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Social Psychology and Motivational Interviewing: A Review of Relevant Principles and Recommendations for Research and Practice

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Abstract. Motivational Interviewing is an evidence-based brief intervention for helping people change problematic health behaviors. The development of motivational interviewing was influenced, in part, by the social psychology literature, especially the concept of psychological reactance. This paper argues for expanding the influence of social psychological processes upon the practice of motivational interviewing by reviewing three relevant processes: defensive bias, message framing, and cognitive-affective ambivalence. Relevant research findings are reviewed and specific recommendations are offered for future research and enhancing the practice of motivational interviewing.

Keywords: Social psychology, motivational interviewing, motivational enhancement therapy.

Introduction

Motivational Interviewing (MI) has been defined as "a client-centered, directive method for enhancing intrinsic motivation to change by exploring and resolving ambivalence" (Miller and Rollnick, 2002, p. 25). MI and its adaptations share similar fundamental assumptions and have enjoyed increasing empirical support both as adjuncts to treatment and as stand-alone interventions for problematic substance use and other health behaviors (Dunn, DeRoo and Rivera, 2001; Burke, Arkowitz and Dunn, 2002).

According to Miller and Rollnick (2002), the practice of MI follows key principles: (a) roll with resistance to avoid fruitless argumentation; (b) ask open-ended questions to explore the client's ambivalence about change; (c) use affirming statements to selectively reinforce change-supporting arguments; and (d) support the client's autonomy and self-efficacy. When discussing change with clients, expressions may be characterized as either resistance (e.g. arguments for the status quo, barriers to change, pessimism about change) or change talk (e.g.

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concerns about status quo, advantages of change, intent to change), and thus one goal is to elicit and amplify change talk while minimizing resistance.

MI did not evolve from a theory-driven process. As it was originally described, MI was an attempt to capture the intuitively-derived clinical style of its founder, William R. Miller (Miller, 1983). Only later did it become evident to Miller that the approach was consistent with clinical approaches and social psychological theories such as Rogerian client-centered counseling (Rogers, 1961), Bem's (1972) self-perception theory, Festinger's (1957) theory of cognitive dissonance, and the newly developed transtheoretical stages of change model (Prochaska, DiClemente and Norcross, 1992). In integrating these theories into a single clinical style, Miller was influenced by social psychological processes, which he believed could account for the relative ineffectiveness of confrontational approaches. Primary among these were the phenomena of psychological reactance and cognitive dissonance (Miller, 1983). Psychological reactance describes the process in which an individual will sometimes behave in ways that preserve a sense of autonomous freedom when choice is perceived to be threatened by others' directions or mandates, such as when others demand behavior change (Brehm and Brehm, 1981). Cognitive dissonance refers to the individual's need to minimize discrepancies (for example, between values or attitudes and behaviors), a drive that can be used to motivate behavior change (Festinger, 1957).

This paper explores the social psychology influences upon MI that might account for the remarkable track record of MI across behavior change areas (Dunn et al., 2001; Burke et al., 2002). Suggestions to further enhance the effectiveness of MI are also made. Finally, we conclude with a number of hypotheses in need of further investigation. Specifically, we identify three social processes that seem to be of special relevance to the MI style of counseling: defensive bias, message framing, and cognitive-affective ambivalence. These phenomena have been found to be predictive of responses to health messages and other attitude and behavior changes. Health messages are inherent (albeit sometimes implicit) in many MI encounters, thus an understanding of how people tend to respond to these messages can help create conditions for the most favorable response. Being conscious of the conditions most conducive to change, while at the same time avoiding those conditions that make change less likely, is at the heart of the MI spirit (Miller and Rollnick, 2002).

Defensive bias and self-affirmation theory

Defensive bias is the tendency for individuals to minimize the impact of personally threatening information. For example, when presented with threatening health information, individuals often discount the seriousness of the threat (Jemmott, Ditto and Croyle, 1986), believe they are less at risk for negative consequences than others who engage in similar risky behaviors (Weinstein, 1982, 1984), challenge the accuracy of the threatening information (Ditto, Jemmott and Darley, 1988; Kunda, 1987), and generate alternative explanations to discredit the information (Ditto and Lopez, 1992). Clinically, client expressions reflecting this defensive bias are experienced as resistance. Clients may respond "actively" through developing counterarguments or "passively" by disengaging from the conversation. Either would be characterized as resistance in the MI model. Because the level of client resistance has been linked to poorer outcomes (Miller, Benefield and Tonigan, 1993), the interviewer attempts to minimize resistance.

