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2016

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The Hopeful Student: Extending Hope Theory to New Populations and Applications

By

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A dissertation submitted in partial satisfaction of the

requirements for the degree of

Doctor of Philosophy

in

Education

in the

Graduate Division

of the

University of California, Berkeley

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Summer 2016

Abstract

The Hopeful Student: Extending Hope Theory to New Populations and Applications

by

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Doctor of Philosophy in Education

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Hope is one's perceived ability to see a better tomorrow and the belief in one's self that they can get there. Hope is a perception-based construct that has been found in several studies to be influential for the achievement of students at all levels of schooling. This dissertation consists of three studies that further the hope theory literature so that better hope interventions can be developed and used to increase the achievement of disadvantaged and minority adolescents. The first study is a validation of the Children's Hope Scale (CHS), the most widely used measure of hope in schools. In order to understand more about hope and how to improve it, it needs to be studied at all levels of achievement. The psychometric properties of the CHS were previously only examined in general education samples, making the study of hope at the ends of the range of achievement difficult. In this study, the psychometric properties of the CHS were examined in three different populations that span the range of achievement: an academically gifted, general education, and academically at-risk sample. In addition, invariance was examined to assess whether CHS scores were invariant across the range of achievement and gender. Results indicated that the CHS exhibited strong psychometric properties and high internal consistency in all three samples, suggesting that the CHS was a valid measure of hope in those samples. In addition, CHS scores were found to be invariant across the range of achievement and gender, indicating that CHS scores can be directly compared across the range of achievement and gender.

In the second study, a theoretical framework for how hope may affect disadvantaged students is put forward and examined. In this study, it was asserted that the relationship between socioeconomic status (SES) and grade point average (GPA) may be partially mediated via hope. Kraus, Piff, Mendoza-Denton, Rheinschmidt and Keltner (2012) asserted and provided evidence that people from different levels of SES have different patterns of thought. More specifically, people from low SES backgrounds think more short term, as a result of their need to fulfill basic needs, whereas people from high SES backgrounds think more long-term, as a result of their basic needs already being comfortably met. With the Kraus et al. (2012) theoretical framework,

it was asserted that SES might affect GPA via hope because those that were from high SES backgrounds might achieve more in school because they have more hope, they are able to see the better tomorrow and have more belief in their ability to accomplish that vision than the student who thinks in the short term and is unable to garner the same confidence of someone from a higher SES background. This mediational pathway was tested in two samples, using two different measures of SES. In both samples, hope was found to mediate the relationship between SES and GPA, indicating that hope may be a way to increase the achievement of disadvantaged youth.

In the final study, hope is explored in the school environment to better understand how it relates to demographic and various influential school variables. First, hope clusters were produced using cluster analysis as hope theory suggests that there are four different groups of hope. Using K means cluster analysis, four hope groups were created using pathways and agency scores. These four clusters were found to be valid and theoretically consistent with the four hope groups of hope theory: high hoppers (students high in pathways and high in agency), high agency thinkers (students high in agency and around average or lower in pathways), high pathways thinkers (students high in pathways and around average or lower in agency), and low hoppers (student low in both agency and pathways). Then, differences among the hope clusters across demographics (grade, sex, SES, and race) and several influential school variables (grades, perceived stress, educational expectations, self-esteem, academic importance, consideration of future consequences, academic self-concept, perceived life chances, and school belonging) were examined to get a better understanding of hope in the school environment. Results indicated that although there were several differences found across demographics, the only difference with a sizable effect was race. Results also indicated that the high hopper profile was the most adaptive profile in school, followed by high agency thinkers, high pathway thinkers, and finally the low hoppers. Of special note was that the high agency profile looked very similar to the high hopper profile, indicating that the agency may be the most influential aspect of hope within the school environment and should be given more attention when developing hope-based school interventions.

