Chapter 2

The Integrative Model of Behavioral Prediction as a Tool for Designing Health Messages

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INTRODUCTION

Why do we study health communication? Why are health messages typically a central component of health interventions? For many of us an obvious part of the answer to these questions is that we have an interest in improving public health, and specifically, that we believe that communication has the potential to improve health behavior. Considering that there is evidence that interventions do not always produce desired effects or can be even countereffective (Cho & Salmon, 2007; Hornik, Jacobsohn, Orwin, Plesse, & Kalton, 2008), one could wonder whether this is a realistic belief.

While there are many reasons why a particular health message may not move people to behavior change as intended, health messages in fact can positively influence behavior change. A primary contributing factor in this regard is the correspondence between the message and the recipient. Maximizing the message–recipient match requires a good understanding of why people engage in healthy or risky behavior. A conceptual framework that can account for different health behaviors in different populations is the integrative model of behavioral prediction (Fishbein, 2000, 2008). This chapter explicates how the integrated model can be used in health interventions to design maximally effective messages for different populations.

The integrative model takes a reasoned action approach to understanding behavior, which holds that although an infinite number of variables may in some way influence behavior, only a small number of variables need to be considered to predict, change, or reinforce a particular behavior in a particular population (Fishbein & Ajzen, 1975, 2010). The integrative model can identify in any given population which variables most importantly determine a given behavior, and proposes that a health message should address those critical determinants in order to improve the recommended behavior in the particular population. It therefore has the ability to maximize the correspondence between the target population's unique needs and the content of a message.

THE INTEGRATIVE MODEL OF BEHAVIORAL PREDICTION

Historical Development

The integrative model is the most recent formulation of Fishbein and Ajzen's (2010) reasoned action approach. The development of the reasoned action approach has been sequential. Most notably is early work by Martin Fishbein in the 1960s on conceptual differences between beliefs, attitude, and intention constructs that he produced in response to scholars who doubted the usefulness of the attitude construct for predicting human behavior (e.g., Fishbein, 1966). This work informed the theory of reasoned action (Fishbein & Ajzen, 1975), which models beliefs about particular outcomes and referents' approval regarding the behavior as antecedents, and intentions and behaviors as consequences of attitude and subjective norm constructs. In the 1980s, Icek Ajzen proposed the theory of planned behavior (Ajzen, 1985), which models perceived control over behavioral performance as an additional behavioral determinant next to attitude and subjective norm. A recent formulation of the theory, and the focus of this chapter, was proposed in 2000 as the integrative model of behavioral prediction, which extends the scope of the normative determinant and points attention to skills and environmental barriers as moderators of the intention–behavior relationship.

Explication of the Theory

Key Propositions. A central tenet of the reasoned action approach is that a small number of variables can be identified that together can explain a substantial proportion of the variance in any behavior in any population (Fishbein,

2008; Fishbein & Ajzen, 1975, 2010). More specifically, the integrative model describes that intention to perform a behavior follows reasonably (but not necessarily rationally) from specific beliefs that people hold about the behavior. "Reasoned" in this regard has to do with the general rule that if people believe that performing a particular behavior is a good thing, then they are more strongly motivated to actually perform the behavior than if they believe that performing the behavior is a bad thing. The integrative model thus accounts for any behavior, regardless of whether behavior is deemed rational or irrational. For example, some people may never walk under a ladder because they believe that it will bring bad luck, which is both reasoned and, to many, irrational.

The Intention–Behavior Relationship. The integrative model predicts that people act on their intentions when they have the necessary skills and when environmental factors do not impede behavioral performance (see Figure 2.1). Thus, for example, when people do not perform a recommended behavior but did intend to, the objectives of an intervention would not be to improve intention. The problem here is not one of motivation but one of competence (i.e., skills) and means (i.e., environmental constraints or facilitators).