Similar results have been found for smoking behavior, alcohol use, and risky sexual behavior. For example, smokers view smoking as less of a health risk compared to non-smokers (Lee, 1989), rate their smoking-related health risks as lower than the average smoker (McCoy et al., 1992; McKenna, Warburton and Winwood, 1993; Waltenbaugh and Zagummy, 2004), and after relapse view smoking as less hazardous to health than before attempting to quit (Gibbons, Eggleston and Benthin, 1997). Similarly, compared to non-drinkers, college student drinkers doubt the scientific merit of studies that report the negative consequences associated with binge drinking (Leffingwell, Neumann, Babitzke and Boczar, 2003), and believe that other college drinkers with similar patterns of use are more at risk for experiencing negative consequences than they are themselves (McQueen, 2003). Lastly, several studies have found that sexually active women underestimate their risk for becoming pregnant or contracting HIV (Kershaw, Ethier, Niccolai, Lewis and Ickovics, 2003; Mickler, 1993). In this area, underestimation of risk has been found regardless of birth control practices (Burger and Burns, 1988) or sexual risk behavior (Brown, Outlaw and Simpson, 2000; Klein, Elifson and Sterk, 2003).

Self-affirmation theory has been proposed as one possible explanation for the defensive bias effect. According to self-affirmation theory (Steele, 1988), individuals are motivated to maintain a perception of one's self as competent, responsible, and adaptive, serving to protect self-worth. Cognitive dissonance occurs when a message implies one is not behaving in a competent and adaptive manner, threatening self-worth. Defensive bias occurs to minimize the impact of the message, reducing cognitive dissonance and preserving self-worth. As a way to reduce levels of defensive bias, studies have sometimes affirmed self-worth before introducing a threatening message (Sherman and Cohen, 2002; Sherman, Nelson and Steele, 2000; Cohen, Aronson and Steele, 2000). Self-affirmation tasks serve to meet the motivational needs of protecting self-worth by encouraging the individual to reflect upon other positive aspects of the self, which in turn reduces the need for defensive responding (Sherman and Cohen, 2002). Typically, studies have asked participants to engage in a self-affirmation task, such as discussing personally important values, and examined the resulting likelihood of defensive bias. Such findings may be of particular relevance to the area of addictive behaviors, because historically some counselors have believed that validations tend to leave clients more satisfied with the status quo, thus the task for the clinician is to strongly confront the client and affirm only after the client has demonstrated some positive behavior change. However, the evidence for this "tear 'em down to build 'em up" approach appears to be to the contrary: self-affirmation tasks have been found to reduce defensive bias and increase amenability to change across a number of domains (see Aronson, Cohen and Nail, 1999; Sherman and Cohen, 2002; Steele, 1988).

As an example, Reed and Aspinwall (1998) examined the effect of a self-affirmation task on orientation to potentially threatening health information. All participants were given risk-confirming and risk-disconfirming information that caffeine use was a risk factor for developing breast cancer. Half the participants completed a self-affirmation task (writing about personal acts of kindness) while half were not affirmed. Those in the affirmation condition believed more in the link between caffeine use and breast cancer, and oriented themselves quicker to risk-confirming information than non-affirmed participants.

Sherman et al. (2000) examined the effect of a self-affirmation task on health related attitude and behavior change. Using a research paradigm similar to Kunda (1987), information linking caffeine use to breast cancer was presented to both frequent and non-coffee drinkers. Affirmed

participants wrote about an important personal value, whereas non-affirmed participants did not. Results indicated that coffee drinkers who were self-affirmed were more accepting of the threatening information than coffee drinkers who did not complete the affirmation task. In addition, affirmed coffee drinkers reported greater intentions to reduce their caffeine consumption.

