

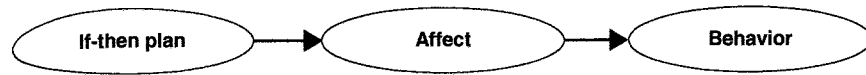
Self-Regulation of Affect–Health Behavior Relations

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A good deal of research indicates that affect influences health behaviors (see, e.g., as indicated throughout this volume). However, the impact of affect on health behavior is not inevitable, as people can use a variety of strategies to regulate unwanted affect (e.g., Gross, 2015a, 2015b; Gross & Thompson, 2007; Koole, Webb, & Sheeran, 2015; Webb, Miles, & Sheeran, 2012). The present chapter begins by considering three key kinds of affect that warrant regulation in order to promote health behavior—*experienced affect*, *anticipated affect*, and *implicit affect*. We describe previous research geared at regulating these kinds of affect before outlining a self-regulation perspective on the relationship between affect and health behaviors. Specifically, we propose that the self-regulation of affect–health behavior relations can be improved by using if-then plans or *implementation intentions* (Gollwitzer, 1999, 2014; Gollwitzer & Sheeran, 2006).

If-then plans can be used to modify the impact of affect on health behaviors in two ways (see Figure 5.1). First, if-then plans can be used to

Path A: If-then plan to regulate affect



Path B: If-then plan to regulate the impact of affect

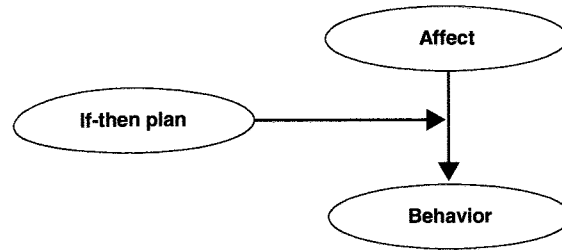


Figure 5.1. Two ways that if-then plans can be used to regulate affect-health behavior relations.

regulate affect, that is, directly alter the strength of the affective response such that it is weaker. Here, the if-then plan targets the affect itself in order to reduce its impact on behavior (Path A). Second, if-then plans can be used to *regulate affective influence*, that is, alter the impact of affect on behavior so that action is no longer disrupted by unwanted affect. Here, the if-then plan is geared, not at modifying the strength of the affective response but at attenuating its motivational force or ensuring that the action unfolds in the manner specified in the plan. In so doing, performance of the behavior should proceed in a manner that circumvents the impact of affect (Path B).

KINDS OF AFFECT

Larsen and Prizmic (2004) defined affect as “the feeling tone a person is experiencing at any particular point in time” (p. 40). The key dimensions of this feeling tone are valence (positive-negative) and arousal (aroused-sleepy) and can be captured, for instance, by Russell, Weiss,

and Mendelsohn's (1989) affect grid. Affect encompasses both discrete emotions (e.g., fear, anger, sadness, disgust, happiness, and surprise) and moods. Emotions and moods differ in terms of the strength of the feeling tone (emotions are experienced more strongly than moods), whether the cause is identifiable (emotions have a recognizable cause whereas moods may not), and degree of awareness (emotions are a focus of awareness whereas moods are in the background of awareness). Affective scientists also distinguish between integral and incidental affect. Integral affect refers to affective responses to a focal stimulus such as a particular object, decision, or behavior (e.g., Loewenstein & Lerner, 2002). Depending on the nature of the focal stimulus, integral affective responses may also include what Williams and Evans (2014) termed "affectively charged motivation" or affective reactions such as fear, desire, or cravings that have clear implications for action. Incidental affect, on the other hand, refers to affective responses that are unrelated to the focal stimulus (e.g., the mood that one was in prior to encountering the stimulus) that may nonetheless influence judgments and decisions (e.g., Schwarz & Clore, 2004). Incidental affect and integral affect may combine additively or via principles of mood congruence/incongruence to influence decisions and action (Västfjäll et al., 2016) though interactive relationships have also been observed (e.g., as when negative affect enhances the enjoyment of tobacco; McKee et al., 2011). Regardless of the specific combinatorial rule, for present purposes, both kinds of affect can be seen to represent *experienced affect* or how the person feels at a particular juncture due to both integral and incidental influences.

