, deeper, and more regular. However, if subjects are instructed to pay attention to their heartbeats, with no intention to alter their heart rate in a particular way, especially with the aid of kinesthetic feedback (feeling one's own pulse), respiration typically becomes shallow and irregular while beat to beat changes in heart rate become more regular (Schwartz, 1984). These selective self-regulation effects with focused attention illustrate the relationship between conscious awareness of organ systems and specific physiological effects.

Schwartz's model of self-regulation involves "attending," which is similar to the Buddhist term mindfulness, and yet, Schwartz's model is goal oriented conscious attention, whereas Kabat-Zinn's model emphasizes conscious (purposeful) attention with no specific goals: "paying attention in a particular way; on purpose, in the present moment, and nonjudgmentally" (Kabat-Zinn, 1994, p. 4). Kabat-Zinn's model of mindfulness differs from Langer's (1989) mindfulness in that it extends the focus on attention to include the nature of attention (e.g., mindfulness qualities brought to the attention; reviewed subsequently). Furthermore, Langer focuses on "mindlessness" and does not emphasize self-regulation practices (e.g., meditation) designed to cultivate mindfulness. Finally, Langer (1989, p. 71) does not address the "cosmology" or "moral aspect of mindfulness" that is significant in Kabat-Zinn's model. In teaching mindfulness, focus is on the experiential practice itself. Mindfulness practice involves concentrated moment to moment attention focused inward, attending to thoughts, feelings, and body sensations as they arise. Research has demonstrated that mindfulness may be an effective intervention for anxiety disorders, chronic pain, and psoriasis in its own right (Kabat-Zinn, 1982; Kabat-Zinn et al., 1992; Miller, Fletcher, and Kabat-Zinn 1995), as well as being an effective complement to more traditional medical and psychological therapies (Teasdale, Segal, & Williams, 1995).

III. SELF-REGULATION TECHNIQUES AND POTENTIAL LIMITATIONS

There are several different models of self-regulation and numerous techniques that follow from these models. Techniques that have been used

as vehicles to develop self-regulation and mindfulness are meditation, biofeedback, guided imagery, and exercise. These techniques share a goal of health enhancement and disease (symptom) reduction through teaching the individual to simply attend (bare awareness) and thereby connect and self-regulate. However, for many practitioners and patients, the context within which these strategies are implemented is a Western reductionist approach to stress management, focusing on symptom alleviation instead of acknowledging the larger process from a systems perspective (Shapiro, 1982, 1994). These techniques, therefore, share limitations that may prevent the individual from achieving "optimal health," defined by the World Health Organization (1946) as more than the absence of disease, involving mental, physical, and social well-being.

Reductionistic self-regulation theories cannot explicitly address all of the multilevels that create and sustain optimal health. Numerous self-regulation techniques simply intend to return things to normal (e.g., blood pressure) and do not address more systemic intentions. There is nothing wrong in using meditation to lower blood pressure. However self-regulation techniques that explicitly address intention toward ISM may be more effective at promoting healing on a systemic level as well as on a symptom level.

IV. PSYCHOPHYSIOLOGICAL RESEARCH ON SELF-REGULATION — PHYSIOLOGY AND ENERGY

The research on psychophysiological self-regulation is voluminous and documents that different techniques that focus on different components or subsystems have different effects (e.g., progressive muscle relaxation produces greater effects on muscular tension than autogenic training techniques involving images of warmth; reviewed in Lehrer and Woolfolk, 1993).

Many relaxation, meditation, and imagery techniques including Qigong, massage, and noncontact therapeutic touch, implicitly or explicitly involve focused attention to the body. From a dynamical energy systems perspective (the thesis that physical systems interact not only through the sharing of matter, but the sharing of energy and information as well; Schwartz and Russek, 1997a), relaxed self-attention should result in enhanced connectivity between the brain and the body. Enhanced connectivity between the brain and the body may be achieved by at least two mechanisms: (1) physiological mechanisms that employ peripheral negative feedback loops and (2) biophysical mechanisms or loops that involve direct energetic resonance between the peripheral organ and the brain.

A recent study by Song, Schwartz, and Russek (1998) illustrates the potential for selective self-regulation that bridges traditional physiological

and modern energetic models of interaction (Schwartz and Russek, 1997a). Nineteen channels of EEG, ECG, and EOG were recorded from 22 subjects during attention to heart versus eye sensation trials, with and without kinesthetic feedback to augment sensory awareness. Analyses of the EEG synchronized with the ECG revealed significant post-R spike EEG effects for heart focused attention (especially with touching), probably reflecting increased baroreceptor and somatosensory feedback, and pre-R spike EEG effects for heart focused attention (independent of touching), possibly reflecting direct energetic interactions between the heart and the brain. These findings suggest that physiological and energetic mechanisms both may be involved in techniques whose goal it is to promote mind-body integration and health.