Sherman et al. (2000) further examined self-affirmation in the area of perceived risk of contracting HIV/AIDS. Sexually active undergraduates were presented with information about the risks of contracting HIV/AIDS through risky sexual behavior. Half of the participants also completed an affirmation task consisting of writing about an important personal value. After controlling for pre-experimental risk perceptions, both men and women in the affirmation condition believed that their risk of contracting HIV was greater than those in the non-affirmation condition. Affirmed participants were also more likely to purchase condoms and take AIDS educational brochures provided at the end of the study. Notably, affirmation tasks are likely most effective when the content of the affirmation task is from a different domain than the content of the threatening message (i.e. a values affirmation and a health-risk message). If the affirmation task is in the same domain, there is a risk of *increasing* defensive bias by amplifying the dissonance between personal values and behavior (Blanton, Cooper, Skurnik and Aronson, 1997).

To date, only one study has examined the effect of an affirmation task upon alcohol use attitudes and intentions. McQueen (2003) assigned heavy drinking college students to write about personally important relationships with family or friends. While no effects were found on intentions to reduce alcohol use or actual alcohol consumption at follow up, participants in the affirmation condition were significantly more likely to report increased readiness to take steps to reduce alcohol use. Indeed, other literature suggests that values clarification activities may be a useful adjunct to alcohol treatment efforts (Larimer and Cronce, 2002).

According to self-affirmation theory, salient positive beliefs about oneself provide a buffer against threatening information (Steele, Spencer and Lynch, 1993). In particular, individuals with high self-esteem should have greater resources to cope with threatening information because they recognize that they possess other positive characteristics. A number of studies have demonstrated support for self-affirmation theory. For example, results from Steele et al. (1993) indicate that when individuals were reminded of their resources via completing a self-esteem measure before exposure to a dissonance-arousing task, high self-esteem participants were more likely to accept threatening information than low-self esteem participants.

Other studies have found similar results. For example, Holland, Meertens and Van Vugt (2002) and Nail, Misak and Davis (2004) found that low self-esteem participants responded more defensively than high self-esteem participants when provided with information about the negative consequences of driving an automobile or being stood up by a friend. This relationship has also been observed in the acceptance of health risk information. Chung and Sherman (2003) exposed high and low caffeine users to the previously described values-oriented affirmation task or to a non-affirmation condition before providing information linking caffeine to breast cancer. In this study, self-esteem moderated the effect of self-affirmation on the acceptance of the health information. Participants with high self-esteem accepted the threatening information regardless of personal relevance of the message (and associated increased threat for high caffeine users), whereas high caffeine users with low self-esteem accepted the information only after completing the self-affirmation task. Clinically, this finding suggests that clients lower in self-esteem are more likely to be resistant to discussions of behavior change. This

may help explain why individuals with addictions may become increasingly resistant to help as consequences mount and their lives become even more unmanageable.

In summary, defensive bias occurs when individuals are presented with threatening information about beliefs or behavior, and is intended to minimize the seriousness of the threat. Defensive bias is clinically important because it seems likely to limit the effect of some clinical interventions. One way to reduce defensive bias, particularly among individuals with low self-esteem, is to enhance the individual's sense of self-worth prior to delivering information that might be threatening. For instance, completing a values task has been shown to decrease defensive bias for fictitious health risks, such as the connection between caffeine use and breast cancer (Reed and Aspinwall, 1998; Sherman et al., 2000) and real health risks, such as contracting HIV/AIDS through risky sexual behavior (Sherman et al., 2000). A number of studies have also shown that individuals with high self-esteem are less likely to engage in defensive bias and an affirmation task may be especially beneficial to individuals with low self-esteem (Chung and Sherman, 2003; Holland et al., 2002; Nail et al., 2004; Steele et al., 1993).

The defensive bias phenomenon and self-affirmation theory have important implications for the delivery of motivational interventions. Clearly, minimizing the occurrence of defensive responses to threatening information is consistent with the MI principle of "rolling with resistance." Support of the client's belief in his or her essential self-worth is also evident in prescriptions to express empathy. Miller and Rollnick (1991, 2002; Miller, 1983) have consistently recognized the importance of enhancing self-esteem (and the related construct of self-efficacy) as a central task in the process of motivational interviewing and recommend a number of strategies for doing so. If self-affirmations reduce defensive bias to substance-use related information, it may be beneficial to incorporate an affirmation task[1] into MI. One possibility is to discuss personal values before discussing substance use behavior. As an affirmation task has been shown to increase readiness to change alcohol use (McQueen, 2003), a self-affirming process at the beginning of a counseling encounter may facilitate behavior change talk.

