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## The Buffering Effect of Hope on Clinicians' Behavior: A Test in Pediatric Primary Care

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### Abstract

Although trait hope is thought to motivate goal directed actions in the face of impediments, few studies have examined directly hope's role in overcoming obstacles, and none have done so while accounting for related goal constructs. We describe a study of 127 pediatric primary care providers who over the course of a year were asked to identify new cases of asthma and confirm previously diagnosed active disease by completing for each of their patients a brief survey validated for this purpose. These clinicians also completed measures of hope, self-efficacy, conscientiousness, and perceived obstacles to implementing a pediatric asthma management program. As predicted by hope theory, the agency component of hope buffered clinicians from perceived obstacles by facilitating the identification of asthma cases among high hope clinicians in the face of obstacles. This buffering effect remained after controlling for self-efficacy and conscientiousness. We discuss the study findings in terms of current theories of goal directed behavior and implications for delivering hope-related interventions, and we offer a testable hypothesis regarding when agency and pathways thinking facilitate goal-related behavior.

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Primary care clinicians now face a myriad of obstacles that threaten their ability to provide effective treatment, including less time to evaluate and treat each patient, decreased reimbursement for their work, incursions into their ability to make independent decisions, and potentially intrusive oversight into their practice patterns (Gillies, Zuckerman, Burns, Shortell, Alexander, Budetti, & Waters, 2001). Clinicians working in large group practices or hospitals may face the additional obstacles of delays in receiving patient-related information, organizational leadership that discourages initiative, and lack of clarity regarding practice expectations. In some settings, yet another challenge is providing care to patients whose primary language may not be English. These obstacles, individually or in combination, can undermine health care providers' motivation to achieve health related goals for their patients.

Goal related constructs, such as dispositional hope (Snyder, 2002), offer the opportunity to apply psychological theory to the prediction of primary care clinicians' goal related behavior within the patient care setting. Conversely, the obstacles inherent in primary care practice offer the opportunity to test the oft-stated hypothesis that individuals high in hope are better able than low hope individuals to overcome obstacles to reach their goals. We describe here a study that was designed to evaluate, within the context of a pediatric asthma management program, whether high hope clinicians engage in more goal related behavior, and whether, as theory predicts, high hope clinicians overcome obstacles more effectively than their less hopeful counterparts. We also examine whether the goal related behaviors associated with hope are retained when other goal-related person characteristics, such as self-efficacy and conscientiousness, are taken into account.

## Hope and Goal Striving

Hope theory (Snyder, 1998) is built upon the principle that a good deal of everyday behavior is goal directed. Unlike traditional definitions of hope that link it to faith, Snyder and colleagues developed a cognitive model of hope as a force behind goal directed behavior. In this model, hope has two components, *pathways* and *agency*. Pathways thinking involves the belief that one can generate several ways to achieve a valued goal. When barriers are encountered, high pathways individuals are able to apply new strategies to achieve their desired goal. Indeed, high hope people not only believe that they can generate new pathways to a goal, but they actually generate such pathways (Snyder, Harris, Anderson, Holleran, Irving, Sigmon, et al., 1991). If pathways thinking provides a 'way' to achieve a goal, *agency*, the second component of hope, provides the 'will' or motivation (Snyder et al., 1991; Snyder, 2002), by providing thoughts about one's ability to move ahead along a selected pathway. The precise role of agency and pathways thinking in overcoming obstacles has yet to be fully articulated. Whereas Snyder and colleagues postulated that agency and pathways work synergistically, and they espoused the use of the total Hope Scale score (Snyder, Harris, Anderson, Holleran, Irving et al., 1991), and indeed relied solely on the total Hope Scale score in some empirical work e.g., Feldman & Snyder (2005), Snyder (1994; 2002), they also asserted that agency is particularly relevant in situations in which a goal pursuit is blocked, i.e., when an individual encounters obstacles, because it provides the motivation needed to pursue a new goal pathway. On the other hand, Edwards, Rand, Lopez and Snyder (2002) underscored the importance of pathways thinking in these situations, and Snyder, Lehman, Kluck & Monsson (2006) hypothesized that for high hope people, obstacles signal the need for trying new pathways and/or more vigorous agency. Snyder, Ritschel, Rand, and Berg (2006) also demonstrated the conceptual value of distinguishing agency and pathways thinking. However, there are currently no clear conceptual guidelines for predicting the circumstances in which agency, pathways or both, i.e., total Hope Scale scores, should predict more or less effective goal-related activity.

