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Use of Priming-Based Interventions to Facilitate Psychological Health: Commentary on Kazdin and Blase (2011)

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Abstract

Whereas traditional psychological interventions have been conceptualized in terms of deliberate readiness for change (Prochaska & DiClemente, 1983), emerging findings from social psychology suggest that regulation of behavior can operate independently of conscious selection and guidance (Bargh & Morsella, 2010). This evidence has come from studies using priming techniques based on activation of relevant mental representations by external environmental stimuli (Bargh & Chartrand, 2000). Research on automatic interpersonal processes has shown that feeling of social warmth (Bargh & Shalev, 2011; Williams & Bargh, 2008a) and the regulation of maladaptive emotions (Williams, Bargh, Nocera, & Gray, 2009), for example, can be induced nonconsciously by physical sensations, visual images or semantic concepts. Interventions based on the procedure of priming could be administered by multiple providers and communication devices to regulate emotional states, increase adherence to treatment instructions, or activate mind-sets that facilitate adaptive functioning. Integrating the methodology of priming and clinical intervention could both contribute to treatment delivery and enrich our understanding of change processes. We conclude that the use of supplementary priming-based interventions to facilitate and disseminate psychological change should be encouraged.

Keywords

priming, psychological intervention, embodiment, self regulation, implicit processes, automaticity, emotion regulation, change

Kazdin and Blase (2011) argue that a major shift and expansion of intervention research and clinical practice is needed to decrease the prevalence and incidence of mental illness. The goal of decreasing rates of mental illness and improving psychosocial functioning on a large scale (i.e., in society) begins with challenging basic assumptions as to which components underlie psychological intervention. We ask what school of thought could also be used to ameliorate psychological health problems. Much of our evidence has come from studies of automaticity using priming techniques, which refer to the passive, subtle, and unobtrusive activation of relevant mental representations by external environmental stimuli, including exposure to semantic concepts, short messages, visual images, and physical sensations (Bargh & Chartrand, 2000). To integrate the notions of automaticity and clinical intervention, we discuss basic assumptions underlying priming-based intervention as compared with traditional interventions and demonstrate uses of priming-based procedures to activate and facilitate psychological change.

Nonconscious Source of Psychological Change

Traditional psychological interventions have been conceptualized in terms of the client's deliberate readiness for change

(Prochaska & DiClemente, 1983). Because of this belief, systematic costly efforts are invested in individual treatment delivery, and individual-based interventions are not available for all those in need of services (Kazdin & Blase, 2011). Despite little understanding of the mechanisms of change (i.e., precisely how they work; Kazdin, 2000, 2007), many traditional therapies (e.g., psychodynamic therapy) as well as evidence-based approaches (e.g., cognitive therapy) are focused on capturing nonconscious maladaptive patterns and challenging them through the use of strategies for arousal of awareness (e.g., emphasis on insight; Messer & McWilliams, 2007; challenging automatic thoughts; Beck, 1997). Though most behavioral interventions highlight mechanisms other than awareness (e.g., exposure; Foa & Kozak, 1986; behavioral activation; Lewinsohn, 1975; behavior modification; Kazdin, 1980), these techniques mostly involve conscious volitional engagement on the part of the patient.

In traditional personality psychology, techniques based on arousal of awareness were supported by the idea that a conscious,

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agentic self is posited to be the ultimate controller of individual human behavior (Bargh, Gollwitzer, & Oettingen, 2010). Therefore, change will only be resulted by volitional engagement to defeat automatic responses. Similarly, traditional social psychology research on self-regulation suggests that success or positive outcomes only occur through the application of conscious control, with the blame for negative outcomes laid at the feet of automatic influences (e.g., Mischel & Ayduk, 2004). For example, for individuals who are trying to lose weight, automatic impulses are seen as the cause for the overconsumption of fattening foods, whereas controlled, conscious processes are believed to be necessary to prevent these impulses from unduly affecting behavior (Baumeister, Heatherton, & Tice, 1994).

Social psychologists have produced numerous demonstrations of nonconscious processes attaining the same outcomes as their conscious counterparts across a variety of research domains (Aarts & Dijksterhuis, 2003; Bargh, Gollwitzer, Lee-Chai, Barndollar, & Troetschel, 2001; Bargh & Huang, 2009; Bargh & Morsella, 2010; Dijksterhuis & van Knippenberg, 1998), suggesting that both conscious and nonconscious processes play an important role in behavior change (Bargh et al., 2010). Whereas conscious processes are generally costly, intentional, controllable, and effortful, and the individual is aware of engaging in them, nonconscious automatic processes are characterized by their unintentional, relatively effortless (i.e., efficient; minimal attentional resources required) nature, and they operate outside of awareness (see Bargh, 1994; Bargh & Williams, 2007). Use of subliminal primes has the advantage of assuring authenticity of the patients' responses, because strategic self-presentational modifications of responses are highly unlikely when the process occurs without awareness (Levy, 2009).

What Mechanism Underlies Priming-Based Interventions?