In addition to these stylistic elements, adaptations of MI have involved a substantial personalized feedback component as a way to raise levels of discrepancy and increase interest in change (for example, the Motivational Enhancement Therapy of Project Match (Miller, Zweben, DiClemente and Rychtarik, 1992) and the Brief Alcohol Screening and Intervention for College Students (Dimeff, Baer, Kivlahan and Marlatt, 1999)). Feedback typically includes elements such as a list of negative consequences attributable to substance use, estimated future risk, and a comparison to relevant norms. In fact, some studies of college and adult drinkers have found that mailed feedback alone may reduce drinking (Neighbors, Larimer and Lewis, 2004; Walters and Neighbors, 2005; Walters and Woodall, 2003). As substance use feedback is likely to include information threatening to one's self-image, including a self-affirmation exercise prior to presentation of the threatening information should enhance processing of

[1]The use of affirmations and affirming and supporting the client is one of the five hallmark methods of the early phases of MI (Miller and Rollnick, 2002), and is described as expressions of compliments, understanding, or appreciation. This type of affirmation may serve to communicate empathy or selectively reinforce and encourage clients' adaptive observations, decisions, or behaviors. An affirmation task is somewhat different from the use of affirmations, and consists of a task that explicitly seeks to elicit from clients personal stories or expressions of past successes, achievements, or values-consistent behaviors, that may affirm self-image and enhance self-worth.

the information. Interestingly, feedback itself has tended to emphasize only one part of the change equation – the negative aspects of status quo behavior. Affirmation theory might argue for an inclusion of other feedback elements, such as successful changes made in the past, positive health efforts in other areas, or even strategies that one has *considered* employing to reduce risk. Elements such as these may improve the efficacy of feedback, whether or not it is accompanied by MI.

The type of affirmation task may also play an important role in decreasing defensive bias. Developing an affirmation task that increases self-efficacy could be particularly helpful in reducing defensive bias and facilitating behavior change. A number of studies have found that self-efficacy plays an important role in substance use behavior. For example, increased self-efficacy is related to more positive treatment outcomes for smoking cessation (Mudde, Kok and Strecher, 1995) and low self-efficacy is associated with greater alcohol consumption (Blume, Schmaling and Marlatt, 2002; Shulenberg, O'Malley, Bachman, Wadsworth and Johnston, 1996). Rimal and Real (2003) also found that individuals at high risk for skin cancer were more likely to engage in preventative behavior if self-efficacy related to preventing skin cancer was high. While supporting self-efficacy is already of principle of MI, the literature supports eliciting self-affirming and self-efficacy building statements *prior to* and *during* aspects of the encounter that may be threatening to self-image, such as feedback results.

Given that self-efficacy plays an important role in reducing risk behavior, future research might determine what kinds of affirmation tasks improve the efficacy of the motivational interview. In addition, future studies should also attempt to identify the importance that type of self-affirmation (i.e. values vs. self-efficacy, general vs. behavior specific) may play in facilitating attitude/behavior change. Future research might also test the utility of affirmations at key points in the motivational interview. For instance, Amrhein, Miller, Yahne, Palmer and Fulcher (2003) noted a substantial increase in expressions of commitment to the status quo (dependent drug use) of some clients (those unlikely to make adaptive behavior changes) during the feedback portion of the interview. For most of these clients, the feedback included substantial negative information related to their drug use histories and associated consequences. It is possible that an affirmation task delivered prior to the feedback might reduce resistance in some clients. Finally, it remains to be determined how affirmations relate to type of message threat. To date, most self-affirmation studies have focused on providing individuals with general health risk information (e.g. providing the negative consequences associated with risky sexual behavior in general) rather than personalized feedback (e.g. "You engage in behaviors X, Y, and Z, which places you at high risk for contracting HIV/AIDS"). Because MI stresses personalized feedback, understanding the impact a self-affirmation task has on personal feedback seems particularly important.

Message framing

Message framing refers to the way in which messages are structured to communicate. For instance, a *positively* (or *gain*) framed message about smoking would emphasize the beneficial aspects of quitting (e.g. improved health, whiter teeth, better breath), whereas a *negatively* (or *loss*) framed message would emphasize the harmful aspects of continuing to smoke (e.g. increased chances of health problems and death, monetary expenses, yellow teeth, bad breath). Research suggests that individual preferences, attitudes, and behaviors are influenced

differently by gain- and loss-framed messages (Tversky and Kahneman, 1981; Wilson, Purdon and Wallston, 1988).