Hope predicts subsequent academic achievement, as long as six years later, even after controlling for intelligence and college entrance exam scores (Snyder, Shorey, Cheavens, Pulvers, Adams, & Wiklund, 2002). Hope also predicts athletic performance (Snyder, Cheavens & Michael, 1999). A substantial literature demonstrates that hope is related to physical health. High hope individuals take more preventive actions, they adjust more effectively to illness when it occurs, and they show greater treatment adherence. When coping with the stress of a chronic illness, higher hope individuals are better able to construe benefits from their adversity (Tennen & Affleck, 1999). Benefit-finding, in turn, predicts subsequent health outcomes (e.g., Affleck, Tennen, Croog & Levine, 1987). Even when barriers to goal attainment are immutable, individuals higher in hope are better than their lower hope counterparts at finding fulfilling alternative goals (Snyder, Rand, & Sigmon, 2002). We are unaware of any study that has examined hope in relation to the goal related behavior of health care providers.

Echoing the conceptual complexity involved in predicting whether agency, pathways or total Hope Scale score is the most relevant predictor of goal-related behavior, the empirical literature has variously demonstrated that sometimes agency only, sometimes pathways only, and sometimes total Hope Scale score predicts goal related behavior and well being. For example, Bailey, Eng, Frisch, and Snyder (2007) found that agency, but not pathways, was related to life satisfaction. Snyder, Berg, Woodward, Gum, Rand, Wroblewski et al. (2005) relied on total Hope Scale scores to predict pain tolerance in a laboratory setting. Chang (2003) found distinct mediating pathways linking agency and pathways to psychological adjustment. Similarly, Arnau, Rosen, Finch, Rhudy, and Fortunato (2007) found distinct associations between agency and pathways and psychological adjustment. Specifically, the agency component of hope, but not pathways, predicted subsequent levels of depression and anxiety. Both Chang (2003) and Arnau et al. (2007) surmised that agency thinking may affect some psychological and behavioral outcomes but not others, and that the same may be true for pathways thinking. These investigators encouraged future studies to consider how agency and pathways predict goal-related behavior and psychological adjustment both uniquely and synergistically.

Although hope and/or one of its components has been shown to predict behavior and well-being across several life domains, a rather frequent criticism (e.g., Aspinwall & Leaf, 2002) is that hope is similar to several other goal related psychological constructs. Tennen and Affleck (2002) demonstrated that the hope-related psychological strengths that have been linked to academic performance, athletics, physical health, and psychological adjustment have also been found among optimistic individuals and people who maintain high self-efficacy expectations. Snyder and colleagues (Snyder, 2002; Snyder, Rand, & Sigmon, 2002) have explained the *conceptual* distinctions between hope and constructs such as optimism and self-efficacy. Yet relatively few studies (e.g., Affleck, Tennen, Zautra, Urrows, Abeles, & Karoly, 2001; Bryant & Cvigengros, 2004; Carvajal, Clair, Nash, & Evans, 1998; Magaletta, & Oliver, 1999) have evaluated empirically whether the psychological and behavioral benefits attributed to hope are retained after taking into account these related person characteristics. Tennen and Affleck (2002) and Rand and Cheavens (in press) have encouraged such studies. We now turn to two person characteristics reliably associated with the goal behaviors typically attributed to high hope: self-efficacy and conscientiousness.

## Competing Goal Constructs: Self-Efficacy and Conscientiousness

Value-expectancy models of motivation share the assumptions that behavior is organized around personal goals, and that goal pursuit is fueled by the expectation that they can be accomplished (Carver & Scheier, 1998; Rotter, 1954). When individuals believe that a valued goal is attainable, they persist in their efforts to reach the goal, even in the face of obstacles. Another goal related construct, self-efficacy, has been theorized to influence goal outcome expectancies, and thus goal pursuit. Conscientiousness, though not typically construed as a goal construct, is by definition associated with the self-discipline required in goal pursuits, particularly when obstacles interfere with goal strivings.

## Self-efficacy Appraisals

Self-efficacy, defined as people's confidence in their ability to produce the behavior(s) that influence events that affect their lives (Bandura, 1994), is considered a critical appraisal directing the choice to actively pursue a goal (Karoly & Ruehlman, 1995), and is the most widely studied construct in the study of goal related behavior and well being. Self-efficacy theory belongs to a family of conceptual models, which stress the explanatory power of personal control over desired outcomes. Believing that one possesses the knowledge, skills, or abilities required to achieve a goal is thought to instill confidence in goal attainment and spur

goal-directed efforts. Bandura and others have documented the importance of self-efficacy judgments for accomplishing a wide range of goals (see Bandura, 1997).