Experienced affect is not the only kind of affect that can influence health behavior. Indeed, a provocative review by Baumeister, Vohs, DeWall, and Zhang (2007) argued that it is an "increasingly untenable view that the direct causation of behavior is the primary function of emotion" (p. 167). According to Baumeister et al., experienced affect predominantly influences behavior indirectly via *anticipated affect* and *implicit affect*. Experienced affect, in this analysis, is a feedback mechanism that enables the person to learn from past performance of a behavior. Such learning can be explicit or implicit. At the explicit level, affect

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may stimulate retrospective appraisal of actions and so lead the person to conscious evaluations that promote pursuit or avoidance behaviors based on their likely affective outcomes (i.e., anticipated affect). At the implicit level, the accumulation of experiences forges associations between mental representations of behavior and affect such that encountering the relevant stimulus activates the associated affective concepts (i.e., implicit affect) via the process of spreading activation.

Baumeister et al.'s (2007) analysis of anticipated affect and implicit affect is consistent with findings from research on attitudes. Principal components analyses of responses to attitude questions and memory paradigms have supported a distinction between affective and cognitive attitudes (e.g., Trafimow & Sheeran, 1998). Whereas cognitive attitudes refer to anticipated utilitarian outcomes (e.g., reduced likelihood of disease or illness), affective attitudes refer to anticipated affective outcomes (e.g., pleasure, satisfaction). Considerable research indicates that anticipated affect (affective attitude) is an important predictor of health-related intentions and behavior (see, e.g., Conner, this volume; Rhodes, Fiala, & Conner, 2009). For instance, in a study of 14 health behaviors, anticipated affect better predicted outcomes than did cognitive attitude, and was associated with behavior even after intentions were taken into account (Lawton, Conner, & McEachan, 2009). Similarly, researchers have distinguished between explicit (i.e., self-reported) attitudes and implicit attitudes or “automatic affective reactions resulting from the particular associations that are activated automatically when one encounters a relevant stimulus” (Gawronski & Bodenhausen, 2006, p. 693). Several meta-analyses indicate that implicit affect is associated with health behaviors even after explicit attitude is taken into account (Greenwald, Poehlman, Ulman, & Banaji, 2009; Reich, Below, Goldman, 2010; Rooke, Hine, & Thorsteinsson, 2008). In sum, a comprehensive analysis of the impact of affect on health behaviors needs to take account of three kinds of affect—experienced affect, anticipated affect, and implicit affect—as each has been observed to influence health decisions and actions.

THE ACTION CONTROL MODEL OF AFFECT REGULATION

There are many examples of the impact of experienced affect on health-related intentions and behavior. For instance, fear can motivate people to engage in protective behavior (e.g., Ferrer, Klein, Persoskie, Avishai-Yitshak, & Sheeran, 2016), disgust can undermine uptake of fecal occult blood tests to detect colorectal cancer (e.g., Reynolds, Consedine, Pizarro, & Bissett, 2013), and experiences of craving or distress can lead to smoking relapse (e.g., Ferguson & Shiffman, 2014; Piasecki, Jorenby, Smith, Fiore, & Baker, 2003). But what determines the levels of fear, disgust, or distress that a particular person experiences in response to a particular stimulus in a particular context? One relatively neglected process in research on health behaviors is *affect regulation*—that is, the person's own efforts to alter their affective response. Affect regulation refers to the set of processes involved in modifying the occurrence, intensity, and duration of feeling states (Gross & Thompson, 2007). The dominant account of affect regulation is Gross's (1998, 2014) process model. The model distinguishes five affect regulation processes on a temporal dimension according to when each one is deployed. Antecedent-focused processes occur before appraisals give rise to a full-blown affective response, and includes four strategies: situation selection, situation modification, attentional deployment, and cognitive change.

For instance, a person wanting to regulate their desire for the delicious but unhealthy pastries for sale in a local coffee shop, could choose a different outlet from which to buy coffee (situation selection), or could bring only enough cash to purchase a coffee but not a pastry too (situation modification). Often, however, it is not possible to avoid or modify the affect-eliciting situation. In such cases, cognitive strategies are needed to regulate desire. The first of these strategies specified by the process model concerns how attention is deployed—whether the person distracts her/himself from, or concentrates on, the emotion-eliciting stimulus. Distraction involves altering the focus of attention so that the relevant stimulus no longer elicits unwanted affect (e.g., avoiding looking at the pastries, or

counting backward from 250 in sevens in order to prevent elaboration of the desire). Concentrating or focusing attention on the emotion-eliciting stimulus, on the other hand, magnifies the affective response and undermines resistance to temptations (e.g., Mischel, Shoda, & Rodriguez, 1989).