For example, those affected by diabetes may be highly motivated and thus intending to start an insulin self-injection regimen, but in the reality of a first unassisted

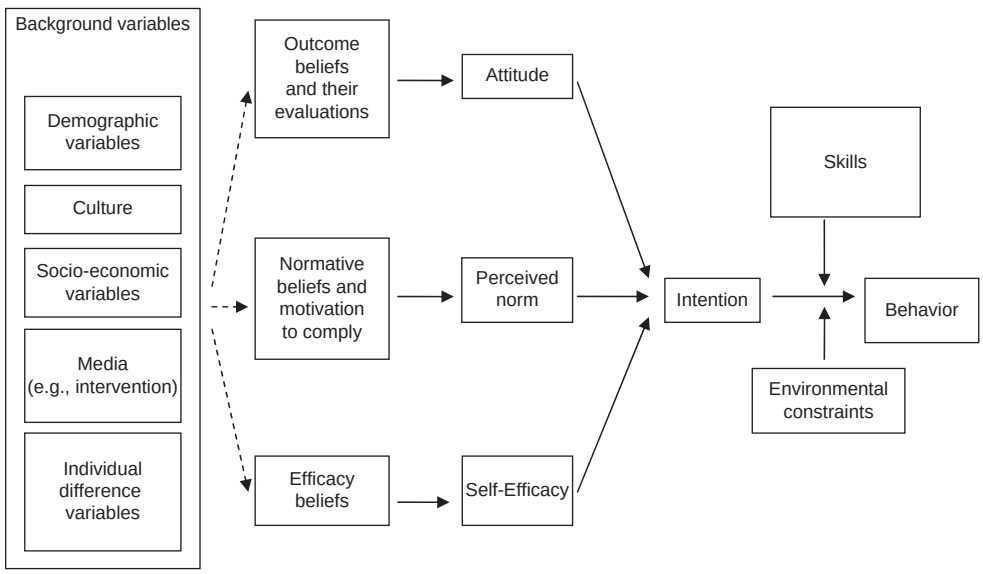

Figure 2.1 The Integrative Model of Behavioral Prediction

injection attempt they may find themselves unable to use the syringe correctly (i.e., deficient actual skills). In addition to the extent to which one possesses necessary skills, a wide range of contextual factors can also either facilitate or impede behavioral performance. These are referred to as environmental constrains in the integrative model. For example, if someone's health insurance benefits include the use of a mail service pharmacy, the likelihood that syringes and insulin will be available will increase. Unforeseen heavy traffic is an example of an impediment, as it makes it difficult to be at home in time for a scheduled injection. In brief, without the necessary skills and resources, intentions will not predict behavior.

Determinants of Intention. The integrative model further postulates that intention is a function of three types of perceptions: *attitude, perceived norm,* and *self-efficacy. Attitude* is a person's evaluation of how favorable or unfavorable his or her performing a particular behavior would be. *Perceived norm,* which is the social pressure one expects regarding performing the behavior, has two aspects, namely an injunctive and a descriptive norm. An *injunctive norm* is the extent to which important social networks are expected to be supportive of the person's performing the behavior, and a *descriptive norm* is the extent to which members of those networks perform the behavior themselves. Perceived norm is the totality of these two normative perceptions. *Self-efficacy* reflects the extent to which a person feels capable of effectively performing the behavior. Self-efficacy should not be confused with competence, which the integrative model proposes to moderate the effects of intention on behavior. Competence refers to actual skills, whereas self-efficacy refers to *perceived* capability. Self-efficacy is one's perceived capability to successfully perform a behavior, and although it has been demonstrated to guide people's behavioral attempts, the skills one perceives oneself to possess do not necessarily or always match the skills one in fact possesses (Bandura, 1997).

In terms of the insulin example, people's attitudes are their evaluation of how positive or negative (e.g., how good or bad, foolish or wise, or pleasant or unpleasant) their self-injecting of insulin would be. The injunctive norm pertains to how much they feel people who are important to them will support or disapprove of their self-injecting insulin, whereas the descriptive norm is their perception of how many of those people who are insulin-dependent inject insulin themselves. Self-efficacy is the extent to which they feel that if they want to, they can effectively use a syringe to self-administer insulin.