## Conscientiousness

Conscientiousness is by its nature related to goal-directed behavior. Studies that have examined conscientiousness in relation to goal pursuit have revealed that individuals with higher levels of conscientiousness set more difficult goals for themselves, and they are more committed to those goals compared to their less conscientious counterparts (Barrick et al., 1993; Gellatly, 1996; Mitchell & Daniels, 2003). In the work performance literature, which is particularly relevant to the current study, there is general agreement that conscientiousness predicts job performance (Behling, 1998). Indeed, among personality traits, conscientiousness has been the most consistent in predicting job performance (Peterson & Byron, 2007). Moreover, the relationship between conscientiousness and performance appears to be mediated by outcome expectations and self-efficacy (Martocchio & Judge, 1997; Westerman & Simmons, 2007). We therefore included conscientiousness in our examination of how dispositional hope predicts performance in the face of obstacles.

## Hypotheses

Relatively few studies have explicitly examined hope in the face of obstacles, and to our knowledge, no study to date has examined the interactive effects of hope and obstacles to goal attainment while controlling statistically for the effects of other goal constructs. Although trait hope, high self-efficacy expectations and conscientiousness all steer individuals toward valued goals, and although each construct has been described as facilitating goal directed behavior in the face of obstacles, as we noted above, the hope literature is not sufficiently developed to allow a formal prediction regarding whether the agency component of hope, the pathways component, or the total Hope Scale score will be linked most directly to overcoming obstacles in the context of clinicians attempting to implement a pediatric asthma management program. In a different work context, Peterson and Byron (2007) found that high hope (based on total Hope Scale scores) management executives provided more, and more high quality solutions to hypothetical work problems involving obstacles. However, these work related scenarios involved complex interpersonal conflicts, novel interpersonal difficulties, and challenging resource limitations. It is not clear whether the benefits of hope in these complex circumstances would generalize to the clinical domain or the task of completing treatment initiating diagnostic surveys in everyday practice.

Based on current theory and available evidence, we hypothesized that: (a) overall, high hope clinicians would recruit more children into an asthma identification and management program than their low hope counterparts; (b) hope would interact with obstacles to predict the number of children enrolled in the program. Hope theory postulates that high hope individuals will persist in the face of obstacles, whereas low hope individuals will more quickly give up or seek new goals. In other words, high hope should buffer clinicians by supporting their goal-directed recruitment efforts despite high levels of perceived obstacles; and (c) the hope X obstacle interaction will be retained after controlling for the two other goal-related constructs that have also been found to predict goal pursuit: self-efficacy, and conscientiousness. Although all three of these constructs have been linked conceptually and empirically to goal related behavior, hope has been linked specifically, at least at the conceptual level, to continued goal pursuit in the face of challenges or obstacles. We made no specific prediction regarding the component (s) of hope that may interact with obstacles. However, after reporting our results we offer a *post hoc* explanation of our findings that generates an explicit testable hypothesis to guide future investigations.

## Methods

### Overview

As part of an ongoing randomized controlled trial comparing practitioner- and organization-focused interventions designed to enhance the implementation of asthma practice guidelines, all forty-six pediatric practices in Hartford, New Britain and Waterbury, CT and the surrounding areas were invited to participate and 36 (13 urban clinics and 23 non-urban private practices) agreed. One hundred thirty eight of the 147 clinicians in these practices (94%) completed measures of hope, optimism, self-efficacy, conscientiousness, and perceived barriers to implementing Easy Breathing™, a pediatric asthma management program for primary care clinicians for which they all had been trained. The Easy Breathing program includes the 15-item *Easy Breathing Survey* that includes 4 items validated for the diagnosis of asthma (Hall, Wakefield, Rowe, Carlisle, & Cloutier, 2001) that is used to identify new cases of asthma and confirm previously diagnosed active disease. All children within a practice, regardless of whether they have asthma and regardless of the reason for their visit, were eligible to have their parents complete a Survey, which was then reviewed by the clinician. For children with asthma, the clinician determines asthma severity using a provider assessment form, and creates a severity-appropriate written asthma treatment plan. Primary care physicians' adherence to this disease management program, as evidenced by completion of the *Survey*, predicted a 56% reduction in outpatient visits and a 91% reduction in emergency department visits for asthma treatment among children with asthma (Cloutier, Hall, Wakefield, & Bailit, 2005). The larger study was approved by the Institutional Review Boards at Connecticut Children's Medical Center and the University of Connecticut Health Center.

### Participants

Of the 138 clinician participants, 10 did not complete the Hope Scale and 1 did not complete the measure of perceived obstacles. This left data from 127 clinicians to test the study predictions. Two thirds of the clinicians were full time physicians, and one third were mid-level practitioners, including advanced practice registered nurses, physician assistants and pediatric nurse practitioners. Seventy-five percent of physicians and 40% of mid-level practitioners had received their highest degree more than 10 years previously with a mean tenure of 10 years.