Priming-based interventions are based on the perception that relevant stimuli (primes) automatically activate a goal representation. The goal will then be pursued even though there is no conscious awareness of the primes, the active intention toward the goal, or the active guidance of goal-directed thought and behavior (Bargh & Gollwitzer, 1994; Bargh & Huang, 2009). The association between the external primes and the concept or the mental representation could be created naturally over development. For example, concepts concerning the physical world (e.g., physical distance, size, and physical temperature) form early in childhood as they are based on direct concrete experiences. These concepts do not require mental capacities of memory retrieval and comparison that do not develop until years later (Clark, 1973; Mandler, 1992). When these abstract concepts are later developed they tend to be "built upon" (and thus strongly associated with) these physical concepts to the extent they are analogous (i.e., share key features; Asch, 1946; Kelley, 1950; Lakoff & Johnson, 1980; Williams & Bargh, 2008a; Williams, Huang, & Bargh, 2009)

and hence could activate one another or be used strategically for psychological intervention.

One example for translating this associative mechanism into potential population-based intervention is the close association of physical and psychological warmth (and coldness). This association was first demonstrated by Harry Harlow (1958), who showed how physical warmth could be effectively substituted (in monkeys) for absent maternal warmth, leading to significantly greater social warmth capacities for the monkey later in adulthood. It was further supported by social neuroscience research implicating insular cortex in the processing of both physical temperature (e.g., Craig, Chen, Bandy, & Reiman, 2000; Sung et al., 2007) and the psychosocial version of warmth information: feelings of trust (e.g., Sanfey, Rilling, Aronson, Nystrom, & Cohen, 2003; Todorov, Baron, & Oosterhof, 2008), empathy, and prosociality (Eisenberger, Lieberman, & Williams, 2003; Kang, Williams, Clark, Gray, & Bargh, 2010; Kross, Egner, Downey, Ochsner, & Hirsch, 2007). Similarly, recent research on embodied cognition has shown these feelings of social warmth or coldness can be induced by experiences of physical warmth or coldness and vice versa (Bargh & Shalev, 2011; IJzerman & Semin, 2009; Williams & Bargh, 2008a; Zhong & Leonardelli, 2008).

In a recent set of studies, we tested the use of this association for emotion regulation intervention. Remarkably, we have found that people already implicitly use this automatic association between physical and social warmth to regulate their emotional states through the frequency, duration, and preferred water temperature of the showers and baths that they take. Applications of physical warmth temporarily reduced or even eliminated feelings of loneliness and exclusion without the individual's explicit awareness of the physical-psychological relation. Furthermore, socially excluded participants who were primed with physical warmth showed a significant decrease in their need for affiliation and a desire for emotion-improving activities in comparison with a group of excluded participants who were primed with physical coldness or a control group (Bargh & Shalev, 2011).

This example demonstrates that primed experiences of physical warmth could be a boon to a population-based intervention of syndromes associated with emotion regulation (e.g., borderline personality disorder; see Glenn & Klonsky, 2009; Linehan, 1993). Physical warmth primes can facilitate bonding and interpersonal trust in the health provider that is the bread and butter of every psychological intervention (Bowlby, 1969, 1988; Gelso, 2011; Gelso & Samstag, 2008; Orlinsky, Ronnestad, & Willitski, 2004). This therapeutic bonding establishes a secure base from which the therapist influences the client through various psychological interventions (e.g., suggestion, encouragement of open communication, modeling, reward manipulation, exposure and cognitive restructuring). Moreover, these findings also demonstrate that change can be produced without conscious awareness on the part of the patient and by simple techniques other than the traditional individual model for treatment delivery.

Which Psychological Problems Could be Targeted by Primes?

Kazdin and Blase (2011) argue that the challenge for psychological interventions is to help reduce the burden of mental illness and related conditions both at the personal and societal level. By promoting adaptive behaviors and mental-health-related responses such as easing stress or irritability, feeling better about oneself, feeling secure, feeling motivated, feeling affiliated and the like, positive primes may push some significant number of individuals into a slightly more positive and less stressed realm and for many that would have impact on determining whether symptoms or disorders were associated with impairment.

Following this view, studies based on the nonconscious, automatic perspective have demonstrated not only that maladaptive behavioral outcomes (e.g., overeating) can be driven by incidental exposure to contextual cues (i.e., priming) associated with that behavior (televised food ads; Harris, Bargh, & Brownell, 2009). Primes can also promote prosocial/mental health related responses and activate aids to self-regulation such as reappraisal processes (Mauss, Cook, Cheng, & Gross, 2007; Williams, Bargh, et al., 2009) or emotional distance (Williams & Bargh, 2008b). For example, in one set of experimental studies, nonconscious reappraisal priming was found to be significantly more effective than people's spontaneous regulatory efforts, with the nonconscious emotion regulation condition demonstrating less reactivity than the conscious reappraisal group (Williams, Bargh, et al., 2009). In another set of studies, priming of physical distance by merely having the participant plot an assigned set of points on a Cartesian coordinate plane activated representations of physical distance and influenced feelings of emotional and interpersonal distance (Williams & Bargh, 2008b). In the most recent set of studies, temperature primes reduced perceived loneliness and sense of social exclusion (Bargh & Shalev, 2011).