Composition of the Three Determinants of Intention. It is important to note that attitude, perceived norm, and self-efficacy are global perceptions that represent a variety of specific beliefs about the particular behavior. Attitude, or the general sense of favorability regarding performing a behavior, is a function

of very specific beliefs about the likelihood that performing the behavior will have certain outcomes (outcome beliefs) and an evaluation of these outcomes in terms of good or bad. For example, if a person believes that self-injecting insulin will hurt and will have only limited effects on his or her diabetes symptoms, and sees these outcomes as undesirable, then the person's overall attitude toward self-injecting insulin will be unfavorable.

Perceived norm is a function of beliefs about the level of expected support from specific members of important social networks (injunctive norm beliefs), and beliefs about the extent to which these specific individuals self-inject insulin themselves (descriptive norm beliefs) and the motivation to comply with these referents. Individuals may expect that their doctor and parents will approve their injecting insulin, but also that their friends will disapprove, or that their insulin-dependent friends do not inject themselves. If it is more important for them to comply with their peers than with their doctor and parents, then their overall perception will reflect normative pressure against their injecting insulin.

Last, self-efficacy is a function of perceived capability in specific challenging or facilitating circumstances (efficacy beliefs). For example, those who believe that they are able to use a syringe to self-inject insulin even when others are watching and when hyperglycemia makes them tired or blurs their vision have an overall perception of being able to self-inject insulin that is strong.

Background Variables. It is well documented that other variables than intention and its proposed antecedents can be associated with behavior. For example, men and women differ markedly in sunscreen use (e.g., Hall, May, Lew, Koh, & Nadel, 1997), which indicates that gender influences behavior. The integrative model proposes that this influence on behavior is indirect, however. Gender, other demographics, and variables such as personality traits, culture, and media use (including exposure to health messages) are conceptualized as possible sources of beliefs. The integrative model therefore positions these variables as "background" variables. Whereas there may be empirical associations between these variables and behavior, there are no theoretical reasons to expect that these variables always and in the same manner shape beliefs (hence the dashed arrows in Figure 2.1).

The conceptualization of background variables illustrates the flexibility and adaptability of the integrative model to different cultures and contexts. The integrative model is sensitive to the unique needs of diverse audiences and can cater to an audience's needs because it recognizes that the beliefs that ultimately guide behavior are grounded in an audience's demographic, socioeconomic, and cultural factors. Formative research based on the theory therefore focuses on identifying population-specific outcome, normative, and efficacy beliefs for a given behavior.

For example, Abroms and colleagues (Abroms, Jorgensen, Southwell, Geller, & Emmons, 2003) found in their sample that men and women differed in their sunscreen use behaviors, but also that men and women held different outcome and normative beliefs regarding sunscreen use. For example, compared to women, men thought that sunscreen use would result in more negative outcomes, such as embarrassment when applying sunscreen with other men around. Compared to men, women expected more approval of sunscreen use from their peers but more disapproval from their relationship partners. The integrative model thus explains that, for example, men and women differ in sunscreen use because they hold different beliefs about sunscreen use. The implication for health intervention is that such differences in beliefs indicate the need to craft separate messages for, in this example, women and men.

Routes to Behavior Change

The above description of the integrative model makes clear that behavior can be influenced through changes in behavioral skills, environmental factors, and behavioral intention. When people have formed appropriate intentions but are not acting on them, then an intervention should aim to help people act on their intention by addressing a possible lack of skills or environmental barriers. Taking marijuana use as an example, one can teach verbal skills with respect to declining offers to use marijuana (e.g., Hecht, Graham, & Elek, 2006) or lobby for policy measures that impede access to marijuana (see Yanovitzky & Stryker, 2001, on communication effects on public policy). When people do not have strong intentions, the intervention should aim to improve intention. This route to behavior change, that is, the route through intention change, uses informational or persuasive messages to change intention to perform a particular behavior. More specifically, the goal of these messages is to positively affect the determinants of intention. The focus of this chapter is on health messages that seek to improve intention.