Strategic deployment of attention is not always feasible, however (e.g., it may be impossible to order coffee without also seeing the pastries). If distraction is not possible, then a cognitive change strategy is needed—“changing how we appraise the situation we are in to alter its emotional significance” (Gross & Thompson, 2007, p. 14). Cognitive change involves reappraisal of the stimulus either by coming up with an alternative interpretation of the stimulus (e.g., “That pastry is just a lump of sugar and fat!”) or by adopting a detached or third-person perspective (e.g., “I will observe my purchases in the coffee shop as if I were an obesity researcher!”). Whereas situation selection, situation modification, attentional deployment, and cognitive change are each deployed before the affective response has become fully fledged, response-focused strategies are deployed once affect has unfolded. The key response-focused strategy is suppression, which involves trying to hide feelings or pushing them out of one’s mind (“I must not feel any desire for pastries!”).

Relatively little research has tested the effects of selecting or modifying situations on emotional outcomes (Webb, Miles, et al., 2012; but see Webb, Lindquist, Jones, Avishai-Yitshak, & Sheeran, 2016) whereas numerous primary studies and several meta-analyses have assessed the impact of distraction, concentration, reappraisal, and suppression on experienced affect (see, e.g., Aldao, Nolen-Hoeksema, & Schweizer, 2010; Augustine & Hemenover, 2009; Webb, Miles, et al., 2012, for reviews). In a synthesis of 306 experimental comparisons, Webb, Miles, et al. (2012) reported that distraction, reappraisal of the stimulus, and reappraisal via perspective taking each were effective emotion regulation strategies ($d_+ = 0.27, 0.36,$ and $0.45,$ respectively). Concentration was a counterproductive strategy that exacerbated the affective response ($d_+ = -0.26$), whereas suppression had no effect on self-reported affect ($d_+ = 0.03$). These findings are consistent with predictions from the process model concerning the likely effectiveness of different affect regulation strategies.

The process model offers a comprehensive analysis of *how* people regulate experienced affect—what strategies can be used and the likely effectiveness of using each strategy. Webb, Schweiger Gallo, Miles, Gollwitzer, and Sheeran (2012) pointed out, however, that knowing how to regulate affect is only one of several difficulties that people face in controlling their emotions and moods. Borrowing from research on striving for behavioral goals (e.g., Gollwitzer & Sheeran, 2006), Webb, Schweiger Gallo, et al. (2012) proposed an action control perspective on affect regulation that specified three tasks that need to be accomplished if people are to effectively control affect: Identifying the need to regulate affect (the *identification* task), choosing an affect regulation strategy (the *selection* task), and enacting the selected strategy (the *implementation* task). Recent research indicates that people encounter difficulties in identifying when to regulate affect less frequently than in choosing how to regulate affect or in implementing the affect regulation strategy. However, people encounter difficulties with implementing a strategy just as often as they do with selecting a strategy (Isselhard et al., 2016). Moreover, competence at the task of strategy implementation is a more powerful predictor of affective outcomes compared to competence at either the identification or selection tasks. In a formal test, strategy implementation mediated the relationship between emotional vulnerability (indexed by competence at emotion regulation and emotional reactivity) and negative affective outcomes (indexed by depression, anxiety, and scores on the negative affect schedule) whereas competence at the identification and selection tasks did not (Isselhard et al., 2016). Thus, it is not enough to know which affect regulation strategy to deploy and when to deploy it; effective self-regulation of affect demands that the strategy is implemented when it is needed.

The action control model of affect regulation exploits the distinction between goal intentions and implementation intentions (Gollwitzer, 1993, 1999, 2014; Gollwitzer & Sheeran, 2006, 2009) in order to understand and promote the implementation of affect regulation strategies. In the present context, goal intentions specify whether or how one will control affect (i.e., the decision to engage in affect regulation and which affect regulation strategy to adopt). The process model construes affect regulation in terms

of specifying particular strategies in goal intentions (e.g., “I will adopt a detached perspective in response to the images that are presented!” or “I will distract myself in response to the presented images!”). The action control model, on the other hand, acknowledges that there is often a “gap” between goal intentions for affect regulation and subsequent affect control, in the same way as an intention-behavior gap has been observed for behavioral goals (e.g., Sheeran, 2002; Sheeran & Webb, in press; Webb & Sheeran, 2006; see also Rhodes, this volume). Indeed, the relatively modest effect sizes observed for affect regulation strategies on emotional outcomes ($d_+ < 0.5$ for all strategies in Webb, Miles, et al.’s, 2012, review) is consistent with this analysis. To close the gap between goal intentions and affect control, and to promote the effective implementation of affect regulation strategies, the action control model proposes that the person should form implementation intentions (Gollwitzer, 1999) in the wake of forming goal intentions to regulate affect.