### Measures

The following measures were distributed to potential participants between May 2003 and June 2004 at focus group sessions designed to obtain feedback about the Easy Breathing program. The measures were completed at the end of the session and returned in numbered envelopes.

**Hope**—The Hope Scale (Snyder et al., 1991) includes four agency statements (e.g., “I energetically pursue my goals”) and four pathways statements (e.g., “I can think of many ways to get out of a jam”). Respondents used a 4-point Likert scale (1 = definitely false through 4 = definitely true) to rate each item. The Hope Scale demonstrates good convergent and discriminant validity (Cheavens, Gum, & Snyder, 2000). In this sample internal consistency was .80 for agency and .75 for pathways.

**Self-Efficacy**—Participants rated their level of confidence in being able to carry out activities in 14 areas related to asthma care associated with Easy Breathing ranging from making a diagnosis of asthma, to developing an asthma treatment plan, to teaching patients about asthma. These confidence ratings were made on 7-point Likert scales ranging from ‘not at all confident’ to ‘highly confident.’ The internal consistency in this sample was .93.

**Conscientiousness**—Conscientiousness was measured with the conscientiousness scale of the Five-Factor Inventory (NEO-FFI; Costa & McCrae, 1992). Sample items include “I try to perform all the tasks assigned to me conscientiously” and “I work hard to accomplish my goals.” Scale items were rated on a 5-point Likert scale ranging from 1 = “strongly disagree” to 5 = “strongly agree.” In this sample, internal consistency of the NEO-FFI conscientiousness factor was .87.

**Obstacles**—We created a 9-item obstacle indicator designed to relate specifically to work obstacles in a primary care setting. Items were rated on a 5-point Likert scale ranging from 1=strongly disagree to 5= strongly agree. These items tapped job structure/organizational obstacles (e.g., “Do you have freedom to decide how you do your work?”; “There are needless delays in relaying information regarding patient care.”) Internal consistency in this sample was .85. Because we considered these work-related obstacles a practice characteristic, individual scores from all participants in a practice were averaged to yield a practice score. However, when we retained individual practitioner scores, we obtained a comparable pattern of findings. Our practice-based indicator of obstacles yielded less within-practice variability than between-practice variability in obstacle scores ( $F = 4.03, p < .001$ ), indicating that this approach to measuring obstacles captured characteristics of the practice rather than solely those of the individual, i.e., it was not a purely subjective measure of practice obstacles.

**Outcome: Easy Breathing Enrollment/Completed Easy Breathing Surveys**—A child was considered enrolled in Easy Breathing when an Easy Breathing Survey was completed. Surveys were collected over the course of one year. The number of surveys completed—which, in turn, predicts children’s asthma related ED visits, hospitalizations, and outpatient visits (Cloutier, Hall, Wakefield, & Bailit, 2005; Cloutier, Wakefield, Sangeloty-Higgins, Delaronde, & Hall, 2006) served as the outcome.

## Results

### Statistical Analysis

A clinician’s Easy Breathing enrollment rate was defined as the number of children with a completed Easy Breathing Survey for that clinician, adjusted for the clinician’s full time equivalent status, e.g., a clinician working 20 hours a week would be .50 FTE. Two sample *t*-tests were used to evaluate mean differences between urban clinics and non-urban practices for each predictor and the outcome variable. Differences between physicians and mid-level clinicians (advanced practice nurses; pediatric nurse practitioners; physician’s assistants) within a practice were evaluated using a linear mixed model.

Multilevel negative binomial models were used to evaluate the number of Easy Breathing Surveys per FTE clinician and to account for the nesting of clinicians within a practice. The negative binomial distribution was used because the dependent variable is a count (i.e., the number of children enrolled in Easy Breathing). These models allow for greater variability than the Poisson models typically applied to count data (Johnson & Kotz, 1993). Covariates included the practice’s location (urban vs. non-urban), the staff-to-clinician ratio, and the clinician’s highest degree (MD vs mid-level). The independent variables were centered by subtracting the means without rescaling, and all models were fit using SAS PROC NL MIXED version 9.1 (SAS Institute Inc, Cary, NC).

**Descriptive Findings and Preliminary Analyses**—No differences emerged in practice size, overall structure, or clinician demographics between participating practices and non-participating practices. We found no differences between clinicians in urban clinics and non-

urban practices with respect to age, gender, race, full/part-time status, and years since obtaining highest degree. Table 1 depicts participants' demographic characteristics and work status.

We evaluated whether the Hope Scale's agency and pathway components, conscientiousness, and self-efficacy differed between urban and non-urban practices or between physicians and mid-level practitioners. Only one difference emerged: Mid-level practitioners reported higher conscientiousness scores than did physicians,  $t=2.21, p<.03$ .