Table of Contents

Chapter		Page
1	Introduction_____	1
2	Examining Psychometric Properties of the Children’s Hope Scale Across the Range of Achievement_____	4
3	The Magic of Hope: Hope Mediates the Relationship Between Socioeconomic Status and Academic Achievement_____	24
4	Profiles of Hope: How Hope Relate to School Variables _____	42

The Hopeful Student: Extending Hope Theory to New Populations and Applications

In 2011, Walton and Cohen conducted a perception-based intervention with minority students. They brought 49 African American 1st year college students into their lab and had half of them read a report ostensibly from upperclassmen which asserted that most students feel a lack of belonging during their first year of college and that the feeling dissipates over time. After reading the report, the researchers had these students write a short essay echoing the message from the report (to internalize the message) and then deliver the essay as a speech to a video camera to be shown to future students. The other half of the students, the control group, went through the same procedure except the topic was social political attitudes. Students in the treatment group had increased academic achievement (cutting the achievement gap in half) from sophomore through senior year, had fewer absences and behavioral referrals throughout college, and were happier and healthier three years later.

In an effort to better understand how the Walton and Cohen study (and other similar perception-based interventions) affected students, Yeager and Walton (2011) conducted a review of perception-based interventions. They concluded that these interventions result in large and long lasting effects via changing the psychosocial trajectory of the intervention students. That is, these interventions changed the way that students perceived themselves or their environment. That change in perception, resulted in students interacting with their environment more auspiciously and as a result, their environment reacted them more positively. Using the Walton and Cohen study as an example, their intervention convinced students that when they felt like they did not belong in college, it was due to them being freshmen in college, instead of their minority status. This change in perception caused these students to work harder and persist as their lack of belonging was ostensibly something that all freshmen went through, instead of feeling hopeless and like they did not belong due to their ethnic background. These students working harder and persisting resulted in the environment responding more favorably to them. Teachers and other students responded much more favorably to the intervention students that were working harder and putting in more effort, compared to the students that appeared to be slacking off.

Perception-based interventions have enormous implications for students in school as they are quick, effective, and have long lasting effects (Cohen & Walton, 2011; Yeager & Walton, 2011). These qualities are very attractive for school administrators as there are increased demands to maximize instruction in the classroom, limiting available time for school-based interventions (Aronson, Zimmerman, & Carlos, 1999). However, despite the potential for perception-based interventions to impact the academic success of school aged children, there are currently very few perception-based interventions developed for school aged children. A perception-based intervention developed for school aged children would have the potential to benefit many struggling school aged students.

One type of perception-based intervention that has proven to be quick, effective, and long lasting for struggling school aged students is hope-based interventions (Feldman & Dreher, 2011; Snyder, 2002; Weis & Speridakos, 2011). Feldman and Dreher (2011) found that hope can be changed in as little as 90 minutes; Weis and Speridakos (2011) found that hope interventions have an average effect size of .39; and Marques, Lopez, and Pais-Ribeiro (2009) found that the effects of hope-based interventions can last at least 18 months. However, despite the potential for hope-based interventions as a whole, there is currently not a hope based intervention that embodies all of the aforementioned qualities in one. The reason that no hope intervention has embodied all those qualities may be because they do not change the

psychosocial trajectory of students, instead they focus on increasing the hope of students (e.g., Marques, Lopez, & Pais-Ribeiro, 2009). This focus on increasing the hope of students and not on changing the psychosocial trajectory of students may be because there is no foundation in the hope literature that can be used to build a hope-based intervention that changes the psychosocial trajectory of students. In order for a quick, effective, and long lasting hope intervention to be developed, there needs to be more research that lays the foundation for how hope relates to psychosocial trajectories.

This dissertation consists of three studies that help lead to a better understanding of how hope relates to psychosocial trajectories. In the first study, I examined the psychometric properties of the Children's Hope Scale (CHS) in three samples that span the range of achievement: an academically gifted sample, a general education sample, and an academically at-risk sample. In addition, invariance across the range of achievement and gender was also examined. This study found that CHS scores were psychometrically sound and internally consistent in all three samples. Additionally, it was concluded that CHS scores were invariant across the range of achievement and gender. This examination provides evidence of the utility of the CHS across the range of achievement, allows for more research on how hope relates to psychosocial trajectories in academically gifted and academically at-risk samples, and provides evidence that CHS scores can be compared across the range of achievement.