If simple attention to the body can foster increased synchronization between the brain and the body—not only physiologically, but energetically as well—the potential for ISM is increased accordingly. From a systems perspective, energy circulates within and between organisms, and energy can be directed to achieve specific goals (energy is defined by physics as the capacity to do work; see Schwartz and Russek, 1997a, 1997b). Furthermore, the psychology, biology, and physics of self-regulation all point to the suggestion that a key to fostering self-regulation lies in the nature of the intention to direct attention to achieve a desired goal. This insight requires that we expand our current models of self-regulation to include the process of intention.

V. ELABORATION OF AN EXPANDED SELF-REGULATION MODEL: INTENTION

According to Schwartz (1984), self-regulation is the process through which a system maintains stability of functioning as well as flexibility and the capacity for change in novel situations. When a system goes out of balance, the restoration of order requires attention to reestablish connectedness. Because human beings can be thought of as systems, when illness occurs, attention also is needed to reestablish connectedness and subsequently health. This has been described by Schwartz as a pathway model of self-regulation: attention → connection → regulation → order → health. Cultivating conscious attention leads to connection, which leads to self-regulation and ultimately order and health. However, the intention with which this attention is applied may be crucial. An expanded model of self-regulation theory, therefore, includes intention as an initiating antecedent: intention → attention → connection → regulation → order → health. However, the question arises, "Intention toward what?"

VI. INTENTION

Intention is a global property of the entire system (e.g., person). In this context, we are using intention following Webster's (1977) definition that focuses on "purpose" and "direction" as opposed to the definition that focuses on an "ultimate end." Intention can be thought of as toward a means as opposed to a single, ultimate goal (which would imply an end state and does not fit within a systemic model). However, according to Gollwitzer and Brandstatter (1997), both the "goal intention" as well as the "implementation intention" (process) are important. Thus, although the emphasis is on the process (implementation intention), multiple goal intentions are developed simultaneously, but they are derived within a nonlinear, systemic perspective and therefore an "ultimate" end is never completed.

VII. INTENTIONAL SYSTEMIC MINDFULNESS: MINDFULNESS QUALITIES AND SYSTEMIC PERSPECTIVES

In response to the question, "Intention toward what?," we propose, "Toward ISM." ISM (shown in Figure 1) establishes a framework for developing goal intentions (from the micro to the macro; see Figure 2) as well as a process of implementing them (open, nonjudgmental attention to all stimuli) within self-regulation theory. In developing both goal and implementation intentions, ISM integrates two components: systemic perspectives (Figure 2) and mindfulness qualities (Table 1).

For clarity of presentation, mindfulness qualities are discussed first. Consistent with Ajzen's recognition of the importance of the relationship between attitudes and intention to behavior and health (Ajzen, 1996), this model makes explicit a set of attitudinal (mindfulness) qualities to incorporate into self-regulation practice. The term "mindfulness qualities" refers to the intention to incorporate and bring into conscious attention 12 cognitive-affective mindfulness qualities defined by Kabat-Zinn (1990) and elaborated by Shapiro, Schwartz, and Bonner (1998). These 12 mindfulness qualities include nonstriving, nonjudging, acceptance, patience, trust, openness,³ and letting go (Kabat-Zinn, 1990) as well as gratitude, gentleness, generosity, empathy, and loving kindness (Shapiro, Schwartz, & Bonner, 1998) (see Table 1). The latter qualities were incorporated to explicitly address the affective (heart) qualities of mindfulness. According to Tanahashi, the Japanese characters of mindfulness are composed of two interactive figures: one mind, and the other heart (Santorelli, 1999).

³ Openness: derived from beginner's mind, "a mind that is willing to see everything as if for the first time" (Kabat-Zinn, 1990, p. 35).

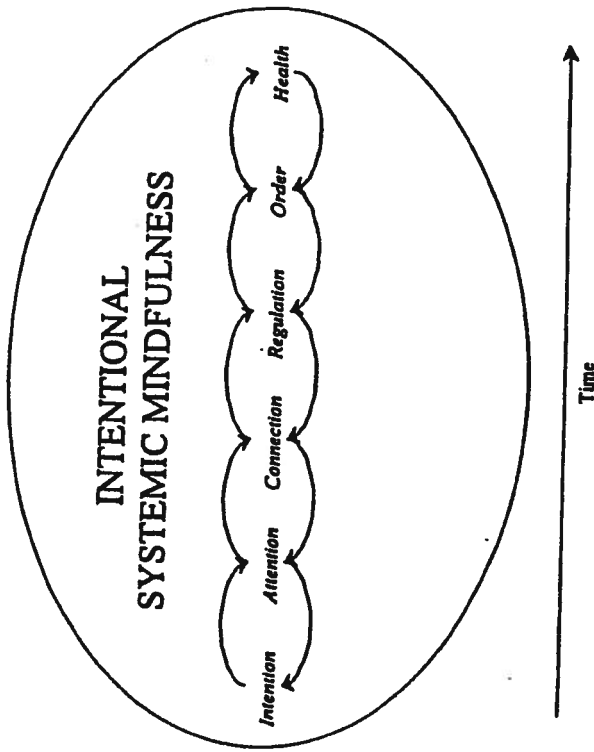


FIGURE 1 The six components of the expanded systemic self-regulation pathways model over time. The arrows indicate how each phase is directly or indirectly connected to all others. Each phase both sends and receives direct or indirect feedback to all other phases as a dynamic systemic process.