**Bivariate Associations among Study Variables:** Table 2 provides the means, standard deviations, and Spearman correlations among study variables. As predicted, higher scores on the agency component of the Hope scale were associated with higher enrollment rates in Easy Breathing ( $t=3.28, p<.002$ ). Higher rates of enrollment into Easy Breathing were also associated with higher scores on the pathway component of the Hope scale ( $t=2.25, p<.03$ ) and Self-Efficacy ( $t=2.16, p<.04$ ). The association between enrollment rates and Conscientiousness emerged as a trend in the predicted direction ( $t=1.91, p=.065$ ). None of these three constructs remained a significant predictor of enrollment into Easy Breathing when the agency component of the Hope scale was added to the model, and there was no interaction between any of those constructs and the obstacle scale.

We observed a buffering effect, i.e., a significant interaction between job obstacles and agency ( $t=2.08, p=.045$ ). Easy Breathing enrollment decreased with increased obstacles for all providers, but providers with lower agency scores showed a steeper decline. The decline was less steep, and not statistically significant, among providers with higher agency scores. Simple slope tests are depicted in Table 3. Figure 1 portrays graphically, and Table 3 shows quantitatively, how the decline in Easy Breathing enrollment changed with increased obstacles as a function of agency. Although at lower values on the obstacle scale the pattern appears to be opposite of that observed at higher values, we found that at obstacle =1, agency had no effect on the number of Easy Breathing surveys [log rate ratio -0.199 per unit change in agency, approximate 95% confidence interval (-1.13, 0.74),  $p=0.67$ ]. Thus, what may appear to be an opposite effect at lower values is non-significant.

## Discussion

We found that pediatric clinicians with higher trait hope enrolled a greater number of children into an asthma management program. More importantly, high hope clinicians were buffered when the work environment was beset by obstacles to successful goal attainment. To our knowledge, this is the first study to examine hope among health care providers, and to evaluate hope as a predictor of clinician behavior known to affect health care outcomes.

The study findings provide strong support for Snyder's (2002) assertion that the agency component of hope is essential for an individual to overcome obstacles while pursuing a goal. Although high pathways individuals should (and do; see Snyder et al., 1991) generate new strategies and tactics to reach a goal when they encounter barriers, agency provides the motivation to implement those strategies and tactics. It is this motivational component of hope that was critical to overcoming barriers among our clinician participants.

Our findings not only support Snyder and colleagues' hypothesis that agency plays a pivotal role in overcoming obstacles, but also extend the hypothesis in interesting ways. First, we found no evidence that high agency participants appraised their clinical work environment as containing fewer barriers than did their lower agency counterparts. In other words, their ability to complete the Easy Breathing Surveys was not driven by a tendency to ignore or diminish the severity of the obstacles they faced. More important, we believe, is that high agency participants were able to maintain their recruitment efforts when they experienced more severe



barriers. Specifically, they not only completed more Easy Breathing Surveys than participants lower in agency across all levels of obstacles, but unlike their moderate and low hope counterparts, they did not show a significant decline in recruitment when they faced greater obstacles. This buffering effect is precisely the one predicted by Hope theory, though not linked specifically to agency thinking. We believe that this is the first test of the buffering function of hope's agency component in a clinical setting using a behavioral outcome.

Hope theory currently does not generate specific predictions regarding the circumstances under which agency, pathways or both will predict goal related behavior, and whether a particular hope component or overall Hope Scale score will assist high hope individuals get beyond goal related obstacles. Yet, as we noted previously, the literature reveals that when agency and pathways have been examined separately, some studies have found that only agency predicted the targeted behavior or adaptational outcome, whereas other studies found that pathways was the only predictor, and in still other studies, these hope components were not examined separately despite what appear to be their somewhat distinctive correlates (Chang, 2003). Moreover, there have been remarkably few studies that have examined explicitly how these components of hope interact with obstacles to goal attainment.

Based on our findings and the varying associations reported across studies, we offer a testable hypothesis that could guide future research: Whether agency, pathways or both, i.e., total Hope Scale score, predicts an individual's goal behavior depends on the nature of the goal and the potential barriers to that goal. We refer to this person-situation context as 'hope-goal context goodness of fit.' Specifically, some goal related activities are necessarily complex because the goal itself is long term and/or multi-faceted and may need to be broken down into sub-goals. Goal related behavior will also be complex when the goal is novel, when reaching the goal demands a complex set of behaviors, when the most effective way to reach the goal is not clear, or when barriers to the goal require strategic action. In these situations, pathways thinking, i.e., being able to generate multiple options for goal attainment, should emerge as the better predictor of successful goal-related behavior.

