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Abstract

People are inherently driven by the need to form and maintain relationships, and these affiliation goals can influence health behaviors in two ways: (a) indirectly, by increasing a person's attention to others and subsequently leaving them more likely to emulate the health behaviors of others (social contagion); (b) directly, by leading people to be more likely to engage in health behaviors they perceive as helping them to form and maintain relationships with others (self-initiated behavioral engagement). In this review, we discuss the evidence for the catalyzing role of affiliation goals in these two processes for a variety of positive (e.g., exercising, smoking-cessation) and detrimental health behaviors (e.g., binge drinking and eating, needle sharing). Additionally, we discuss individual difference factors that may temporarily or chronically activate affiliation goals and ultimately impact health behaviors. Affiliation goals hold many implications for future work, and for improving interventions.

Keywords

social influence; health behavior; affiliation goals; social contagion

Why does a person drink, smoke, or start a new diet? What motivates a person to start a new exercise routine, and why do people continue to drink, smoke, or exercise once they start? Most contemporary health theories and intervention efforts that address these questions focus squarely on intrapersonal factors, such as an individual's cognitions, attitudes, affect, and motivations (e.g., theory of planned behavior [Ajzen, 1985], prototype/willingness model [Gibbons & Gerrard, 1997], tension reduction model [Higgins, 1976]). However, people seldom engage in health behaviors in a vacuum; rather, a growing body of research suggests that people start, maintain, and quit these and other health behaviors within a broader context of close relationships with family, friends, spouses/romantic partners, neighbors, co-workers, and acquaintances (Christakis & Fowler, 2007; 2008; Rosenquist, Murabito, Fowler, & Christakis, 2010). A better understanding of people's interpersonal motives and beliefs may help to further understand why and under what conditions people engage in a particular health behavior (Leary, Tchividjian, & Kraxberger, 1994).

Interpersonal Motives

While some intrapersonal models of health behavior do include social cognitions as playing a causal role in behavior (e.g., subjective norms, prototypical behavior of group members), little attention has been paid to how the desire to affiliate with others may affect health behavior. Humans are inherently driven by the need to form and maintain close relationships (Baumeister & Leary, 1995; McClelland, 1985; Stevens & Fiske, 1995). Thus people are motivated to initiate behaviors that lead to positive social exchanges with others and minimize negative social exchanges. This basic social drive need not be conscious to direct interpersonal behavior and attention (Lakin & Chartrand, 2003; Woike & Bender, 2009), and may have adaptive underpinnings (Stevens & Fiske, 1995). For example, being a member of a group was valuable for ancestral hominid survival (e.g., protection, resource and cost-sharing in acquiring food and shelter). Therefore, survival would rest on being able to form and maintain strong bonds with others in the group, and avoid frictions and disharmonies that may jeopardize collegial relations and cooperative and coordinated behaviors for mutual benefit. Satisfaction of our basic affiliation needs requires positive social interactions with a minimal set of other people, and may include a sense of reciprocal feelings of care about the other person (Baumeister & Leary, 1995). When these conditions are satisfied, we experience positive emotions and feelings of contentment, and when they are not, we experience negative emotions and lethargy (Baumeister & Leary, 1995; Baumeister, Twenge, & Nuss, 2002; Blackhart, Eckel, & Tice, 2007).

When affiliation goals are frustrated or left unfulfilled, a variety of negative physical and emotional health consequences may follow (Hawkley & Cacioppo, 2010; Newsom, Mahan, Rook & Krause, 2008). For instance, failure to fulfill affiliation goals can lead to chronic loneliness (Newsom et al., 2008), strong feelings of homesickness (Watt & Badger, 2009), and increases in suicidal ideation (Van Orden et al., 2008). Frustrated affiliation goals have also been linked to higher levels of stress hormones and poorer cardiovascular health (Caspi, Harrington, Moffitt, Milne, & Poulton, 2006; Hawkley, Burleson, Berntson, & Cacioppo, 2003). The generally aversive states and outcomes that occur when affiliation goals are thwarted further suggests the evolved utility of affiliation needs, and these negative experiences serve as powerful proximal motivators for people to seek the company of others and to behave in a manner that facilitates rapport building (Baumeister & Leary, 1995; Lakin & Chartrand, 2003), which in turn promotes the more adaptive functions of social cohesion and coordination within dyads and groups (Lakin, Jefferis, Cheng, & Chartrand, 2003; Stevens & Fiske, 1995).