Therefore, perhaps a more accurate translation of the Japanese is heart-mindfulness (Shapiro & Schwartz, in preparation).

The mindfulness qualities are involved in a synergistic co-evolution, in that the cultivation of one facilitates the cultivation of others. ISM encourages the cultivation of all qualities simultaneously; however, for each individual, the practice and development of these qualities will be different. A systemic vision recognizes a multiplicity of satisfactory stable equilibria that continue to evolve to new equilibria. As a result, the level of activity of each mindfulness quality varies and yet the intention is to cultivate all qualities. The qualities operate as "inputs" during both the intention and attention phase.

Mindfulness qualities specify the way one attends. Attention by itself is not enough. It is crucial to attend in a particular way, with the intention to incorporate the mindfulness qualities as part of the self-regulation technique. It is not simply paying attention, but the intention behind it, that may be important for enhancing health. For example, Schwartz (1984) mentions grooming as a healthy form of attention that leads to self-regulation and improves health. However, it is possible that if individuals groom themselves with the intention...

TABLE 1 Mindfulness Qualities

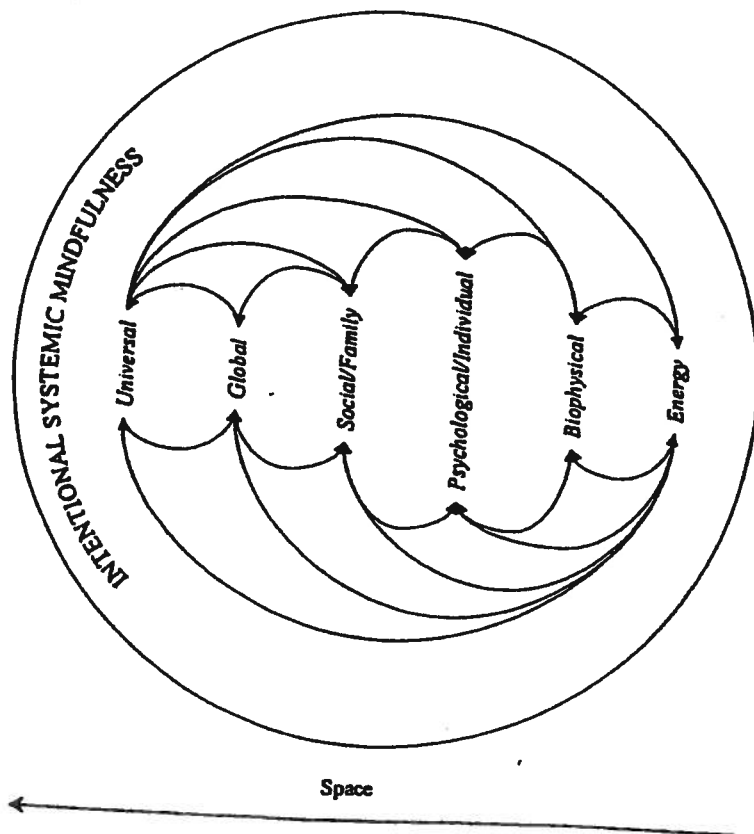
Nonstriving: Nongoal oriented, remaining unattached to outcome or achievement
 Nonjudging: Impartial witnessing, observing without evaluation and categorization
 Acceptance: Open to seeing and acknowledging things as they are
 Patience: Allowing things to unfold in their time, bringing patience to both ourselves and to others
 Trust: Trusting both oneself and the process of the self-regulation practice itself to all feedback
 Letting go: Nonattachment, not holding on to thoughts, feelings, or experiences
 Gratitude: The quality of reverence, appreciating and being thankful for the present moment
 Gentleness: Characterized by soft, considerate, and tender quality; soothing, however not passive, undisciplined, or indulgent
 Generosity: Giving within a context of love and compassion, without attachment to gain or thought of return (the content of giving does not have to be material)
 Empathy: The quality of feeling and understanding another person's situation—their perspectives, emotions, actions (reactions)—and communicating this to the person
 Loving kindness: A quality embodying benevolence, compassion, and cherishing, a love filled with forgiveness and unconditional love

Note: These categories are offered heuristically, reflecting the general idea that there are mindfulness qualities that should be part of the intention phase as well as the attention phase of the pathway model. A commitment (intention phase) is made to bring the qualities to the practice and then the qualities are themselves cultivated throughout the self-regulation practice itself (attention phase). See Kabat-Zinn (1990, pp. 33-40) for detailed definitions of the first seven qualities.

we may find. This attention involves a stance of impartiality, letting go and cultivating patience for whatever is present, and a willingness just to listen to and accept in loving kindness all the parts of our whole.

It is also crucial to discuss the systemic perspectives within which the attending occurs. *Systemic perspectives* refer to the intention to incorporate into the practice of mindfulness the awareness that symptoms themselves exist as part of larger systems (see Figure 2). This aspect of ISM is akin to the term "holon," which was coined by Koestler (1978) and refers to a system that is "both a whole composed of parts and a part composing larger wholes." ISM requires the simultaneous consciousness of being a whole and being part of a larger whole (systemic perspectives) while incorporating the mindfulness qualities.