USING THE INTEGRATIVE MODEL TO INFORM HEALTH MESSAGE DESIGN

Fishbein first introduced the integrative model in an address delivered to the 4th AIDS Impact conference in 1999 (later published as Fishbein, 2000). In that address, and to an even greater extent in later work (e.g., Fishbein, 2008;

Fishbein & Yzer, 2003), he emphasized the integrative model as a tool for designing and evaluating health behavior change interventions.

The theory's approach to message design is based on the proposition that effective messages cater to an audience's needs. The theory conceptualizes these needs as the variables that determine the particular behavior in the population that an intervention seeks to approach. Once those determinants have been identified for the particular behavior in the population under consideration, an intervention can be designed to address those variables. The logic of this approach is that the better we understand the variables that guide health behavior in a particular population, the better able we are to design interventions to change the behavior (Fishbein, 2008). Which of the model variables will most importantly guide a behavior in a particular population is an empirical question, however, and intervention design anchored in the integrative model thus always should be research-based. The recommended research process includes three steps.

Step 1: Define the Behavior

A first step in health message design is the definition of the behavior that one wants to explain or change. Consistent with a four-component view of behavior, a behavior can be defined as an *action* directed at a *target,* performed in a certain *context,* and at a certain point in *time* (Ajzen & Fishbein, 1980; Fishbein & Ajzen, 2010). Consider the behavioral definitions in Table 2.1. A moment's reflection makes it obvious that changing any one of the components of these behaviors creates a new behavior. For example, using a condom for vaginal sex with a new, casual partner is a different behavior from using a condom for sex with one's spouse, because of differences in, among others, motives (e.g., prevention of sexually transmitted disease or pregnancy) and expectations (uncertain about partner reactions or an established routine). Clearly, the belief systems underlying these behaviors can greatly differ, which implies a need for designing different, behavior-specific messages.

In a direct test of the implications of changing the time component of behavioral definitions, Lutchyn and Yzer (2011) found that efficacy beliefs are more salient when people think about proximal behaviors (e.g., eating five servings of fruits and vegetables every day in the next 3 months), but attitudinal and normative beliefs are more salient when people think about more distal behaviors (e.g., eating five servings of fruits and vegetables every day 5 years from now).

One possible reason for this salience difference is that perceptions of behaviors that take place in the near future are concrete, whereas perceptions of more distal behaviors are abstract. For example, it is often quite clear what it will be like to eat five servings of fruits and vegetables tomorrow, and as a consequence, perceptions of eating healthy tomorrow emphasize how one can eat healthy given those circumstances. In contrast, it is hard to conceive the circumstances of eating healthy in the distant future, which will make the "how" aspect less pressing and instead accentuate why one would eat healthy (Trope & Liberman, 2000).

The more specific a behavior is defined in intervention messages, the more likely it is that behavioral recommendations are interpreted as intended. A recommendation to "exercise 3 days a week," for example, has an action and a time component, but the absence of target and context in this definition leaves message recipients with ample room for interpretation. A person may think that walking from the parking ramp to the office every day exceeds the recommendation to exercise 3 days a week, while this would not have been possible if the message offered the perhaps overly specific recommendation to "run outside for 30 minutes at a 10-minute-per-mile pace 3 days each week."

Step 2: Identify Salient Beliefs

After the behavior of interest has been defined, the next task is to understand the belief system underlying that behavior. Because each behavior has a

Table 2.1 Examples of Behaviors Defined at Various Levels of Specificity

Definitional component	***Behavior 1 (Fishbein, 2008)***	***Behavior 2 (Schmiege, Bryan, & Klein, 2009)***	***Behavior 3 (Lutchyn & Yzer, 2011)***	***Behavior 4 (Lutchyn & Yzer, 2011)***
Action Target	using a condom	flossing my teeth	eating five servings of fruits and vegetables	eating five servings of fruits and vegetables
Context	for vaginal sex with my spouse	—	—	—
Time	always in the past 2 weeks	regularly	every day in the next 3 months	every day in the next 5 years