Affiliation Goals and Health Behaviors

While thwarted affiliation goals may directly affect well-being via stress and adverse physiological states, affiliation goals also affect people's health behaviors for better or worse in two important ways: social contagion and self-initiated health behavior engagement. First, social contagion entails people emulating the health behaviors of others with whom they wish to form or maintain positive relations. This is an indirect way in which affiliation goals influence health behaviors because such goals make people more receptive to the behavior of others, which subsequently influences their own behavior. Second, self-initiated health behavior engagement occurs when affiliation goals encourage people to partake in a particular health behavior (e.g., exercising, smoking) when such behaviors help—or are perceived as helping—to establish and maintain rapport with others. Affiliation goals are especially likely to influence health behaviors when such goals are threatened, whether temporarily (e.g., feeling rejected by an acquaintance; breaking up with a romantic partner) or chronically (e.g., socially anxious, or rejection sensitive people). Below, we discuss how affiliation goals contribute to the diffusion of health behaviors that are both positive and

detrimental to our health, across individuals as well as broader social networks. We also discuss evidence, when available for health behaviors, regarding temporary and chronic instances in which affiliation goals are threatened or satisfied.

Affiliation Goals and Social Contagion

A highly effective means of evoking interpersonal warmth and liking from others—the kind of responses from others that satisfy our affiliation goals—is to emulate the behaviors of those with whom we interact (Cheng & Chartrand, 2003). Whether we are aware of our behavioral mimicry or not, emulating the behavior of another person helps build rapport and mutual liking, and promotes a shared sense of identity between two people (Ashton-James, Van Baaren, Chartrand, Decety, & Karremans, 2007). Affiliation goals can automatically orient our attention toward others, and thus expose us to their behavioral patterns and mannerisms, and this in turn can lead us to reflexively respond in kind (Lakin et al., 2003). This behavioral mimicry process is especially strong when our affiliation goals are threatened (e.g., after being recently rejected by someone), which leads us to be especially likely to attend to and emulate the behaviors of a subsequent person with whom we interact (Lakin & Chartrand, 2003). Put simply, emulating the behavior of another person helps satisfy our affiliation goals, and we need not be aware of this effect on our own behavior in order in order to benefit from it.

Modeling experiments in both laboratory and natural settings show that we are likely to mimic the health behavior of another person, such as sipping an alcoholic drink or eating food, when he or she is a friend or behaves in an inviting and warm manner toward us; and we are unlikely to mimic such health behaviors when the person is an indifferent stranger, or behaves in a cold and disengaged manner toward us (Collins, Parks, & Marlatt, 1985; Koh & Pliner, 2009; Reid, 1978). These findings suggest that affiliation goals play an important role in the transmission of health behaviors between people, by increasing attention toward another person and leaving us more likely to perceive their behavior patterns and to respond in kind, whether this emulation occurs reflexively or consciously (Lakin & Chartrand, 2003).

Beyond experimental data, health behaviors spread across close ties, as close friends reciprocally influence one another's drinking and smoking (Andrews, Tidesley, Hops, & Li, 2002; Popp, Laursen, Kerr, Stattin, & Burk, 2008), and spouses reciprocally influence each other's various health behaviors (Homish & Leonard, 2008b). For instance, after marriage, spouses grow increasingly similar to one another on a variety of negative health behaviors, such as frequency and quantity of alcohol consumption and the frequency of binge drinking, with each spouse's premarital drinking behaviors predicting change in their partners drinking behavior (Leonard & Homish, 2008), and number of drinking buddies over time (Homish & Leonard, 2008a). These influences in turn lead to increasing similarity between spouses in the negative and risky consequences of heavy alcohol use (e.g., hangovers, sleeping problems, drunk driving). Spouses also influence each other over time on other potentially negative health behaviors, becoming increasingly similar to one another in their use of marijuana (Homish, Leonard, & Cornelius, 2007), cigarette smoking (Homish & Leonard, 2005), and rate of excessive eating (Homish & Leonard, 2008b). For example, if one spouse smokes cigarettes before marriage and the other does not, the non-smoking spouse is more likely to take up smoking in subsequent years after marriage (Homish & Leonard, 2005). Spouses also influence each other after marriage on positive health behaviors, such as exercising regularly, eating healthy (e.g., high fiber diet, lots of fruits and vegetables, etc.), and having regular physical examinations (Homish & Leonard, 2008b).