This context of "wholeness" is created by the intention with which the individual approaches the attention (self-regulation technique). It is necessary to look at attention from a systemic perspective, explicitly acknowledging multiple intentions directed at multiple levels: (1) awareness of interconnection, (2) awareness of dynamic interaction and constant change, (3) awareness of levels (micro-macro), and (4) awareness of wholeness (wholes within larger wholes).



All possible interactions not shown in figure

FIGURE 2. Six systemic levels in space, from the micro (energy) to the macro (universal). The arrows indicate how each level is directly or indirectly connected to all others. Each level both sends and receives direct or indirect feedback to all other levels as a dynamic systemic process. All possible arrows (hence interactions) not are shown.

ing, need for perfection, self-criticism, and frustration, then this attention will not be health promoting and may instead be harmful. This same behavior of grooming, performed with a conscious intention to infuse the attention with mindfulness qualities of acceptance, generosity, nonjudgmentalness, may indeed be health promoting.

To consider another example, if people who attend to their blood pressure attend with fear that they will not be able to control it or with anger at themselves for having high blood pressure, this may have deleterious effects on their health or at least impede the potential healing effects of the self-regulation technique. The intention to attend with mindfulness qualities may be health enhancing in itself. Utilizing these qualities, we focus attention on ourselves in a loving and gentle way, open to whatever

The process of ISM is to develop multiple intentions in an attempt to heal and recognize all levels from the specific symptom (blood pressure) to the largest level (universe.) Thus, approaching self-regulation within systemic perspectives involves seeing and recognizing the interconnection of all things, and intending to acknowledge and heal each piece and simultaneously the larger whole. Practicing a self-regulation technique within the context of ISM leads to a feeling of being supported by and connected with oneself as well as with a larger supportive system. These feelings of support and interconnectedness may have health enhancing properties. The literature supporting this hypothesis will be discussed in Section IX.

Many self-regulation techniques fall short by focusing on a symptom and ignoring the system. For example, a person may practice meditation solely to become aware of blood pressure and thereby lower it. However, if this is done without the proper intention, it may exacerbate the situation as discussed earlier. ISM addresses these shortcomings. A self-regulation technique practiced with intention toward systemic perspectives includes multiple levels of intention, combining the intention to heal blood pressure with an intention to promote the well-being of the entire circulatory system, especially the heart. This in turn leads to enlarging the intention to heal the heart to incorporate the knowledge that the heart is part of the body, conceived of as a psychosomatic self. The self is then recognized as embedded within interpersonal relationships, family, and community, and, therefore, the intention to heal interpersonal relationships is added also. This awareness stimulates recognition that these relationships are part of a larger community (humankind), which creates the intention to acknowledge the connectedness of all beings. Finally, the recognition develops that this greater community is connected to the earth and that humans are interconnected and interdependent with all beings and with the earth itself.

Because of the continual evolving nature of intention, the expanded self-regulation pathway model is not a simple linear sequence. ISM is dynamic, a continual process of expanding and redefining intention (mindfulness qualities and systemic perspectives; see Figure 1). It is a system of many variables that are connected in nonlinear fashion and, thus, it is impossible to separate the pathways—it is the opposite of discrete. Yet, throughout this continual transformation, the intention to attend with the mindfulness qualities (acceptance, loving kindness, etc.) remains constant, as does commitment to eventually acknowledging all systemic perspectives. ISM, therefore, is not only the plan and the execution of the plan, but the modification of the plan based on the feedback of the actual experience (see Figure 1). ISM is change fueled by the intention to incorporate mindfulness qualities and systemic perspectives.

For example, one cannot be expected to immediately embrace (or even *crave*) the intention of healing the universe. Because ISM is both nonlin-

ear and dynamic, it provides the opportunity for continual growth and transformation. As one becomes increasingly mindful, through the cultivation of attention, the formulation of one's intentions changes (see Figure 1). Through becoming aware—expanding one's scope of intentionality—deeper levels of previously unrecognized feedback are discovered and amplified. Continuing along the systemic self-regulation pathway model (Figure 1), this constantly increasing feedback guides the movement and allows the process to flow in a dynamic manner as opposed to disjointedly moving from each phase to the next. Thus, as the grounding theory underlying the self-regulation pathway model, ISM opens the potential that, eventually, multiple intentions will be adopted. As one continues the process, one moves through concern for the specific symptom to concern for the larger context of one's symptoms.

ISM is both the theory and the practice, exercising guidance throughout the entire self-regulation pathway model. It pervades the whole system (self-regulation pathway model), providing the overarching principles that cause the flow as well as the means to sustain this flow. One has to be mindful continually of the increasing levels of feedback in order to deepen one's mindfulness qualities, expand one's systemic perspectives, and sustain the flow.