IMPLEMENTATION INTENTIONS

Implementation intentions are if-then plans that specify precisely what one will do and when one will do it in a contingent (e.g., if-then) format in order to realize goal intentions. Thus, whereas a goal intention might specify, “I will adopt a detached perspective in response to disgusting images!”, a corresponding implementation intention might be “If I see a disgusting image, then I will view it as if I were a medical doctor!” The if-part of the plan identifies the opportunity to regulate affect (e.g., the stimulus that evokes affect, the onset of the feeling or mood) whereas the then-part of the plan specifies the response that the person anticipates will be effective in regulating affect (e.g., the precise strategy that they will use). It is well established that forming implementation intentions improves rates of behavioral performance and goal attainment compared to forming mere goal intentions. Gollwitzer and Sheeran (2006) observed an effect size of medium-to-large magnitude ($d_+ = 0.65$) in a quantitative synthesis of 94 behavioral studies, and meta-analyses of specific health

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behaviors also found reliable effects of if-then plans on diet (Adriaanse, Vinkers, de Ridder, Hox, & de Wit, 2011) and physical activity (Bélanger-Gravel, Godin, & Amireault, 2013).

How do if-then plans exert these powerful effects? Implementation intentions do not strengthen goal intentions or enhance self-efficacy (Webb & Sheeran, 2008). Nor can the greater specificity of if-then plans explain their effectiveness as forming implementation intentions still improved performance compared to goal intentions even when the content of the two kinds of intention was formally identical and differed only in the use of an if-then format (e.g., Oettingen, Hönig, & Gollwitzer, 2000; Palayiwa, Sheeran, & Thompson, 2010; Wieber, von Suchodoletz, Heikamp, Trommsdorff, & Gollwitzer, 2011). Rather, the effectiveness of if-then plans accrues from psychological processes to do with the if-part and then-part of the plans. Forming an implementation intention is the mental act of linking an anticipated critical situation with an effective goal-directed response. These mental links facilitate goal attainment in two ways. First, the mental representation of the opportunity specified in the if-part of the plan becomes highly activated, and hence more accessible (Gollwitzer, 1999). This heightened accessibility of the if-part of the plan has been demonstrated in several studies (e.g., Aarts, Dijksterhuis, & Midden, 1999; Parks-Stamm, Gollwitzer, & Oettingen, 2007; Webb & Sheeran, 2007, 2008) and means that people who form if-then plans are in a good position to identify and take notice of the critical cue when they subsequently encounter it (e.g., Parks-Stamm et al., 2007; Webb & Sheeran, 2004). Second, forming implementation intentions forges a strong association between the specified opportunity and the specified response (Aarts & Dijksterhuis, 2000; Webb & Sheeran, 2007, 2008). The upshot of these strong links is that the initiation of the goal-directed response specified in the if-then plan becomes relatively automatic; that is, more immediate (e.g., Gollwitzer & Brandstätter, 1997, Experiment 3), more efficient (e.g., Brandstätter, Lengfelder, & Gollwitzer, 2001), and needless of conscious intent at the moment of acting (e.g., Bayer, Achtziger, Gollwitzer, & Moskowitz, 2009; Sheeran, Webb, & Gollwitzer, 2005, Study 2). These component processes of implementation intentions (enhanced

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cue detection, increased automatization of responding) mean that if-then planners are in a good position both to see and to seize good opportunities to move toward their goals. Forming an if-then plan should thus *strategically automate* affect regulation (Gollwitzer & Schaal, 1998; Schweiger Gallo, Keil, McCulloch, Rockstroh, & Gollwitzer, 2009) because people delegate control of strategy implementation to preselected situational cues that serve to trigger responses swiftly and effortlessly. Neurophysiological evidence supports the idea that response initiation by if-then plans operates in a cue-driven (bottom-up) rather than goal-driven (top-down) fashion (e.g., Gilbert, Gollwitzer, Cohen, Oettingen, & Burgess, 2009; Hallam et al., 2015).

SELF-REGULATION OF EXPERIENCED AFFECT

Path A: Regulating Experienced Affect

Does the strategic automaticity afforded by if-then planning improve strategy implementation and lead to improved affect? Several studies and a recent meta-analysis (Webb, Schweiger Gallo, et al., 2012) suggest that this is the case. Schweiger Gallo and colleagues (Schweiger Gallo & Gollwitzer, 2007; Schweiger Gallo et al., 2009) offered the first demonstrations that forming an implementation intention engenders better affective outcomes compared to forming goal intentions. Furnishing a goal intention (“I will not get frightened!”) with an if-then plan (“And if I see a spider, then I remain calm and relaxed!”) attenuated negative affective reactions to spider images compared to both goal-intention-only and no-instruction conditions (Schweiger Gallo & Gollwitzer, 2007). These findings emerged even though participants (1) exhibited dispositional fear of spiders, and (2) were under cognitive load as they rated the images (i.e., engaged in a secondary task that consumed working memory); the findings thus speak to the idea that implementation intentions serve to automate control of affect. Electrocortical data also supported the idea that forming implementation intentions help to regulate affective responses. The P1 index typically

shows greater positivity about 120 ms after detecting threatening stimuli (e.g., Carretié, Hinojosa, Mercado, & Tapia, 2005) and before conscious efforts to regulate affect are initiated (at about 300 ms). Forming implementation intentions proved effective in down-regulating this ERP component in response to spider images, and led to significantly reduced P1 positivity compared to forming mere goal intentions (Schweiger Gallo et al., 2009).