Furthermore, increasing similarity between spouses in their health behaviors after marriage is associated with higher levels of marital satisfaction, suggesting that the emulation of each

other's health behaviors helps to more fully satisfy each partner's affiliation needs (Homish, Leonard, Kozlowski, & Cornelius, 2009). For example, if one spouse smokes cigarettes or engages in regular binge drinking before marriage, and the other spouse begins to smoke and binge drink after marriage, each partner will feel that the relationship is more fulfilling over time, and partners in these couples are happier than couples in which one partner did not emulate the health behaviors of his/her spouse over time. Further, the more discrepant the spouses are in their health behaviors after years of marriage, the more dissatisfied they are in their relationship (Homish et al., 2009). This pattern of results is consistent with the notion that affiliation goals facilitate the social contagion of health behaviors across people via their close relationships.

The social contagion of health behaviors does not stop at the dyad, but can continue to diffuse more broadly across cliques and large populations via an intricate web of social ties. When the people we routinely socialize with engage in a particular health behavior (e.g., over-eating), this creates an opportunity for these behaviors to transmit from person to person (Rodgers, 2007), and even spread across a vast network of people via their direct social ties with people to whom they feel close (Christakis & Fowler, 2007; 2008; Rosenquist, Murabito, Fowler, & Christakis, 2010). For instance, in college communities of on-campus residents, drinking, smoking, diet, and exercise behaviors increasingly cluster over time among densely interconnected friendship and discussion networks (Cullum & Harton, 2007; 2011), resulting in the emergence of distinct local/geographical norms for engaging in these behaviors within residence halls. Similarly, distinct binge eating behaviors emerge among cliques of sorority members in college samples (Crandall, 1988). Similar patterns of norms have emerged for other risky behaviors as well (e.g., injection drug needle sharing) among friends in such disparate cultures as Philadelphia (U.S.) and Chiang Mai (Thailand; Latkin et al., 2009). The extent to which these health behaviors develop into local norms among cliques is constrained by how closely these behaviors are yoked to the act of affiliation. For instance, Cullum and Harton (2011) found that at the start of the school year, drinking occurred relatively more often in socializing settings (at parties, clubs, or bars) than smoking. Although both health behaviors showed equally strong norms within cliques at the start of the school year, and local norms for both health behaviors grew stronger over time, this process was far more pronounced for drinking. Similarly, needle sharing among intravenous drug users (IDUs) is often viewed as an act that helps cement close bonds between users and this behavior emerges as a strong norm among IDU cliques, but other risky sharing behaviors that are not as closely linked to the affiliation process, such as sharing drug cooking and filtration tools, do not develop into strong norms within cliques (Neaigus et al., 1994; Valente & Vlahov, 2001).

Large population health studies that have tracked health behaviors and asked participants to nominate familial, friendship, neighbor, and co-worker relationships over decades, also show strong evidence for the diffusion of health behaviors along close social ties. For instance, negative health behaviors such as over-eating (Christakis & Fowler, 2007) and binge drinking (Rosenquist et al., 2010) spread across thousands of people over time via close social ties, such that the health habits of a friend, of a friends' friend, and even of a friends', friends', friend, can influence a person's own health behaviors, even if we never meet our friends' friend, or his/her friends' friend. This diffusion is not limited to negative health behaviors alone; similar results occur over time for quitting smoking (Christakis & Fowler, 2008), and for abstaining from alcohol (Rosenquist et al., 2010). Thus, both positive and detrimental health behaviors transmit broadly across populations over time via close social ties. Interestingly, the direction of social contagion across relationships for all of these health behaviors consistently starts with the person nominated as a social tie, and spreads to the person who made the nomination. This consistent pattern of results suggests that our

attention toward others with whom we wish to affiliate and maintain close ties increases our likelihood of being influenced by them, and ultimately of emulating their health behaviors.