VIII. APPLICATIONS OF INTENTIONAL SYSTEMIC MINDFULNESS TO SELF-REGULATION TECHNIQUES

We suggest that optimal health enhancement and disease prevention and resolution stem from systemically mindful self-regulation techniques more so than from nonsystemically mindful self-regulation techniques. "Optimal health enhancement" can be translated and measured using outcome variables that span the immunological level (e.g., NK cells) and the physiological level (e.g., blood pressure) to the psychological (e.g., depression, anxiety), the social (quality of life), and the spiritual (spirituality measure) levels. ISM teaches the individual to adopt the intention to heal from a qualitative and contextual level that may promote healing on all levels (symptom, self, family, political, universal). Systems heal both downward and upward, smaller to larger and larger to smaller. Thus, the person (a system) heals on multiple levels, creating a greater opportunity to reach optimal health (physical, emotional, social, spiritual well-being). ISM is both a means (the technique used to achieve this whole) and an end (a way of living, being, and interacting in the world).

The healing effects of "consciously paying attention" may depend upon the mindfulness qualities and systemic perspectives in which this self-regulation is practiced. Through self-regulating techniques (meditation.

biofeedback, hypnosis, imagery, yoga), the individual attends and connects to his or her "self," and is often able to regulate blood pressure and body temperature, and achieve a state of physiological hypoaousal—the "relaxation response" (Benson, 1975). The literature demonstrates that no technique is inherently better than another in terms of self-regulation for a specific clinical problem (Shapiro, 1994). We suggest that a self-regulation technique practiced with the intention toward ISM is qualitatively and quantitatively "better" than one practiced with no intention.

IX. CONNECTEDNESS AND INTERCONNECTEDNESS

It is commonly recognized at the molecular biochemical level that connection is crucial for regulating physical health. However, if connectedness is fundamental to the functioning of our body, it seems plausible that it is important on social and psychological levels as well. As Schwartz and Russek (1997b) remind us, the words "health" and "heal" come from the Anglo-Saxon "hal," which means whole (Webster, 1977). Perhaps feeling whole and connected is primal to cultivating physical and emotional health. ISM, by fostering interconnectedness and wholeness (during both the intention and attention phases of the pathway model), may be health enhancing.

It can be argued that in the past scientific research literature, positive association between social support and health was really tapping into the healing effects of connectedness and wholeness. The effects of social support are well documented. As Berkman, (1995, p. 245), a pioneering researcher in the field states, "there is now a substantial body of evidence that indicates that the extent to which social relationships are strong and supportive is related to the health of individuals who live within such social contexts." In the past 20 years, numerous studies have concluded that people who feel isolated and disconnected have a greater risk of death from all causes. The converse has been found also: People who feel loved and connected are healthier and live longer.

One of the first prospective longitudinal community-based studies that documented the relationship between health and social support was the Alameda County study. This study found that men and women who did not have a strong social network were 1.9 and 3.1 times more likely to die in a 3-year followup (Berkman & Syme, 1979). There have been at least eight community-based prospective studies since, all indicating a relationship between social support and mortality rates independent of socioeconomic status, self-reported physical health status, and health practices such as smoking, diet, alcohol consumption, exercise, and utilization of preventive health services (Berkman & Syme, 1979; Blazer, 1982; House, Robbins, & Metzner, 1982; Kaplan et al., 1988; Orth-Gomer & Johnson, 1987, Orth-

Gomer, Uden, & Edwards, 1988; Ruberman et al., 1984; Schoenbach et al., 1986; Seeman et al., 1993; Weim et al., 1985; Williams et al., 1992).

The literature also demonstrates that facilitating feelings of support and connection through group intervention is health enhancing. Spiegel, & Bloom, Kraemer, & Gottheil (1989) conducted a prospective intervention focusing on group cohesion, support, sharing, and trust for patients with metastatic breast cancer. A 10-year followup showed that women in the intervention group survived 36.3 months compared to 18.9 months in the control group (Spiegel et al., 1989). In a similar study, Fawzy et al. (1993) found a three times greater chance of survival in patients with malignant melanoma who received a group support intervention.

In the Lifestyle Heart Trial, 41 patients with angiographically documented coronary artery disease were assigned randomly to an intervention group or a "usual-care" control group. The intervention consisted of a low-fat vegetarian diet, moderate exercise, smoking cessation, stress management, and support groups. The usual-care group received standard traditional medical care. At a 1-year followup, 82% of the intervention group showed significant regression of severe coronary atherosclerosis, whereas the control group continued to worsen (Ornish et al., 1990). The stress management (imagery, meditation, yoga) and social support components of the intervention were designed intentionally to help participants enhance connectedness with self, others, and a higher power (Ornish, 1991).

Even more recent studies consistently document the relationship between love, spirituality, and health. In a study exploring the relationship between the perception of parental care and health, Russek and Schwartz (1997) found that feelings of warmth and closeness with parents predicted health status for 35 years. Another study examined the effects of social support and religion on men and women who had undergone open heart surgery 6 months previously. The study revealed a four times greater risk of mortality 6 months after surgery in men and women who lacked participation in organized social groups, and a three times greater risk for those who did not draw strength and comfort from their religion (Oxman et al., 1995).