Subsequent research observed that forming implementation intentions is also more effective than goal intentions in up-regulating mood (McCormack et al., 2010, cited in Webb, Schweiger Gallo, et al., 2012), down-regulating distress (Palayiwa et al., 2010), and modulating affective responses to disgusting (Hallam et al., 2015; Schweiger Gallo, McCulloch, & Gollwitzer, 2012) and sad images (Hallam et al., 2015). Implementation intentions also proved effective in reducing clinical levels of anxiety in an 8-week trial (Varley, Webb, & Sheeran, 2011). Moreover, implementation intentions engendered superior emotional outcomes whether the strategy specified in the then-part of the plan was antecedent-focused (e.g., “And if I see blood, then I take the perspective of a physician!”; Hallam et al., 2015; Schweiger Gallo et al., 2009), response-focused (e.g., “And if I see blood, then I stay calm and relaxed!”; Hallam et al., 2015; Schweiger Gallo et al., 2009), or was geared at situation selection (e.g., “If I am deciding what to do this weekend, then I will select activities that will make me feel good and avoid doing things that will make me feel bad!”; Webb et al., 2016, Study 2).

Meta-analysis also supports the effectiveness of implementation intentions for affect regulation (Webb, Schweiger Gallo, et al., 2012). Across all affective outcomes, if-then plans led to a medium-sized improvement in affect compared to goal intentions ($d_+ = .53$, $k = 29$) and a large improvement compared to no instructions ($d_+ = .91$, $k = 21$). These findings support the idea that forming if-then plans helps people to regulate affect (i.e., Path A in Figure 5.1). Although no studies to date have appeared to have measured health behaviors in the wake of an if-then plan intervention for affect control, the strong effects of if-then plans on affect coupled with the strong associations between affect and health behavior suggest that planning to regulate relevant affect should lead to changes in the respective health behavior.

Path B: Regulating the Impact of Experienced Affect

Path A in Figure 5.1 is a mediational model. The idea is that forming an if-then plan improves experienced affect, which in turn enhances health behavior performance. There may be occasions, however, where there is little that can be done to alter experienced affect (e.g., an unanticipated negative event occurs, the person is unaware of the impact of a stimulus on his/her affect, no if-then plan has been formed, and the person's capacity for affect regulation in situ is compromised by stress or fatigue). A key question therefore is whether the unwanted behavioral consequences of affect are inevitable in such instances, or whether there is something that the person can do to prevent affect from influencing behavior. Path B in Figure 5.1 suggests that forming implementation intentions can also be helpful in these circumstances. Path B is a moderation model. Here, the if-then plan is geared at regulating *affective influence*, that is, blocking or attenuating the impact of experienced affect on behavioral outcomes.

If-then plans could regulate the influence of experienced affect on behavior in two ways—by targeting the motivational force of experienced affect so as to defuse its impact, or by targeting the execution of the behavior so that performance is longer gripped by affect. Webb, Sheeran, Totterdell, et al. (2012, Experiment 1) explored how the impact of negative mood on risky decision-making could be defused. After negative mood was induced, participants either formed if-then plans geared at disrupting the impact of mood on performance (e.g., “If I am in a bad mood, then I . . . [think ‘it is only a mood’ and I will not let it bother me! / think how I have successfully dealt with other situations!]”) or formed a mere goal intention to regulate their affect (“I will try and stay in a positive mood!”). Findings showed the predicted interaction between mood and type of intention. For participants in the goal intention condition, the negative mood induction led to riskier decisions compared to the neutral mood condition. When participants had formed implementation intentions on the other hand, the mood induction no longer had any effect on decisions—if-then plans broke the link between mood and decision-making.