Other goals, however, require far more straightforward goal efforts. These goals are short term and often require persistence because the same goal needs to be achieved repeatedly. Such goals do not require the development of multiple strategic alternatives because the behavior required to reach the goal is clear. In these circumstances, typical of many work situations, a high level of motivation is needed. One simply needs to persist. Pathways thinking may help in some way, but what is needed most in these situations is persistence and the maintenance of a high level of motivation, i.e., agency thinking. In fact, by exerting mental effort toward generating pathways when that is not what is required, people run the risk in these circumstances of creating a 'problem-maintaining solution.'

We assert that for the clinician participants in our study, the completion of Easy Breathing Surveys is an example of this latter type of goal. The Easy Breathing Surveys are easy to complete. What is required is the willpower and persistence to do so in the face of time pressures and related obstacles. This is why, we believe, agency thinking interacted with obstacles—but not pathways—to predict the number of completed surveys. In other words, the degree of fit between the nature of the goal situation and the hope component should predict which hope component will predict goal behavior and adaptational outcomes. This prediction does not contradict Snyder's notion that agency and pathways often interact synergistically. Rather, we hypothesize that for situations that can be identified *a priori*, either agency or pathways thinking will guide the individual toward his or her goal. The varying findings involving agency and pathways across studies in the literature are consistent with this analysis. This hope-goal context goodness of fit hypothesis is readily testable in both laboratory and field settings, and we believe that it offers the opportunity to conduct more precise tests of hope theory.

Since the agency component of hope predicted how the clinicians in our study responded to obstacles, why didn't self-efficacy—which is conceptually similar to agency—yield the same pattern of findings? From a methods perspective, our measure of self-efficacy, while specific to diagnosing and developing effective treatment plans for childhood asthma, was not specific to completing Easy Breathing Surveys. Although we believe that our measure was at the proper level of specificity, Bandura (1997) has urged investigators to treat self-efficacy as a situation-specific construct, and further investigation regarding this question is clearly warranted.

Several aspects of this study and its findings suggest directions for future research. First, although we were able to determine that the obtained interaction between hope and obstacles predicting the goal directed behavior of primary care clinicians was independent of self-efficacy and conscientiousness, we did not consider dispositional optimism in our analyses. Carver and Scheier (1998;2000) have argued that although self-efficacy judgments may increase people's confidence that they can meet their goals, a strong sense of self-efficacy is not needed for goal pursuit. Carver and Scheier assert that the expectation that a goal will be achieved, i.e., a sense of optimism that may have little to do with a sense self-efficacy, can drive goal directed behavior. The critical element in Carver and Scheier's model of goal attainment is thus "*whether* the desired outcome seems likely to occur, not *how* it is to occur" (Carver, et al., 2000, p. 141).

People's estimates of the probability that a goal will be achieved often turns on their general tendency to hold generalized positive outcome expectancies, which they refer to as dispositional optimism. Echoing the benefits of trait hope, dispositional optimism has been linked to superior academic performance, high levels of psychological well being, and superior psychosocial adaptation to a host of health-related stressors (see Tennen & Affleck, 2002). Carver and Scheier (1998) also assert that optimism, like hope, drives goal related behavior when obstacles arise. Future examinations of the role of hope in helping people achieve their goals despite impediments should include an indicator of dispositional optimism.

A goal's *value* or importance should also be considered in future investigations of hope in challenging circumstances. Value-expectancy models of motivation (Carver & Scheier, 1998; Rotter, 1954) predict that when people perceive a goal to be both valued and attainable, they will persist in their efforts to reach the goal, even in the face of obstacles. There is little disagreement among goal theorists that the value, importance or meaningfulness of a goal should predict the initiation and persistence of goal-directed effort (e.g., Carver & Scheier, 1998; Karoly, 1999). The fact that 85% of the medical practices involved in the initial validation of Easy Breathing continue its use five years after initial implementation serves as evidence that adhering to the protocol is viewed as an important clinical goal (Cloutier et al., 2006).

Hope theory too posits a role for goal value. As Snyder (2002) and Rand and Cheavens (in press) note, according to hope theory, individuals monitor over time the value of the goal they are pursuing in relation to perceived pathways the agency required to engage those pathways. This helps them gauge whether further effort is worthwhile or whether it might be time to disengage from the goal. Despite this central role for goal value in hope theory, most studies of hope have assumed, rather than measured directly, goal value. We urge investigators to examine goal value in evaluating hope's role in overcoming goal barriers. We also encourage investigations among samples that provide a wider range of scores of the Hope Scale.