Affiliation Goals and Self-Initiated Health Behavior Engagement

Individuals are more likely to engage in a particular behavior when they believe that it may be conducive to establishing or preserving rapport with others. For example, when people believe that a particular health behavior will help them portray an image that others find desirable, they will be more likely to view that behavior as positive and use the behavior to gain more favorable evaluations from others (Martin & Leary, 2001; Norman & Tedeschi, 1989; O'Grady, in press). Therefore, creating a desirable image through engaging in health behaviors may help increase the likelihood of forming and maintaining relationships. Once again, people need not be aware of their affiliation goals, or their beliefs about what behaviors may facilitate their fulfillment, for these affiliation goals to influence their behavior (Lakin & Chartrand, 2003). For instance, when people have expectations that consuming alcohol will facilitate forming or maintaining social bonds, they show unconscious physiological responses consistent with appetitive or approach drives in response to images of alcohol, which suggests an automated readiness to engage in drinking when alcohol is present; such appetitive physiological responses are not present in people who do not have affiliation-enhancing expectations regarding alcohol (Drobes, Carter, & Goldman, 2009). Similarly, people with affiliation-enhancing alcohol expectancies that come to mind more quickly (i.e., are highly accessible thoughts), report drinking greater quantities of alcohol (Read, Wood, Lejuez, Palfai, & Slack, 2004). People who endorse higher levels of affiliation-enhancing alcohol expectancies also accumulate more drinking friends and/or acquaintances over the years (Homish & Leonard, 2008a), and report consuming greater amounts of alcohol per drinking occasion (Read et al., 2004). Affiliation-enhancing expectancies may also be specific to maintaining close relationships. For instance, Derrick et al. (2010) examined partner specific alcohol expectancies in married couples, and found that the spouses in couples in which both partners drank heavily had stronger beliefs that alcohol would promote intimacy and bring them closer together, compared to couples in which only one partner drank, or when neither partner drank.

Similar to affiliation-enhancing expectancies, some researchers have developed scales for measuring social motives for engaging in a particular health behavior (Cooper, 1994; Gere & MacDonald, 2010). Such goals are motivated by attachment or communal needs, such as gaining or maintaining approval from others. These social motives may be either approach oriented, and focus one's efforts to acquire positive relational outcomes, or avoidance oriented, and focus one's efforts to avoid negative relationship outcomes. For example, having approach social motives leads to self-initiated behavior engagement in order to facilitate positive interactions with others and build rapport. Avoidance social motives, on the other hand, lead to self-initiated behavior engagement in order to circumvent the dissolution of relationships by reducing or preventing negative experiences with others, and evade social ostracism. As such, these social motives for engaging in health behaviors are derived from more basic affiliation needs.

Social motives are directly related to drinking and sexual behavior. For example, approach social drinking motives are the most strongly endorsed reason for drinking alcohol (Cooper, 1994). Approach social drinking motives are routinely positively correlated with drinking quantity and frequency at a moderate to high degree, whereas avoidance social drinking motives are more modestly positively related to alcohol use or slightly negatively related (e.g., Kuntsche, Knibbe, Gmel, & Engels, 2006). Social drinking motives may also contribute to drinking related problems that introduce further risks to health and well-being, such as getting into fights, having unprotected sex, self-injury, and drunk driving (Wechsler & Nelson, 2001). For instance, approach social drinking motives positively predict drinking

related problems, over and above other purely intrapersonal beliefs (e.g., alcohol reduces stress and anxiety; Bradley, Carman, & Petree, 1992; Cronin, 1997). Regarding sexual behavior, gaining intimacy has been cited as a primary reason for having sex among both college students and community adults (Cooper, Shapiro, & Powers, 1998). Strong approach social motives protect against sexual risk behaviors and their potentially negative consequences, but this effect depends on relationship status. Among individuals in a stable relationship, having sex to form intimacy is related to seeking a single sexual partner, maintaining relationships over time, and less of an increase over time in the frequency of intercourse and risky practices. However, among individuals motivated to have sex as a way to create intimacy and who are not in a stable relationship, birth control, condom use, and abstaining from sex are undermined (e.g., Cooper et al, 1998; Patrick & Lee, 2010)