The second way that if-then plans could moderate the affect–health behavior relation is by ensuring that performance of the behavior unfolds in the exact manner specified by the plan, and is thus no longer disrupted by unwanted affect. Webb, Sheeran, Totterdell, et al. (2012, Experiment 2) tested this idea using a different mood induction (arousal vs. no arousal) and a different task to index risky decision-making. Participants were randomized to a goal intention condition that merely specified that they would try to make good decisions, or to an implementation intention condition that spelled out how to make good decisions (e.g., If I am asked to make a decision, then I will pay close attention to the relevant risks!). Findings showed that arousal reduced sensitivity to risk information and risky decisions—but only when participants had formed goal intentions. Participants who formed if-then plans remained sensitive to risk information even when they were aroused, and made decisions of equivalent, low risk in both the arousal and no-arousal conditions (see also Bayer, Gollwitzer, & Achtziger, 2010). O'Connor, Armitage, and Ferguson (2015) also observed that forming if-then plans to substitute a healthy snack for an unhealthy snack when feeling stressed attenuated the relationship between stress and unhealthy snacking. Although O'Connor et al. did not measure affect, their results are consistent with the idea that if-then plans are effective at regulating affective influence. In sum, accumulated evidence indicates that implementation intentions are effective at regulating experienced affect (and should thus change health behaviors that are influenced by experienced affect), and at regulating the impact of experienced affect on health decisions and behavior.

SELF-REGULATION OF ANTICIPATED AFFECT

Path A: Regulating Anticipated Affect

Evidence supports the distinction between affective attitude or *anticipated affect* (e.g., “Doing X would be enjoyable/pleasant/fun”) and cognitive attitude (e.g., “Doing X would be wise/worthwhile /valuable”) (e.g., Trafimow

& Sheeran, 1998), and it is well established that anticipated affect better predicts health-related intentions and behavior compared to cognitive attitude (e.g., Conner, this volume; Lawton et al., 2009; Rhodes et al., 2009). Surprisingly little research has been specifically concerned with modifying levels of anticipated affect in order to promote health-related behaviors (i.e., Path A in Figure 5.1), and most work is concerned with persuading people that performing particular health behaviors is more likely to have positive affective outcomes than they currently anticipate (see, e.g., Conner, Rhodes, Morris, McEachan, & Lawton, 2011). Recently, however, evidence has emerged that affect regulation exerts an important influence on anticipated affect. Sheeran, Webb, Jones, and Avishai-Yitshak (2016) used the Difficulties in Emotion Regulation Scale (Gratz & Roemer, 2004) to index competence at affect regulation and measured anticipated affect (“How [enjoyable/pleasant] would engaging in behavior X be for you?”) and participants’ behavioral intentions (“I intend to engage in behavior X”) in relation to physical activity and dietary behaviors (eating a low-fat diet, eating 5 portions of fruit and vegetables per day). Competence at affect regulation predicted greater anticipated affect and stronger intentions in relation to all three behaviors. Moreover, anticipated affect mediated the relationship between competence at affective regulation and intention in each case. Thus, people who are good at regulating their affect expect that performing weight-control behaviors will feel good which, in turn, leads to the formation of stronger intentions to perform those behaviors.

In an experimental test, participants were primed either to experience affect (using scrambled sentences containing words such as “feelings,” “emotion,” and “passion”), to regulate affect via reappraisal (using scrambled sentences containing words such as “analyze,” “scrutinize,” and “evaluate”), or were not primed. Next, in a supposedly unrelated study, participants completed measures of anticipated affect (“How positive or negative are your feelings about performing behavior X?”), cognitive attitude (“How positive or negative are the consequences of performing behavior X?”), and behavioral intentions in relation to 22 (predominantly health-related) behaviors. Comparisons across the three conditions indicated that

participants in the affect-regulation prime condition attached less weight to anticipated affect and attached greater weight to cognitive attitude during intention formation relative to participants in the other conditions. These findings are consistent with Path A in Figure 5.1 and indicate that affect regulation processes modify not only experienced affect but also anticipated affect concerning health behaviors. Ongoing studies test whether forming if-then plans facilitates the regulation of anticipated affect compared to mere goal intentions to regulate that affect.

Path B: Regulating the Impact of Anticipated Affect

Several studies have tested whether forming if-then plans can overcome the impact of anticipated affect on health behaviors (Sheeran, Aubrey, & Kellett, 2007; Sheeran, Webb, & Gollwitzer, 2016). As was the case for experienced affect, implementation intention interventions have attempted to regulate anticipated affective influence in two ways—by targeting the motivational impact of anticipated affect, or by targeting the execution of the behavior so that performance is no longer gripped by anticipated affect. The first study that used if-then plans to target anticipated affect concerned attendance for psychotherapy (Sheeran et al., 2007). On average, 40% of clients who are offered therapy fail to attend their first appointment (Hampton-Robb, Qualls, & Compton, 2003) and anticipated affect (e.g., believing that attending therapy would be embarrassing, shameful, or stigmatizing) is a key factor that militates against attendance. With this in mind, participants who were offered a first appointment for psychotherapy ($N = 479$) were randomized to instructions prompting them to form an if-then plan geared at undermining the impact of negative anticipated affect about attendance, or to a treatment-as-usual (TAU) control condition. The if-part of the plan specified the anticipation of negative affect (“As soon as I feel concerned about attending my appointment . . .”) and the then-part of the plan specified two responses. The first response was designed to prevent the elaboration of the anticipated negative affect (“ . . . then I ignore that feeling . . .”) and the second response was designed

to encourage participants to construe their affect as entirely normal, and so prevent participants from using their affect as information that they should not attend the appointment (“. . . and tell myself this is perfectly understandable!”).