unique set of underlying beliefs, the investigator must go to the target population to obtain a rich understanding of the beliefs that the target population has about the recommended behavior. For this purpose, open-ended questions are used to identify which beliefs are salient in a sample that is representative of the population of interest. To elicit outcome beliefs, study participants are asked to list all advantages and disadvantages of performing the behavior. Normative beliefs are elicited by asking participants to describe the people who would disapprove and who would approve their performing the behavior, and to describe who they think do and do not perform the behavior themselves. Lastly, to elicit self-efficacy beliefs, participants are asked to list factors that would facilitate or challenge their performing the behavior. A qualitative content analysis of all responses is then used to build a list of modal outcome and normative and self-efficacy beliefs. A sample size of about 30 is thought to be sufficient to produce an exhaustive list of salient beliefs, but note that this number is based on experience and has not been submitted to systematic inquiry (Fishbein & Ajzen, 2010).

Step 3: Determine Which of the Salient Beliefs a Message Should Address

Rationale and Criteria. Figure 2.1 visualizes that a message does not directly affect attitudes, perceived norm, or self-efficacy. Rather, it directly affects specific beliefs people hold about performing a particular behavior. Effects on beliefs, then, influence behavior through their influence on attitude, perceived norm, self-efficacy, and intention. It is therefore necessary to identify which outcome, normative, or efficacy beliefs are the best candidates to address in a message.

Beliefs are good message candidates when they meet one of two criteria. First are those beliefs that are most strongly correlated with the intention to perform the behavior, because changes in these beliefs produce the relatively greatest changes in intention (i.e., to the magnitude of the size of the correlation). Second are beliefs that do not necessarily correlate strongly with intention, but already are favorable toward the recommended behavior or unfavorable toward the risky behavior. Messages do not seek to change such beliefs, but rather reinforce them such that they are more accessible in memory when a behavioral decision needs to be made. Priming is the reinforcing mechanism that increases the strength of the association between belief and intention, and is achieved by repeatedly exposing an audience to messages that address that belief (see Fishbein & Yzer, 2003, for a detailed

discussion on priming). Messages that successfully change or reinforce these two types of beliefs should have a strong impact on intention, and through intention ultimately on behavior (Ajzen & Fishbein, 1980; Fishbein, 2000).

Analytical Strategy. To establish which of the salient beliefs identified at step 2 are message candidates, all salient beliefs are transformed into quantitative questions and integrated in a questionnaire that quantitatively assesses all model variables (for a comprehensive discussion of recommended measures see Fishbein & Ajzen, 2010). The questionnaire is administered to a sample representative of the target audience.[1] The data can be submitted to regression analysis to determine the extent to which attitude, perceived norm, and self-efficacy determine intention in the sample. If, for example, attitude proves to be the primary determinant of the behavior in question, then outcome beliefs are next examined to determine which of these beliefs are most strongly related to the intention to perform the behavior.

Uniqueness of Behaviors and Populations. This analytical strategy is sensitive to the uniqueness of different behaviors. Consider, for example, Table 2.2, which presents analyses of the intention to quit smoking (Van den Putte, Yzer, Willemsen, & de Bruijn, 2009), intention to use condoms with new sexual partners (Yzer, Siero, & Buunk, 2000), and intention to use marijuana regularly (Yzer, Fishbein, & Cappella, 2007) in different segments. As a set of determinants, attitude, perceived norm, and self-efficacy performed well in explaining intention to perform the three behaviors, with proportions of explained variance in intention ranging from 27% to 64%.

This analysis is also sensitive to the uniqueness of different populations. In this regard, Table 2.2 further shows that the importance of these variables as determinants of intention can differ between segments. Intention of smokers who had tried to quit in the past was primarily a function of self-efficacy, whereas for smokers without a quit history intention was guided by self-efficacy and even more so by attitude. For men with casual sex partners, intention to use condoms with new partners was guided by attitude, perceived norm, and self-efficacy, but for women intention was a function of self-efficacy and to a lesser extent attitude. Lastly, for both White and African American teenagers, intention to use marijuana was primarily explained by attitude. Because messages are most effective when they address the variables that most strongly predict intention, the implication of these findings for message design is that different messages would need to be developed to optimally serve segments in which intention is explained by different variables.