It is possible that a variety of conditions associated with emotion regulation and interpersonal relations (e.g., self-control, impulsivity, or interpersonal violence) could be ameliorated by physical temperature interventions. Physical primes, especially those revolving around issues of trust and empathy, may also be of great value to the treatment of young children's attachment and other emotional problems, because as the non-conscious emotion regulation research shows, nonconscious interventions are of particular value to those who are unable to regulate through the traditional, conscious means.

Primes can also promote adaptive functioning of specific groups (e.g., preverbal children, elderly). For example, priming was used in one set of studies for improvement of adaptive functioning among the elderly. When old and young participants were first primed with either positive or negative elderly stereotypic words, memory performance in the older (but not younger) participants was improved by the positive stereotypic associations and was hindered by the negative stereotypic associations. These effects resulted from flashing age-stereotype

words, such as *learned* and *confused*, on a computer screen at subliminal speeds—fast enough to prevent conscious perception, but slow enough to allow encoding (Levy, 1996). A variety of social phenomena (e.g., stereotypes, stigmatized mental health groups, attitudes toward minorities) could be activated by environmental contexts (i.e., primes) of physical impairment. For example, Stapel and Lindenberg (2011) recently found that disordered contexts (such as litter or a broken-up sidewalk, abandoned bicycle and a dirty train) promoted stereotyping and discrimination toward minorities. Future research will examine if these conditions could be challenged by physical cues of cleanliness or environmental organization.

Priming-based interventions could enrich existing procedures for different conditions. A wide array of maladaptive habitual behaviors (e.g., smoking, procrastination) could be targeted by primes that activate avoidance or aversion reactions. Similarly, treatment of anxiety and mood difficulties, eating disorders, addictive behaviors, or learning disabilities are all affected by environmental influences. Use of health-related primes could reduce emotion contagion within depressed couples or family accommodation to symptoms by consistent reminders of cues associated with functional behavior patterns.

Individual differences also need to be examined to address differences in response to environmental conditions (Aarts, Wegner, & Dijksterhuis, 2006). These studies could examine the interrelations between specific deficits (e.g., attentional bias) and response to contextual cues. For example, theories of depression (Abramson, Seligman, & Teasdale, 1978; Beck, 1967) suggest that differences between dysphoric and nondysphoric patients result from cognitive schemata that are triggered by self-referential processes (e.g., Bargh & Tota, 1988). Consistent with this assumption, dysphoric compared with nondysphoric patients were found to be lower in sense of authorship (the feeling that observed effects are caused by one's own actions) after priming of the self concept in an ambiguous situation. However, priming the potential effects of an action just prior to their occurrence increased the sense of authorship in all participants (Aarts et al., 2006). This study demonstrates the differences between normal and clinical populations in response to the prime, indicating that people who are unable to (implicitly) self-regulate their behavior through the prime may be candidates for additional effective interventions. Priming-based intervention combined with other techniques may facilitate the treatment effects for clinical population.

How to Incorporate Priming-Based Interventions Into Daily Life?

Experimental studies have demonstrated the utility of priming-based interventions in laboratory setting and field experiments (Bargh & Shalev, 2011; Levy, 2009). The findings demonstrate that people implicitly use natural sources to self-regulate their emotional states without conscious awareness of

doing so. The remaining challenge is to achieve the activation of contextual cues in broader, everyday settings and on a sustained basis. To address this goal, natural environmental conditions (e.g., temperature, space) as well as various technologies could be used to improve an individual's functioning. Communication devices (e.g., smartphones) could be used to increase the accessibility and distribution of treatment messages (e.g., by text messaging, visual images). Similarly, computers screen savers, home pages, photographs in the office, exposure to different real or virtual environments ("wide open spaces" vs. crowded urban environments) could easily be developed and/or used to activate the desired mental representation.

Clearly, the use of mundane physical experiences, easily available to all, as therapeutic interventions would increase the availability of therapy to all who need it (Kazdin & Blase, 2011). Priming-based supplementary interventions could be administered by multiple providers (e.g., parents, educators, nurses, media and communication devices). Such interventions have the advantages of low cost and effort, individualization, anonymity, and widespread reach to facilitate action, increase adherence to treatment instructions, or activate mindsets that facilitate adaptive functioning. Future research will be needed to examine the ecological validity of priming-based interventions and their implications for clinical population and prevention. Multiple strategies (e.g., priming procedures, coaching and health education, media and communication devices) regulated by professional case managers can be extended in a programmatic way to move from intensive, costly, and individual case application to versions that are more population based. Integrating the methodology of priming and clinical interventions could contribute to the effective delivery of treatment to a much wider patient base than is presently the case.

Declaration of Conflicting Interests

The authors declared that they had no conflicts of interest with respect to their authorship or the publication of this article.

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