Affiliation goals can also influence an individual's susceptibility to social influences on engaging in a health behavior. Perceived norms among peers and direct offers from peers are major reasons why people drink, smoke or use drugs (Cullum, Armeli, & Tennen, 2010; Prentice & Miller, 1993; Graham, Marks, & Hansen, 1991). Perceptions of peers' permissiveness and norms regarding sharing used needles are also strong predictors of injection drug users' offering to share a needle with others (Davey-Rothwell, Latkin, & Tobin, 2010; Tobin, Davey-Rothwell, & Latkin, 2010). Similarly, people with strong approach social drinking motives are more influenced by the drinking norms of their peers (Lee, Geisner, Lewis, Neighbors, & Laramier, 2007) and comply more often with offered drinks than people with weaker approach social drinking motives (Cullum, O'Grady, Armeli, & Tennen, 2010). Related to sexual behavior, Cooper et al. (1998) noted that having sex to please one's partner appears to be an important dynamic underlying sexual risk taking, but understanding the partner's preferences regarding using condoms is necessary to determine whether condoms are used, suggesting that one's sexual health can be affected by how affiliation goals interact with the preferences of an important relationship partner.

Temporary and Chronic Factors in the Activation of Affiliation Goals and their Link to Health Behaviors

When threatened, affiliation goals are likely to be activated, and in turn, catalyze social contagion and self-initiated health behavior engagement. Conversely, these two processes are less likely to influence health behaviors when affiliation goals are fulfilled. Activation of these goals can either be temporary or chronic via individual difference factors that relate directly to a person's sensitivity to affiliation goals, and/or the extent to which such goals are threatened or satisfied (e.g., high social anxiety). People with heightened interpersonal sensitivities are more likely to look for signs of potential rejection and have increased perceptions of potential rejection cues from others (Gere & MacDonald, 2010). Such individual differences lead to a hyper-vigilance to cues in social situations, and therefore may affect how likely a person is to attend to others' health behaviors. Currently, research is limited in this area. We review the research that is available and then offer suggestions for future directions.

Low levels of social support can temporarily activate affiliation goals and influence health behavior. For example, college freshmen who reported being embedded in a network of family and friends who provide them with a high degree of social support and interpersonal warmth, were not influenced by the drinking norms of their college peers, whereas freshmen with low levels of support and warmth were influenced by these drinking norms (Sandoval, Cullum, O'Grady, & Tennen, 2010). In addition, low self-esteem may signal that affiliation goals are not being met (Leary, Tambor, Terdal, & Downs, 1995); therefore, greater attention to others' behavior may be necessary in order to repair or re-establish rapport. Although the evidence linking low self-esteem and health behaviors such as alcohol use, smoking, sexual activity and eating disorders is mixed or weak (e.g., Baumeister, Campbell,

Krueger, & Vohs, 2003), there is evidence that low self-esteem individuals use health behaviors in an attempt to meet affiliation goals. For example, Dehart, Tennen, Armeli, Todd, and Mohr (2009) found that people with low implicit self-esteem drank more on days during which they experienced negative interpersonal interactions. This occurred because participants sought interpersonal connections with others in situations where drinking occurred, suggesting that periods of low self-esteem may have increased the susceptibility to social influences.

More stable individual difference factors have also been found to activate affiliation goals and subsequently influence health behaviors. For example, people with high social anxiety fear negative evaluation from others which increases their susceptibility to the social contagion of health behaviors. Neighbors et al. (2007) and LaBrie, Hummer and Neighbors (2008), for example, found the relationship between perceived norms and drinking was stronger among students who were higher in social anxiety. Social anxiety can also increase self-initiated health behaviors in order to fulfill affiliation goals. For instance, Ham (2009) found that the links between social anxiety and heavy drinking and alcohol related problems are mediated by affiliation-enhancing alcohol expectancies; all other intrapersonal alcohol expectancies (e.g., tension-reduction), failed to mediate these relationships.