Forming if-then plans reliably improved rates of attendance at psychotherapy according to both intention-to-treat (64% vs. 50%) and explanatory analyses (83% vs. 57%). Moderated regression analysis revealed a three-way interaction between if-then planning, anticipated affect, and anticipated benefits. Decomposition of the interaction showed that anticipated affect was a powerful, negative predictor of attendance among participants in the TAU condition. However, for participants who had formed an if-then plan *and* also anticipated that attendance would be beneficial, anticipated negative affect was not significantly related to behavior—anticipated feelings of shame or embarrassment no longer prevented these participants attending their scheduled psychotherapy appointment. Sheeran, Webb, and Gollwitzer (2016, Study 2) observed equivalent findings in an intervention to reduce frequency of drunkenness among young people.

Two further studies attempted to overcome the impact of anticipated affect on health behavior by using if-then plans to spell out exactly how the behavior would be performed. The expectation was that controlling action via the cues specified in the plan would circumvent the impact of anticipated affect. Findings confirmed this expectation (Sheeran, Webb, & Gollwitzer, 2016). In the first study, participants nominated a snack food that they wanted to consume less of, and formed an implementation intention that specified exactly where and when they would consume a limited number of snacks (our prediction was that precommitting to indulgence in specific contexts would prevent overindulgence). Control participants did not form a plan. Participants who formed an if-then plan consumed fewer snacks compared to controls during the subsequent week. For control participants, anticipated affect but not cognitive attitudes predicted consumption. For treatment participants, on the other hand, forming if-then plans seemed to resolve the conflict between anticipated affect and cognitive attitude in favor of participants’ cognitive attitude. When

participants who formed implementation intentions anticipated feeling bad about reducing their snack consumption, then cognitive attitudes predicted less snack consumption—that is, if participants thought it was a good idea to reduce consumption and had formed if-then plans to avoid overindulgence, then consumption was reduced.

The second study was a reanalysis of a randomized controlled trial concerning cervical cancer screening. The original report indicated that forming an if-then plan that specified when, where, and how one would make an appointment for screening led to improved screening rates (92% vs. 69%; Sheeran & Orbell, 2000). Reanalysis of the data showed that if-then planning moderated the impact of anticipated affect on attendance for screening. Whereas anticipating that screening would be worrying, embarrassing, or unpleasant was strongly associated with nonattendance among control participants, anticipated affect no longer predicted attendance among participants who had formed if-then plans. In sum, affect regulation is important in reducing anticipated affect in relation to health behaviors, and if-then plans have proved effective in emancipating health actions from deleterious effects of anticipated affect.

SELF-REGULATION OF IMPLICIT AFFECT

Path A: Regulating Implicit Affect

Implicit affect is typically measured by speeded classification tasks such as the implicit association test (IAT; Greenwald, McGhee, & Schwartz, 1998) that require participants to classify target stimuli (e.g., words or images representing, for instance, high-fat foods or physical activity) with concepts related to affect (e.g., pleasant-unpleasant, approach-avoid). The extent to which participants are faster to classify target stimuli in the same category as concepts with positive valence (relative to how fast they classify target stimuli with negative concepts) is assumed to index participants' implicit affect towards targets. Findings indicate that implicit affect is only modestly related to explicit attitudes (e.g., $r_+ = .21$ in Greenwald

et al.'s, 2009, meta-analysis), and implicit affect predicts unique variance in behavioral outcomes even after explicit attitudes have been taken into account (e.g., Greenwald et al., 2009; Reich et al., 2010; Rooke et al., 2008).