Message framing is based on the theoretical underpinnings of prospect theory (Kahneman and Tversky, 1979; Tversky and Kahneman, 1981), which holds that the way in which information is presented can have differential effects on behavior change. Specifically, individuals are deemed "risk-seeking" when contemplating loss-framed messages, and "risk-averse" when contemplating gain-framed information. In general, individuals appear more likely to gamble on a riskier alternative when faced with loss-framed messages (choose an option perceived to have some probability of success over one with certain loss), but to respond more conservatively to gain-framed messages (choose an option perceived to have certain advantage over one with potential loss), even when the two options are objectively similar (Rothman and Salovey, 1997).

Past proponents of message framing operated under the assumption that negatively framed information was generally more effective in influencing decisions to perform behaviors to reduce risk (Meyerowitz and Chaiken, 1987). This assumption was consistent with the original health belief model, which tended to emphasize perceived susceptibility to and severity of disease as predominantly motivating health behavior (Rosenstock, 1974). The belief may have also prevailed due to the similarities between negatively framed messages and the traditional fear appeals to promoting behavior change (Rothman, Martino, Bedell, Detweiler and Salovey, 1999). A recent review of the literature, however, suggests that depending on how the riskiness of the behavior in question is perceived, both positively and negatively framed messages can influence the decision-making and behavior change process (Rothman et al., 1999; Rothman and Salovey, 1997). If the behavior in question is perceived as risky (e.g. illness detection procedures, such as breast self-examinations), then loss-framed messages may be most effective. Conversely, if the behavior in question is perceived as non-risky (e.g. preventive behaviors, such as increasing physical activity), then gain-framed messages may be more effective (Rothman and Salovey, 1997).

A number of studies have found that positively framed health messages are more effective for influencing prevention behaviors, whereas negatively framed health messages are more effective for influencing detection behaviors. For example, studies have indicated that positively framed messages effectively promote preventative health behaviors, such as requesting a free sample of sunscreen (Detweiler, Bedell, Salovey, Pronin and Rothman, 1999; Rothman, Salovey, Antone, Keough and Martin, 1993) and using infant car seats (Christophersen and Gyulay, 1981). Conversely, Meyerowitz and Chaiken (1987) found that women who received a negatively framed pamphlet that promoted breast self-examination to detect suspicious lumps were more likely to engage in self-examinations than women who received a positively framed pamphlet. Subsequent studies have similarly revealed that negatively framed messages effectively promote health detection behaviors for skin cancer examination (Block and Keller, 1995), mammography (Banks et al., 1995), HIV testing (Kalichman and Coley, 1995), blood-cholesterol screening (Maheswaran and Meyers-Levy, 1990), and amniocentesis (Marteau, 1989).

Recently, researchers have suggested that loss-framed health messages should also be utilized when individuals are uncertain of behavioral norms (Stuart and Blanton, 2003; Blanton, Stuart and VandenEijnden, 2001). They contend that positive frames, which praise people for engaging in healthy behavior, may imply that few people actually perform the behavior in question. When individuals perceive the healthy behavior as uncommon, they may feel little

normative pressure to engage in the behavior (Anderson and Milgram, 1997; Carter and Kahnweiler, 2000; Haines, 1996; Keeling, 2000; VandenEijnden, Buunk, Bakker and Siero, 1998). However, loss-framed messages that imply that most other people perform the behavior in question may work to increase normative pressure to engage in the healthy behavior (Stuart and Blanton, 2003). When using MI to enhance motivation for prevention behaviors, these findings suggest that one emphasize, or elicit from the client, potential gains or benefits of the preferred behavior (e.g. abstinence from smoking), while also emphasizing that many, or even most, people engage in the preventive behavioral option (e.g. most people do not smoke).

In sum, message framing consists of wording a health message as potentially leading to gains or losses for individuals. A number of studies suggest that positive frames have a greater impact on prevention behaviors while negative frames are more influential on detection behaviors. Because the majority of message framing studies have examined non-substance use behavior, future research needs to apply message framing research to addictive behaviors to better understand the impacts of message framing upon these behaviors.