Gender is another stable individual difference factor that can lead to variation in the relationship between affiliation goals and health behavior. Women tend to have a highly relational self-construal (e.g., they are likely to define themselves in terms of their relationships with others; Cross & Madson, 1997), and therefore may have more active affiliation goals than do men. Evidence supporting this hypothesis can be found in the alcohol literature in the finding that women have more accessible and stronger affiliation-enhancing alcohol expectancies (Read et al., 2004). Further, a married woman is more influenced by her husband's drinking than vice versa, at least during the first year of marriage, and she is more likely to endorse relationship-specific intimacy expectancies if her husband is a heavy drinker, than vice versa (Derrick et al., 2010; Leonard & Mudar, 2003). Women also endorse intimacy motives more strongly than men as reasons for engaging in risky sexual behavior (Cooper et al., 1998), and are more likely to have sex after drinking when they possess strong affiliation-enhancing alcohol expectancies (Corbin, Bernat, Calhoun, McNair, & Seals, 2001).

Future Research Directions

As reviewed above, there is limited research examining how temporary and/or enduring individual difference factors that satisfy or threaten affiliation goals subsequently affect health behavior via either social contagion or self-initiated health engagement. Future research in the examination of these processes should continue to include the individual differences we discussed above. There are several other important factors that, to our knowledge, have yet to be included in the study of social contagion and self-initiated health engagement. For example, one temporary factor that may be important is relationship status: Individuals in a satisfying romantic relationship may be less susceptible to social contagion or less likely to engage in self-initiated health behavior because their affiliation goals are more satisfied than those not in a relationship.

Two potentially important stable individual differences related to affiliation goals are rejection sensitivity and attachment style, both of which could increase hyper-vigilance to others during social encounters, thus increasing the likelihood of social contagion or self-initiated health-engagement. For example, both rejection sensitivity and insecure attachment have been linked to failure to use condoms, eating disorder symptoms, and substance use (Edwards & Barber, 2010; Maunder & Hunter, 2001; Park, 2007; Selby, Ward, & Joiner,

2010). Although this link has typically been explained as people attempting to manage negative emotions through negative health behavior, similar to the other interpersonal sensitivities discussed here, we suspect that vigilance to social cues may lead to health behaviors as an attempt to satisfy affiliation goals. Future research should examine this possibility.

We also have several suggestions for research methods that could enhance future investigations of the role of affiliation goals in health behavior. For example, because much of the research reviewed here is correlational, future work might benefit from including experimental manipulation of affiliation goals to examine their role in catalyzing the social contagion of health behaviors and in the self-engagement of health behaviors perceived as instrumental to building and maintaining rapport. Another method that is underutilized, but that can help to delineate these processes is daily diary methods (Tennen, Affleck, Armeli, & Carney, 2000). For example, investigators might examine how situation to situation differences in social support and/or rejection, correspond to adherence to health behavior norms within those situations (e.g., heavy or light drinking settings), and could further determine whether these associations are stronger for people with enduring sensitivities to affiliation goals.

Finally, interventions designed to promote positive health behaviors can be strengthened by appealing to people's affiliation needs. For instance, weight loss and exercise programs are more effective and the behaviors are maintained at higher rates and for longer periods of time when they help satisfy people's affiliation goals (Wing & Jeffery, 1999). When people trying to lose weight receive empathetic social support and/or when they are allowed to initiate these programs with a close friend, they have better success and stick with the program longer than when more standard—and individualized—behavioral interventions are employed. Likewise, recovering alcoholics and narcotics users also have better outcomes and are more successful in abstaining from alcohol when they participate in behavior change programs that help them establish empathetic and supportive friendships with others who support their efforts to quit or reduce their drinking or drug use (Davey-Rothwell, Kuramoto, & Latkin, 2008; Litt, Kadden, Kabela-Cormier, & Petry, 2007; 2009). These affiliation support-based interventions are more effective and have longer lasting benefits on health behaviors than traditional programs that focus solely on addressing an individual's health cognitions and behaviors (Litt et al., 2007; 2009).

Conclusion

Pursuing behaviors aimed at forming and maintaining relationships in attempts to fulfill affiliation goals have implications for health and well-being. As reviewed here, such goals can increase a variety of health behaviors, both positive and negative, through two mechanisms. First, people may emulate behavior of the others with whom they wish to affiliate, suggesting a social contagion effect. Second, people may engage in a certain health behavior because they believe that doing so will help them form or maintain relationships. We have also identified several important individual differences that may make affiliation goals more salient. It is clear that interpersonal factors are important in a variety of health behaviors, and should be included in health behavior models along with intrapersonal or cognitive factors.

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