Table 2.2 Determinants of Intention in Different Population Segments for Three Behaviors

	Adult smokers (N = 3,454)		*Adults with casual sex partners (N = 237)*		*Marijuana: Teenage non-users (N = 411)*	
	Previous quit attempts ß	*No previous quit attempts ß*	*Males ß*	*Females ß*	*White ß*	*African American ß*
Attitude	.24	.32	.30	.22^{ns}	.57	.44
Perceived norm	.12	.14	.27	.05^{ns}	.25	.25
Self-efficacy	.38	.26	.30	.40	.13	.05^{ns}
R^2	.30	.27	.59	.35	.64	.32

NOTE: *ns* = not significant. All other coefficients significant at $p < .05$.

Implications for Message Design. To further illustrate the importance of identifying beliefs that can serve as message components, consider the finding that intention to use marijuana in a sample of White and African American teenagers was a function of attitude toward using marijuana. This finding implies that for both groups a message that produces an attitude that is unfavorable toward marijuana use produces a more negative intention to use marijuana than a message that changes perceived norm or self-efficacy. According to the integrative model, however, a message designer should not only know that attitude guides intention, but should also know which beliefs are most central in this process.

To underscore this point, Table 2.3 presents mean scores on 13 selected outcome beliefs for teenagers who intended and did not intend to use marijuana regularly (based on a median split of intention), as well as bivariate correlations between these beliefs and intention. These results make clear that while in this sample attitude explained intention for both White and African American teenagers, the outcome beliefs underlying these associations were quite different. For example, for almost all beliefs, associations with intention were stronger for White compared with African American teenagers, which suggests that White teenagers would benefit more from message-induced changes in these outcome beliefs than African American teenagers. For White teenagers, largest differences between intenders and non-intenders were found on beliefs about the likelihood that their marijuana use would reduce their ability to express themselves, lead to a loss of their friends' respect, and, as a positive outcome, result in having a good time with their friends. Among African American

teenagers, largest differences between intenders and non-intenders had to do with beliefs about how likely it is that their marijuana use would make them anxious, lead them to use stronger drugs, lose their friends' respect, and negatively affect academic performance. In addition, and relevant for a reinforcing strategy, intenders (those who intend to use marijuana regularly) already believed that their marijuana use would have a number of negative outcomes, and disbelieved the likelihood of some positive outcomes. White teenagers, for example, already believed that their marijuana use would upset their parents, and believed that marijuana use would be unlikely to make them fit in or be like other kids their age. African American teenagers already believed that their marijuana use would damage their lungs, upset their parents, make them a bad role model, and in addition believed that marijuana use would not make them fit in or make them more creative. Because these beliefs are unfavorable toward marijuana use, making them more important increases the likelihood that these adolescents will refrain from marijuana use when that decision needs to be made.

Attention to the above-noted three steps can significantly improve the effectiveness of health messages. The AIDS Community Demonstration Projects (ACDP) provides a pertinent example. The ACDP was an intervention that aimed to improve various HIV preventive behaviors in diverse at-risk communities. The behaviors were defined at a high level of specificity, and included condom use for vaginal sex with steady partners, condom use for anal sex with steady partners, condom use for vaginal sex with casual partners, condom use for anal sex with casual partners, and using bleach to clean needles. The communities included female sex workers, homeless youth, injection drug users, female partners of injection drug users, and men who have sex with men but who are not gay-identified (Fishbein et al., 1996).