The MI approach may benefit from incorporating lessons from the message framing literature. Most MI applications are focused upon preventive behavior change, either reducing the frequency of a risky behavior or increasing health behaviors. Because these behaviors appear to be more responsive to positively-framed messages, MI practitioners should consider framing their own messages positively when offering information about behavior change or, ideally, eliciting positively framed change talk from clients. For example, instead of asking, "What kinds of problems or risks would you avoid by reducing your drinking?" a better question might be, "What kinds of benefits can you imagine you might receive if you reduced your drinking?" Likewise, MI applications involving assessment and feedback may choose to craft aspects of the assessment to elicit potential gains or benefits of behavior change from the client to provide an opportunity to discuss personally relevant perceived gains during feedback.

Individual difference variables may impact the relative efficacy of gain- or loss-framed messages. Although untested in the existing literature, the relative efficacy of positively or negatively framed messages may be influenced by the readiness to change of the recipient. Individuals who are addicted to substances in the precontemplation stage of change typically move to the contemplation stage after considering the negative aspects of continued use and those in the contemplation stage may be moved to action by consideration of the positive aspects of potential change (DiClemente, 2003). Future research should investigate the relative efficacy of positively and negatively framed messages for moving individuals along the stages of change, rather than simply evaluating behavior change alone. Further, some recent evidence suggests that individual differences in approach/avoidance orientation may interact with message framing, with avoidance-oriented individuals responding to loss-framed messages and approach-oriented individuals responding to gain-framed messages (Mann, Sherman and Updegraff, 2004). These hypotheses and the clinical applications need to be further tested to maximize the efficacy of ideally framed health messages.

Cognitive-affective ambivalence

Ambivalence is a central assumption of Miller and Rollnick's (2002) description of the behavior change process. Indeed, they describe ambivalence as "a common human experience and a stage in the normal process of change" (Miller and Rollnick, 2002, p. 19) and include the resolution of ambivalence as a critical task in the definition of MI. In describing the dilemma,

they use the analogy of a balancing of pros and cons, and recommend decisional balance exercises as a way to examine the various factors impacting upon an individual's decision about behavior change.

One way to conceptualize ambivalence is as a conflict between cognitive elements (i.e. the pros and cons of a behavior), as implied by a decisional balance exercise. In addition, social psychologists have suggested that ambivalence can also be characterized as a conflict between affective elements (how one *feels* about the behavior) as well as cognitive elements (what one *thinks* about the behavior) (Trafimow and Sheeran, 1998). The interplay between these cognitive and affective dimensions suggests some considerations when using MI as an approach to resolving ambivalence.

Cognitive and affective beliefs that contribute to attitude formation are relatively independent of each other (Crites, Fabrigar and Petty, 1994). For example, items asking an individual to rate a behavior as *wise* or *unwise*, an example of a cognitive belief, or *pleasant* or *unpleasant*, an example of an affective belief, would likely display only modest correlations. Factor analyses of the cognitive and affective beliefs about a behavior show two relatively distinct scales (Trafimow and Sheeran, 1998; Boczar, Babitzke and Leffingwell, 2003). Therefore, cognitive and affective beliefs about a target behavior may be consistent with one another, but they may also be inconsistent, creating a state of cognitive-affective ambivalence (Trafimow and Sheeran, 1998).

Perhaps more interesting are the effects of cognitive and affective beliefs upon attitude, behavioral intentions, and ultimate action. Research in a variety of domains suggests that when cognitive and affective beliefs are in conflict, intent to act is more strongly related to affective beliefs. In a review of four national surveys of voting behavior, Levine and colleagues (1998) found that when cognitive and affective beliefs were in conflict, overall attitudes were more strongly determined by the affective beliefs. For example, if an individual *felt* positively about the candidate but *thought* the candidate lacked positive leadership traits, the individual would still be likely to hold a positive overall evaluation of the candidate and would be likely to vote for that person despite their acknowledged flaws. This idea is further elaborated in the advertising persuasion literature, where the affect, reason, involvement (ARI) model predicts that affect and reason both influence attitudes and product preferences (see Chaudhuri and Buck, 1995). Interestingly, the ARI model predicts that rational thought sometimes, but not always, has some influence on behavior, but affect *always* influences behavioral choice.