Our indicator of goal barriers was not specific to completing Easy Breathing Surveys and enrolling children into the asthma management program. Rather, it captured more general barriers to effective clinical care including organizational failure to clarify patient care expectations and leadership expectations that discouraged initiative or limited the care providers' latitude in making clinically relevant decisions. We view these barriers as highly

relevant to clinicians' ability and willingness to complete Easy Breathing Surveys, and our findings support this view. Nonetheless, future studies might benefit from evaluating goal-specific obstacles.

A limiting design feature of our study should also be addressed in future investigations. Specifically, our cross sectional study design does not allow us to draw causal inferences. Although Easy Breathing Surveys were collected over a period of a year, participants did not complete measures of hope, self-efficacy, conscientiousness and obstacles before the year-long period of Easy Breathing Survey collection. Instead, the predictor and criterion variables were obtained contemporaneously. Although we find it hard to imagine that clinicians' success in completing the surveys affected their trait hope or conscientiousness, it may have affected their self-efficacy appraisals. And, of course, an unmeasured third factor may have affected the associations reported.

Finally, our findings suggest that interventions directed at health care providers may hold the promise of enhancing the health and well-being of the patients in their care. Because such interventions would attempt to transform that which emerges spontaneously for some people into an effortful antidote for others, we approach this issue with some ambivalence. With that caveat in mind, we note that Snyder, Lopez and colleagues developed and evaluated hope-based interventions for students at risk for academic failure (Lopez, Bouwkamp, Edwards, & Teramoto Pedrotti, 2000; Snyder, Shorey, Rand, & Ritschel, 2005). Comparable interventions could target medical practitioners' goal development and their agency and pathways thinking. In the current study, the goal of completing Easy Breathing Surveys was focused and easily operationalized. But there are medical situations in which practitioners may benefit from guidance in clarifying their treatment goals. Hope theory suggests that such guidance should endorse approach goals rather than avoidance goals, and that it should assist the clinician select goals that are sufficiently meaningful to the patient so as to foster productive doctor-patient collaborations.

If our hope-goal context goodness of fit hypothesis is correct, the more complex goals associated with patient care would benefit most from interventions that facilitate pathways thinking by helping clinicians consider alternate routes to goal attainment when standard approaches are blocked or otherwise fail, and by training them to think in terms of sub-goals. For less complex yet equally important clinical goals, such as completing disease management surveys that facilitate effective treatment, interventions might focus more on enhancing agency thinking by helping the clinician identify negativistic thinking and ruminative tendencies that interfere with agency thoughts while simultaneously increasing positive self-talk, which is fundamental to agency thinking. We suspect, however, that hope-based interventions focused solely on the individual practitioner will be less effective than those that also target the organizational setting in which health care is provided (Dunn & Dougherty, 2005; Snyder et al., 2006). Without organizational level interventions, healthcare settings that inadvertently create major obstacles to effective patient care may adjust to practitioner-oriented hope-based interventions so as to maintain the pre-intervention status quo. We are now examining the effects on patient outcomes of organizational interventions in the context of the Easy Breathing program. This is a promising area for hope-based, theory-guided interventions within the healthcare system.