Reductionistic self-regulation techniques, practiced without intention (mindfulness qualities and systemic perspectives) may never access this resource of interconnectedness associated with healing. However, practicing self-regulation with the intention toward ISM (developing the mindfulness qualities and systemic perspectives) may help facilitate greater health enhancing feelings of support and connection (interconnection). For example, the systemic perspectives may enable the individual to connect to a larger self and, thereby, become more whole. As Kabat-Zinn (1994, p. 226) describes, "When we are in touch with being whole, we feel at one with everything. When we feel at one with everything we feel whole." Self-regu-

lation techniques facilitated with the intention toward systemic perspectives aim to foster this healing sense of "ultimate belonging" which the Benedictine monk Steindal-Rast (1989) refers to as "God."

The mindfulness qualities also may facilitate feelings of love, connection, and support. The systemic pathway model (Figure 1) can be applied to all levels, from the individual to the global, suggesting that the theory attention (embodying the mindfulness qualities) leads to greater connection and greater health is not limited to an individual or biological process. An example can be seen when applying this model to interpersonal relationships. Bringing a compassionately open attention to relationships may lead to greater connection, love, and health. We can develop our capacity to feel (accept) and express love through attention, but only through an attention couched in trust, acceptance, and generosity (mindfulness qualities). As the foregoing research suggests, when we feel loved and cared for unconditionally, or in theologian Paul Tillich's (1952) words "accepted," we have improved health and well-being. Thus, a self-regulation technique (attention) practiced with the intention toward ISM (mindfulness qualities and systemic perspectives) may facilitate the health enhancing feelings of interconnection and love.

X. GENERAL PRINCIPLES OF INTENTIONAL SYSTEMIC MINDFULNESS INTERVENTIONS

General principles of ISM that could transfer across intervention settings include (1) an emphasis on the intention of the selfregulation intervention, (2) cultivating a compassionate, nonjudgmental (mindfulness qualities) attention throughout the intervention, (3) viewing the intervention as a continual process as opposed to an end in itself, and (4) adopting systemic perspectives that acknowledge and address interconnectedness and wholeness.

XI. FACILITATING INTENTION SYSTEMIC MINDFULNESS

An effective way to facilitate interconnectedness is probably to practice self-regulation with others (groups, couples, and student and teacher). A community (sangha) provides an organizing context, facilitating direct experience of greater connection. One example can be seen in Kabat-Zinn's work with mindfulness meditation groups (Kabat-Zinn, 1982; Kabat-Zinn et al., 1992; Miller et al., 1995). Further examples are the Lifestyle Heart Trial intervention (Ornish, 1991) and historical teacher and disciple practices of the ancient traditions (Buddhism, Hinduism, Judaism).

XII. DIRECTIONS FOR FUTURE RESEARCH

There are multiple directions for future research. First and most importantly, self-regulation interventions with an intention toward ISM need to be compared to self-regulation interventions without any explicit intentions. An example of this would be to measure the psychological and physiological effects of diaphragmatic breathing with the intention toward ISM versus diaphragmatic breathing with no explicit intention. We hypothesize that the systemic mindful intervention would benefit the individual on multiple levels of health. Furthermore, future research should focus on creating reliable and valid self-report measures to assess ISM (e.g., one's intentions, the degree to which one understands and is able to integrate ISM into the self-regulation) as well as measures to assess systemic health (an assessment sensitive to the multiple levels of health). Because ISM is an overarching approach to self-regulation, it can be studied and applied to various specific techniques such as biofeedback and relaxation.

XIII. IMPLICATIONS FOR HEALTH AND MEDICINE

In discussing the implications of ISM, it is crucial to emphasize again that ISM is not simply another self-regulation technique (although it can be applied to self-regulation techniques). ISM can be viewed as a way of living, a "way of being" (Kabat-Zinn, 1992). Thus, the implications of ISM span multiple levels from the micro to the macro, each interacting with and stimulating the others.

On an individual level, intention toward ISM will amplify feedback and thus should deepen connections and self-regulatory processes within the body. Furthermore, ISM provides a compassionate contextual perspective for self-exploration, potentially leading to greater insight and psychological well-being, and allowing greater reception of more accurate and complete information that can be processed without attaching judgment. One's intention to embody the mindfulness qualities within a systems context of interconnectedness should affect not only one's relationship with self, but all interpersonal relationships, bringing greater compassion and insight to family, friends, colleagues, and even casual acquaintances and strangers.

A natural outgrowth of practicing self-regulation techniques with the intention toward ISM is that the cultivation of feelings of compassion, impartiality, and interconnectedness often translate into action (e.g., greater service to community). This is because the practice frequently results in feelings of interconnectedness and the realization that there is no separation between self and other. ISM cultivates the capacity to understand another person's point of view and the ability to acquire

information nonjudgmentally. Social psychology has demonstrated the phenomena of cognitive filtering and schema: In all spheres of life, people often attend to stimuli that support their beliefs and filter out those which do not. This process usually occurs at a nonconscious level, and people are, therefore, unaware that they have lost crucial information that could be applied to health and well-being.