Similar findings emerge in other domains. In a study of attitudes and intentions regarding condom use, De Wit, Victoir and Van den Bergh (1997) found that affective beliefs, compared to cognitive beliefs, more strongly predicted overall attitudes and behavioral intentions. Despite a clear understanding of the effectiveness of condoms (cognitive beliefs), many participants exhibited negative affect (e.g. condom use is invasive, use conveys a message of mistrust toward partner) toward using them, and this strongly influenced attitude and behavior. Similarly, in a study of food choice, Gavin (1998) found that health food choices were more strongly associated with food preference (an affective belief) than knowledge about the wisdom of eating healthier foods (cognitive beliefs).

Addictive and other high-risk health behaviors may be particularly prone to this type of cognitive-affective ambivalence – "I know it's not smart for me to use drug X, but I enjoy it so much (or I can't stand the way I feel without it)". In the first edition of the MI book, Miller and Rollnick (1991) described individuals' relationships with their drug of dependence as being similar to a "fatal attraction" love affair. These types of attractions may be well

explained by this cognitive-affective ambivalence. One *knows* that the problematic behavior is unwise, unsafe, or irrational, yet at the same time it *feels* rewarding, satisfying, and enjoyable. Trafimow and Sheeran (1998) examined this ambivalence in smokers dependent upon nicotine, and discovered that cognitive and affective beliefs about smoking were, indeed, frequently in conflict. Consistent with findings from other domains, they also found that affective beliefs were again more strongly related to overall attitudes and intentions to continue smoking than cognitive beliefs.

These distinctions may bear significant implications upon the practice of MI. First, not all change talk may be equally supportive of behavior change. The interviewer should pay special attention to the cognitive/affective content of both change talk and resistance and attempt to elicit and amplify affective beliefs favoring behavior change. Likewise, the interviewer should not be satisfied with only cognitive beliefs supporting change, since affective beliefs appear to be better predictors of future behavior. The interviewer might also use targeted questions and reflections to emphasize the affective drawbacks of the current behavior and benefits of change. For instance, in exploring a decisional balance scale, the interviewer might ask the client, "What benefits would you see of quitting drinking?" to capture cognitive beliefs, as well as, "How would you feel differently?" to capture affective beliefs. Further, the MI practitioner may want to pay special attention to opportunities to reflect and amplify affective arguments for change from the client, even if those affective elements are unspoken, yet implicit. Finally, in assessment-feedback MI applications, interviewers may consider using a cognitive-affective belief measure and include the results in the feedback for discussion. Cognitive-affect belief measures are relatively easy to construct using semantic differentials of cognitive and affective adjective pairs. Examples are available in the literature to base the development of scales specific to any behavioral target of interest (e.g. Trafimow and Sheeran, 1998).

Conclusions

MI is an evidence-based approach for promoting behavior change. Although the evidence suggests that MI is generally more effective than confrontational or other direct persuasion approaches, there is still room for improvement (Dunn et al., 2001; Burke et al., 2002). This paper has discussed the relevance of social psychology findings upon MI by highlighting three relevant processes that influence responses to health messages. Specific recommendations for enhancing the practice of MI are summarized in Table 1.

Although grounded in evidence, the recommendations included in this paper are, of course, speculative at this point. Future research should continue to investigate MI as currently practiced, but researchers and clinicians must also continue to investigate potential improvements to the approach. Future process-based research of MI may also help determine whether predictions from the social psychology literature are in evidence in MI applications. For example, Amrein et al. (2003) recently reported that statements reflecting desire, ability, reasons, or need to change were predictive of commitment language during the interview. These commitment statements, in turn, predicted behavior change. Similar research focused upon utterances of cognitive or affective beliefs, or positively- or negatively-framed arguments for change might be tested as predictors of commitment language and behavior change. These findings could potentially be of great benefit in enhancing the future practice of MI.

Table 1. Summary of recommendations for potential enhancements to MI derived from relevant social psychology processes

Process	Recommendations
Defensive bias and self-affirmation	• Encourage client to discuss personal values or strengths prior to discussing behavior change. • Incorporate self-affirmation task into the assessment-feedback package, and include self-enhancing information or exercises prior to more threatening aspects of feedback.
Message framing	• Emphasize potential gains or benefits for preventive behavior changes. • Elicit gain-framed messages from client.
Cognitive-affective ambivalence	• Do not be satisfied with only cognitive-based change talk, especially if affectively-based beliefs are offered in defense of status quo. • Use specific open-ended questions to elicit affectively-based arguments for behavior change. • Incorporate cognitive-affective ambivalence measures into assessment and feedback.

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