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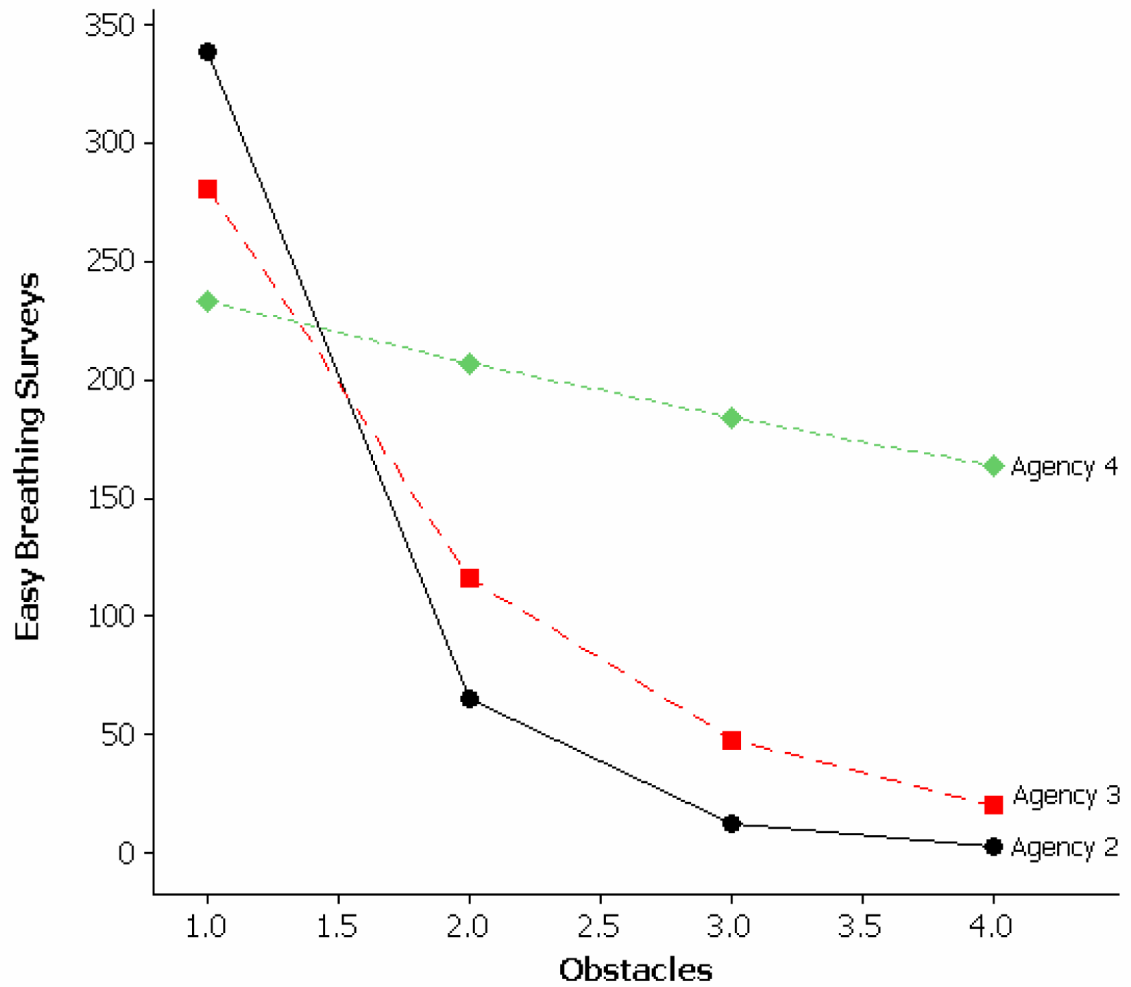
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**Figure 1.** The interaction between the agency component of hope and perceived obstacles predicting enrollment rates in *Easy Breathing*, an asthma management program.

**Table 1**

Participant demographic characteristics and work profiles

<b>Demographic Characteristics</b>	
Age (yrs)	45 ± 11 (26, 80)
Gender	M: 42 (31%); F 95(69%)
Ethnicity	
Caucasian	116 (84%)
African-American	7 (5%)
Other/Unknown	15 (11%)
Yrs Since Highest Degree	
<5 Yrs	14 (11%)
5 – 10 Yrs	33 (25%)
>10 Yrs	83 (64%)
Employment Status	
Full Time	87 (65%)
Part Time	46 (35%)
Tenure (yrs)	10 ± 8
<b>Work Profiles</b>	
Provider Type:	
Physician	94 (68%)
Mid-Level Practitioner	44 (32%)
Patient Hours per week:	
Physicians	35 ± 12
Mid-level practitioner	32 ± 10
Patients per week:	
Patients perclinicsession: Physicians	17 ± 8
Patients perclinicsession: Mid-level practitioner	13 ± 7



Table 2

Means, standard deviations, and correlations\* among study variables.

	Hope (Overall)	Agency	Pathway	Self-Efficacy	Conscientious	Obstacles	EB Surveys
MEAN	3.31	3.44	3.18	5.94	4.17	2.16	103.07
SD	0.35	0.41	0.38	0.70	0.48	0.54	123.08
Hope (overall)	1	0.91	0.81	0.32	0.63	-0.06	0.10
Agency		1	0.53	0.26	0.64	-0.11	0.10
Pathway			1	0.34	0.46	0.00	0.05
Self-Efficacy				1	0.43	-0.10	0.02
Conscientious					1	-0.07	0.02
Obstacles						1	-0.52
EB Surveys							1

\* Spearman correlations are reported

**Table 3**

Negative binomial regression interaction model for the decline in easy breathing enrollment with increased obstacles as a function of agency level.\*

Agency	Estimate	SD	t	95% CI
1	-2.42	0.92	-2.53	(-4.30, -0.54)
2	-1.66	0.4	-2.62	(-2.89,-0.42)
3	-0.89	0.15	-2.31	(-1.64, -0.13)
4	-0.12	0.17	-0.29	(-0.93, 0.69)

\* The 'Estimate' column is the log rate of decline in enrollment per unit change in obstacle. Estimates, standard errors, confidence intervals, and *p*-values were calculated from the actual model parameter estimates following Aiken and West (1991).