XIV. SUMMARY

This chapter addressed the possible implications of making intention explicit in self-regulation theory. It responds to the question, "Intention toward what?" by developing a model of ISM. ISM provides a comprehensive and integrative approach to self-regulation and health. Through directing intention toward the two components of the model, mindfulness qualities and systemic perspectives, a more accepting, compassionate, and systemic approach is brought to self-regulation practices and techniques. A challenge for future research is to develop instruments that measure intentionality and health systemically (e.g., biopsychosocial-spiritually) and determine whether ISM techniques lead to more systemic improvements in overall health and well-being. The evolution of self-regulation theory toward ISM will expand the simple stress management and symptom reduction intention of self-regulation techniques toward a more comprehensive approach to human intention.

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REFERENCES

- Ajzen, I. (1996). The directive influence of attitudes on behavior. In P. M. Gollwitzer & J. A. Bargh (Eds.), *The psychology of action: Linking cognition and motivation to behavior*. (pp. 385-403).
- Benson, H. (1975). *The relaxation response*. New York: Morrow.
- Berkman, L. (1995). The role of social relations in health promotion. *Psychosomatic Medicine*, 57, 245-254.

- Berkman, L. F., & Syme, S. L. (1979). Social networks, host resistance and mortality: A year follow-up study of Alameda County residents. *American Journal of Epidemiology*, 110, 186-204.
- Blazer, D. (1982). Social support and mortality in an elderly community population. *American Journal of Epidemiology*, 115, 684-694.
- Carver, C., & Scheier, M. (1981). The self-attention-induced feedback loop and facilitation. *Journal of Experimental Social Psychology*, 17(6), 545-568.
- Commoner, B. (1990). *Making peace with the planet*. New York: Pantheon.
- Fawzy, F., Fawzy, N., Hyun, C., Elashoff, R., Guthrie, D., Fahey, F., & Morton, D. (1990). Malignant melanoma: Effects of an early structured psychiatric intervention, coping affective state on recurrence and survival 6 years later. *Archives of General Psychiatry*, 47, 681-689.
- Gollwitzer, P., & Brandstatter, V. (1997). Implementation intentions and effective pursuit. *Journal of Personality and Social Psychology*, 73(1), 186-199.
- House, J. S., Robbins, C., & Metzner, H. L. (1982). The association of social relationship activities with mortality: Prospective evidence from the Tecumseh community health study. *American Journal of Epidemiology*, 116, 123-140.
- Kabat-Zinn, J. (1982). An outpatient program in behavioral medicine for chronic patients based on the practice of mindfulness meditation: Theoretical considerations and preliminary results. *General Hospital Psychiatry*, 4, 33-47.
- Kabat-Zinn, J. (1990). *Full catastrophe living*. New York: Bantam Doubleday Dell Publishing Group.
- Kabat-Zinn, J. (1994). *Wherever you go there you are*. New York: Hyperion.
- Kabat-Zinn, J., Massion, A. O., Kristeller, J., Peterson, L. G., Fletcher, K. E., Perle, Lenderking, W. R., & Santorelli, S. (1992). Effectiveness of a meditation based stress reduction program in the treatment of anxiety disorders. *American Journal of Psychiatry*, 149, 936-943.
- Kabat-Zinn, J., & Chapman-Waldrop (1988). Compliance with an outpatient stress reduction program: rates and predictors of program completion. *Journal of Behavioral Medicine*, 11(4), 333-352.
- Kaplan, G. A., Salonen, J. T., Cohen, R. D., Brand, R. J., Syme, S. L., & Puska, P. (1987). Social connections and mortality from all causes and cardiovascular disease: Prospective evidence from eastern Finland. *American Journal of Epidemiology*, 128, 370-380.
- Koesler, A. (1978). *Janus: A summing up*. London, UK: Hutchinson.
- Langer, E. (1989). *Mindfulness*. Reading MA: Addison-Wesley.
- Lehrer, P., & Wolfolk, R. (Eds.). (1993). *Principles and practice of stress management*. New York: Guilford.
- Miller, J., Fletcher, K., & Kabat-Zinn, J. (1995). Three-year follow-up and clinical implications of a mindfulness meditation-based stress reduction intervention in the treatment of anxiety disorders. *General Hospital Psychiatry*, 17, 192-200.
- Ornish, D. M. (1991). *Dr. Dean Ornish's program for reversing heart disease*. New York: Random House.
- Ornish, D. M., Brown, S. E., Scherwitz, L. W., Billings, J. H., Armsstrong, W. T., Ports, T., McLanahan, S. M., Klerkeide, R. L., Brand, R. J., & Gould, L. (1990). Can lifestyle changes reverse coronary atherosclerosis? The lifestyle heart trial. *The Lancet*, 335, 129-133.
- Orth-Gomer, K., & Johnson, J. (1987). Social network interaction and mortality: A six year follow-up of a random sample of the Swedish population. *Journal of Chronic Disorders*, 40, 949-957.
- Orth-Gomer, K., Unden, A. L., & Edwards, M. E. (1988). Social isolation and mortality in ischemic heart disease. *Acta Medica Scandinavica*, 224, 205-215.