Can if-then plans help to regulate implicit affect? Several studies suggest that this is the case (e.g., Hofmann, Deutsch, Lancaster, & Banaji, 2010; Webb, Sheeran, & Pepper, 2012). In four experiments on social stereotyping, Webb, Sheeran, and Pepper (2012) observed that forming if-then plans (for instance, to associate the social group "Muslims" with the concept of "peace") led to weaker outgroup bias on the IAT and another implicit measure. Hofmann et al. (2010) compared whether goal intentions to reappraise chocolate (i.e., "... imagine the chocolate in a strange or novel way unrelated to the purpose of consumption") or if-then plans to resist chocolate consumption specified by the participant (e.g., "If my friend offers me chocolate during the film, then I will say 'no thanks' and concentrate on the film!") could reduce implicit affect toward chocolate compared to a no-instruction control condition. Hofmann et al. found that goal intentions to reappraise led to weaker associations between chocolate and positive affect compared to the control condition. However, forming if-then plans reduced the positivity of implicit affect to a significantly greater extent than did goal intentions. Thus, implementation intention formation can alter the valence of implicit affect, and should thus change behaviors for which implicit affect is a key determinant.

Path B: Regulating the Impact of Implicit Affect

Two studies have tested whether if-then plans can overcome the impact of implicit attitudes on behavior (Sheeran, Miles et al., 2016). The first study aimed to defuse the motivational impact of implicit attitudes by causing participants to deliberate about their consumption of chocolate at the critical juncture ("And if I am tempted to have chocolate, then I ask myself, 'Do I really want to do this?'"). Participants completed an IAT designed to measure implicit affect toward chocolate and also completed a measure of explicit attitudes prior to randomization to if-then plan versus

no-plan control conditions. One week later, participants reported their chocolate consumption. Forming if-then plans led to a 30% reduction in the amount of chocolate that participants consumed. Whereas implicit affect was a strong predictor of consumption for control participants, among participants who formed if-then plans, the influence of implicit affect depended on their explicit attitudes. If participants' explicit attitude favored a reduction in consumption, then implicit affect was *negatively* related to consumption. Participants ate the least chocolate (less than one-half of a unit) when they had formed an if-then plan, thought that it was a good idea to reduce their consumption, *and* had positive implicit affect toward chocolate.

The second study aimed to regulate the impact of implicit affect by spelling out exactly how the focal behavior would be performed. Participants were informed that the study concerned attitudes toward mental illness and that they would later have a conversation with John, who had a diagnosis of schizophrenia. Participants completed a battery of explicit measures and an IAT that measured their implicit affect in relation to schizophrenia. Participants were then randomized to a no-instruction control condition, a goal intention condition, or an if-then plan condition. The no-instruction condition comprised an information sheet that simply explained that participants would meet John. Participants in the goal intention condition received the same information sheet but were also informed that, "Your goal is to be friendly and warm to this person!" Finally, the if-then plan condition was the same as the goal intention condition save for inclusion of an implementation intention ("As soon as I get a chance to be friendly and warm to this person, then I'll take it!"). Next, participants were directed to a meeting room in which two chairs were set side-by-side against the back wall. Participants were instructed to set out the chairs for the meeting with John while the experimenter (ostensibly) went downstairs to get him. Upon returning, the experimenter probed participants for suspicion (none of the participants guessed the true purpose of the study), and then measured the distance between the two chairs that the participants had set out. Seating distance was used as the measure of behavioral avoidance.

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Findings showed that participants who formed if-then plans chose to sit closer to John than participants in both the goal intention and control condition. The latter conditions were combined to analyze the impact of implicit affect among participants in the if-then plan versus no plan conditions. Implicit affect was a reliable predictor of seating distance for participants in the no-plan condition, such that more positive implicit affect was associated with greater interpersonal closeness. For participants who formed if-then plans, however, implicit affect no longer predicted behavioral avoidance. Participants elected to sit close to John, and implicit affect toward people with schizophrenia did not affect their behavior. In sum, the findings from studies on implementation intentions and implicit affect parallel the findings observed for experienced affect and implicit affect. If-then plans can serve both to regulate implicit affect itself, and to regulate the impact of implicit affect on behavior.

CONCLUSION

The impact of affect on health decisions and actions is not inevitable. The present chapter offers evidence concerning the important role of self-regulation processes in mitigating the influence of three kinds of affect—experienced, anticipated, and implicit—on health behaviors. For each of these three kinds of affect, we observed that forming if-then plans or implementation intentions could emancipate health actions from unwanted influence by affect. This emancipation could be achieved in two ways—by directly targeting the affect itself so as to undermine the strength of the affective response, or by targeting the relationship between affect and health behavior so that the translation of affect into action is reduced or blocked. We acknowledge that there are gaps in the evidence base, and that if-then planning interventions that measure health behaviors in the wake of changes in experienced affect and interventions that target levels of anticipated affect, in particular, are needed. Larger scale trials with more representative and clinical samples over longer follow-up periods would also help to make the case for using if-then plans to regulating

affect-health behavior relations even more compelling. Notwithstanding these limitations, however, the self-regulation approach advocated here holds considerable promise for both theory and practice. Further research using this approach therefore seems warranted.

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