Formative research in each of these communities identified important beliefs about each of the behaviors (Higgins et al., 1996). For example, beliefs relevant for using bleach to clean needles for intravenous drug use had to do with the ability of bleached needles to prevent HIV infection (an outcome belief), and perceived knowledge of which items are necessary for using bleach (an efficacy belief). These beliefs were addressed in role model stories that were designed to improve the variables that were the most important determinants of the particular HIV preventive behavior in each community (Corby, Enguidanos, & Kay, 1996). For example, a role model story about using bleach read:

> "I first found out about bleach about two years ago from these people that would shoot up at a vacant house. We would all go there, and everybody would just do a bit of everything. In one corner they would shoot up, and in another they would be smoking. When they started talking

Table 2.3 White and African American Teenagers' Outcome Beliefs About Using Marijuana

	White			*African American*		
If I would use marijuana nearly every month for the next 12 months, I would . . .	$M_{non\text{-}intenders}$	$M_{intenders}$	r	$M_{non\text{-}intenders}$	$M_{intenders}$	r
. . . become anxious	.74	–.15	–.32	.51	–.38	–.30
. . . lose my athletic skills	1.26	.08	–.44	.82	.24	–.18
. . . have difficulty expressing my thoughts clearly	1.11	–.10	–.47	.77	.33	–.21
. . . damage my lungs	1.57	.77	–.33	1.03	.86	–.09
. . . start using stronger drugs	.75	–.34	–.34	.22	–.76	–.31
. . . lose my friends' respect	1.08	–.39	–.51	.71	–.33	–.33
. . . upset my parents	1.57	1.04	–.21	1.21	.67	–.12
. . . be a bad model to younger kids	1.54	.73	–.35	1.08	.76	–.11
. . . do worse in school	1.41	.31	–.41	.90	.19	–.27
. . . fit in with a group I like	–1.03	–.31	.24	–.62	–.24	.03
. . . have a good time with my friends	–.88	.57	.51	–.53	.14	.18
. . . be like other teens my age	–.28	.26	.22	–.37	.05	.06
. . . be more creative and imaginative	–1.15	–.23	.36	–1.00	–.57	.02

NOTE: $M_{non\text{-}intenders}$ and $M_{intenders}$ are means reflecting a –2 (very unlikely) to +2 (very likely) scale. *r* is bivariate correlation with intention.

> about bleaching outfits, it wasn't shocking or anything, because people use bleach to disinfect a lot of things. So it kinda made sense when I thought about it. In fact, it's a wise decision." Champ has been slamming coke on and off for about four years. Most of the people he uses with he's known for a while. "Just because I know the guy I'm sharing with doesn't mean I can trust him with my life. He may have HIV, and I sure wouldn't know it by looking at him. I know a lot of people who have died from using needles behind other people. One thing that I've learned is that you can't tell by looking who's got the AIDS virus." Champ plans on protecting himself from AIDS by bleaching his outfit every time. "Bleaching is a regular habit. I have my bottle of rinse water, my bottle of bleach, and my dope in my pocket. I'm always prepared for whatever comes my way." (Centers for Disease Control and Prevention, 2010, para. 4)

The ACDP intervention approach recognized that messages had to be designed from the perspective of the substantive uniqueness of each behavior. There is good evidence that this approach improved the determinants of HIV preventive behaviors and in turn the behaviors themselves (CDC ACDP Research Group, 1999; Yzer, Fishbein, & Hennesy, 2008).

THE POSITION OF THE INTEGRATIVE MODEL IN THE PROCESS OF HEALTH MESSAGE DESIGN

To fully appreciate the contribution of the integrative model to health message design, it is useful to consider which message design question the integrative model addresses. The message design process involves at least two major questions: "What should the message tell the audience?" and "How should that content be formatted?" The first question has to do with the content of the message and requires a decision on the specific information that the message needs to convey. This process of choosing message content is referred to as message strategy (Hornik & Woolf, 1999). The integrative model is ideally positioned to inform message strategy. Once the content has been decided, the message can next be crafted in a creative process that requires choices about, for example, structure, style, presentation, and layout elements that resonate with the particular audience.

For example, consider an anti-methamphetamine (meth) print advertisement developed for the Montana Meth Project (n.d.). The print ad shows the lower half of a young woman's face. Her skin appears inflamed, there are sores on her lips, and she has obvious tooth decay. The headline reads "You'll

never worry about lipstick on your teeth again," followed by "Meth—not even once." In terms of integrative model variables, the print ad is an attitudinal message that addresses the outcome belief that using meth harms your looks, and in particular that meth use leads to tooth decay.