- Ozman T. E., Freeman, D. H., Manheimer E. D. (1995). Lack of social participation or religious strength and comfort as risk factors for death after cardiac surgery in the elderly. *Psychosomatic Medicine*, 57, 5-15.
- Ruberman, W., Weinblatt, E., Goldberg, J. D., & Chaudhary, B. S. (1984). Psychosocial influences on mortality after myocardial infarction. *New England Journal of Medicine*, 311, 552-559.
- Russek, L., & Schwartz, G. E. (1997). Feelings of parental caring predict health status in mid-life: A 35-year follow-up of the Harvard Mastery of Stress Study. *Behavioral Medicine*, 20, 1-13.
- Santarelli, S. (1999) *Heal Thy Self*. New York: Bell Tower.
- Schoenbach, V. J., Kaplan, B. G., Freedman, L., Kleinbaum, D. G. (1986). Social ties and mortality in Evans County, Georgia. *American Journal of Epidemiology*, 123, 577-591.
- Schwartz, G. E. (1977). Psychosomatic disorders and biofeedback: A psychobiological model of dysregulation. In J. D. Maser and M. E. P. Seligman (Eds.), *Psychopathology: Experimental models*. San Francisco: W. H. Freeman.
- Schwartz, G. E. (1984). Psychobiology of health: A new synthesis. In B. L. Hammonds and C. J. Scheiner (Eds.), *Psychology and health: Master lecture series Vol. 3* (pp. 145-195). Washington, DC: American Psychological Association.
- Schwartz, G. E. (1990). Psychobiology of repression and health: A systems approach In J. Singer (Ed), *Repression and dissociation: Implications for personality theory, psychopathology and health*, (pp. 337-387). Chicago: University of Chicago Press.
- Schwartz, G. E., & Russek, L. (1997a). Dynamical energy systems and modern physics: fostering the science and spirit of complementary and alternative medicine. *Alternative Therapies*, 3(3), 46-56.
- Schwartz, G. E., & Russek, L. (1997b). The challenge of one medicine: Theories of health and eight "world hypotheses." *Advances: The Journal of Mind-Body Health*, 13 (3), 7-23.
- Seeman, T. E., Berkman, L. F., Kohout F., Lacroix, A., Glynn, R., & Blazer, D. (1993). Intercommunity variations in the association between social ties and mortality in the elderly: A comparative analysis of three communities. *Annual Epidemiology*, 3, 325-335.
- Shapiro, D. H. (1982). Overview: Clinical and physiological comparisons of meditation with other self-control strategies. *American Journal of Psychiatry*, 139, 267-274.
- Shapiro, D. H. (1994). Examining the content and context of meditation: A challenge for psychology in the areas of stress-management, psychotherapy, and religion/values. *Journal of Humanistic Psychology*, 34, (4), 101-135.
- Shapiro, S., Schwartz, G. E., & Bonner, G. (1998). The effects of mindfulness-based stress reduction on medical and premedical students. *Journal of Behavioral Medicine*. 21, 581-599.
- Shapiro, S., & Schwartz, G. E. (in preparation) *Hear-Mindfulness*.
- Song, L. Z. Y. X., Schwartz, G. E. R., & Russek, L. G. R. (1998). Heart-focused attention and heart-brain synchronization: Energetic and physiological mechanisms. *Alternative Therapies in Health and Medicine*, 4(5), 44-63.
- Spiegel, D., Bloom, J. R., Kraemer, H. C., & Gottheil, E. (1989). Effect of psychosocial treatment on survival of patients with metastatic breast cancer. *The Lancet*, 2, 888-891.
- Silendal-Rast, D. (1989). The mystical core of organized religion. *Religion*, 12(1), 11-14.
- Teasdale, J. D., Segal, Z., & Williams, M. (1995). How does cognitive therapy prevent depressive relapse and why should attentional control (mindfulness) training help? *Behavioral Research and Theory*, 33, (1), 25-39.
- Tillich, P. (1952) *Courage to be*. New Haven, CT: Yale University Press.
- Waizlawick, P., Beavin, J. H., & Jackson, D. D. (1967). *Pragmatic of human communication: A study of interactional patterns, pathologies and paradoxes*. New York: Norton.
- Webster, N. (1977). *Webster's new twentieth century dictionary of the English language*. Unabridged, 2nd ed. New York: Collins World.

- Welin, L., Tibblin, G., Svardsudd, K., Tibblin, B., Ander-Peciva, S., Larsson, B., Wilhelmssen, L. (1984). Prospective study of social influences on mortality: The study of men born in 1913 and 1923. *Lancet*, 1, 915-918.
- Wiener, N. (1948). *Cybernetics: Control and communication in the animal and the machine*. New York: Wiley.
- Williams, R. B., Barefoot, J. C., Califf, R. M., Hancy, T. L., Saunders, W. B., Fryol, D. B., Hlatky, M. A., Siegler, I. C., & Mark, D. B. (1992). Prognostic importance of social and economic resources among medically treated patients with angiographically documented coronary artery disease. *Journal of the American Medical Association*, 267, 520-524.
- World Health Organization. (1946). Constitution. Geneva, Switzerland.