The integrative model can thus be recognized in a message's content, which in the example of the anti-meth ad is the ad's argument that using meth negatively affects appearance. At the same time, it is clear that in addition to content a message has several other features, including colors, textual and visual complexity, language style, and emotional appeal (e.g., fear or humor). Importantly, each of these features by themselves and in interaction with message content contributes to the message's ultimate effects on a person who is exposed to the message. The anti-meth ad, for example, is a print ad, uses explicit graphics in combination with one headline and no body text, and can be considered a fear-inducing message. The integrative model speaks to message content, and other theories are needed to conceptualize message features other than content. As but one example, work in the field of visual rhetoric has demonstrated that the effectiveness of persuasive messages can be improved by using metaphors, such as a visual of decayed teeth with a lipstick reference, which may suggest that meth use renders concerns about looks irrelevant (Phillips & McQuarrie, 2004).

This discussion should make clear that the process of health message design includes both message content and message format decisions. Suppose, for example, that the anti-meth ad was the state of the art in creative design. The ad would still not produce favorable results if the audience's decision to use or not use meth were unrelated to beliefs about physical effects of meth use. Strong message format thus is a necessary but not sufficient condition for a message to have the effect it ultimately should have, just like appropriate message content will be effective on the condition of appropriate format decisions.

Conclusion

The integrative model and other reasoned action theories have been widely used to investigate a broad range of health behaviors. There is meta-analytical support for the theory's ability to explain different health behaviors (e.g., Albarracín, Johnson, Fishbein, & Muellerleile, 2001; Hagger, Chatzisarantis, & Biddle, 2002), and for the theory's usefulness as a basis for health interventions (e.g., Albarracín et al., 2005; Hardeman et al., 2002). The appeal for health message design is that the theory can help identify the beliefs that a

message should address. In this regard the integrative model accommodates two routes to behavior change; one, use messages to change those beliefs that are most strongly related to intention to perform the behavior, and two, use messages to reinforce beliefs in favor of the recommended behavior that are already held by most members of the population. The three-step approach to identifying those beliefs described in this chapter provides guidance for designing integrated model-based health messages.

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Note

1. Behavior is a function of a previously formed intention, which implies a time lag between intention and behavior. Behavioral data should therefore be obtained some time after the other model variables have been measured. Prospective research is costly, however, and limited budgets may allow a cross-sectional survey only. Note, therefore, that whereas cross-sectional data can usefully explain influence of past behavior on intention, they cannot determine causal influence of intention on behavior.

Suggested Additional Readings

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Questions for Theory and Practice

1. Theorists recommend an open-ended questionnaire to elicit salient beliefs about performing a behavior. Other approaches have been used, however, including focus groups and unstructured interviews. Which method is best suited to elicit a list of beliefs that accurately reflects a belief system in a population?

2. Whereas some beliefs are more strongly related with intention than others, beliefs within a belief system typically are correlated with each other. Does this mean that if one belief changes, this change subsequently spreads to correlated beliefs?

3. The integrative model proposes that attitude, perceived norm, and self-efficacy have additive effects on intention. How useful is it to consider interaction effects among these variables? For example, is it possible that self-efficacy moderates attitudinal effects on intention, such that attitude affects intention if people believe that they can successfully perform the behavior, but not if they believe that they cannot perform the behavior?

4. Whether attitude, perceived norm or self-efficacy dominate as determinants of intention in a particular population is an empirical question. Is it possible to draw on other theories to identify variables that predictably moderate the predictive power of these variables?

5. A priming strategy involves repeated exposure in order to strengthen the relationship of a belief with intention. How often does a message need to be received before such a reinforcing or priming effect is discernable?

6. The intention-behavior relationship that the integrative model proposes implies that to achieve behavioral performance, one can improve intentions among those who do not intend to perform the behavior, or reinforce intention among those who already intend to perform a recommended behavior. Which of these strategies is most cost-effective?