In the second study, I examined a theoretical pathway of how hope can lead to increased academic achievement in two studies. In the first study, I examined whether hope partially mediated the relationship between socioeconomic status (SES) and GPA in a mixed population. In the second study, I examined whether hope mediated the relationship between SES and GPA in a minority population using a different measure of SES. These studies found that hope partially mediated the relationship between SES and GPA. These examinations provide evidence that hope can affect students' psychosocial trajectories. When hope was higher, that is when students held a certain perception, their achievement was higher, despite their socioeconomic background.

In the final study, I examined how hope related to several school variables. I first examined whether the four clusters that were produced via cluster analysis were interpretable and theoretically consistent with hope theory. After the clusters were found to be valid, interpretable, and theoretically consistent with hope theory, I examined the differences among the hope clusters across demographic and school variables. Several differences were found across the demographic and school variables, with the highest hope cluster having the most adaptive school profile and the lowest hope cluster having the least adaptive school profile. This examination provides evidence for how a change in hope might affect other variables in the school setting, providing insight into how the included school variables might relate to the psychosocial trajectory of hope intervention students. Overall, these three studies begin to lay the foundation for a hope-based intervention to be produced that changes the psychosocial trajectory of students, allowing for a quick, effective, and long lasting hope-based intervention that could be deployed widely in schools to help disadvantaged students achieve.

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Examining Psychometric Properties of the Children's Hope Scale Across the Range of Achievement

Academic achievement is the gold standard for measuring one's educational standing in the United States (Aud, Fox, & KewalRamani, 2010; Morsch, 2007). As a consequence, much research has been devoted to better understanding academic achievement and to developing interventions that improve academic achievement (e.g., Aronson, Fried, & Good, 2002; Fisher et al., 1981; Hattie, 2008, 2011; Sanders & Rivers, 1996; Steele, 1997; Weis & Speridakos, 2011; Yeager & Walton, 2011). Recently, the role that psychosocial variables play in achievement outcomes has become prominent (see Yeager & Walton, 2011), resulting in a burgeoning literature on how psychosocial factors affect achievement and many recent academic interventions being social-psychologically based. Despite the increased knowledge in this area, many aspects of how perception-based psychosocial variables affect academic achievement are unknown (see Richardson, Abraham, & Bond, 2012, for a review). For instance, there are few studies that examine the generalizability of the relationship between perception-based constructs and academic achievement.

For example, several studies have shown that higher amounts of hope, a perception-based construct, is associated with increased academic achievement (Feldman & Kubota, 2014; Rand, Martin, & Shea, 2011). In one study of college students, Feldman and Kubota (2014) found that academic hope had a correlation of .69 with academic achievement. However, despite hope's documented relationship with academic achievement, there is little research on how it relates to academic achievement across the full range of achievement levels. Additionally, it is unclear if the effectiveness of achievement interventions developed for hope (e.g., Lopez, 2010; Lopez et al., 2004; Lopez, Rose, Robinson, Marques, & Pais-Ribeiro, 2009) applies to all groups of students, as the relationship between hope and achievement may differ across students with different levels of achievement.

The Children's Hope Scale (CHS; Snyder et al., 1997) is the most commonly used hope measure. Given that validity of a scale's scores is sample-specific (Salkind, 2012) and there is currently no evidence that CHS scores are psychometrically sound across students with differing levels of achievement, the literature is in need of a validation study examining this question. In addition, a validation study that examines invariance across groups with different achievement levels would indicate if cross-group comparisons can be made. In this paper, I first review hope theory and the psychometric properties of the CHS. Second, I discuss giftedness and hope in academically gifted populations. Third, I discuss being academically at-risk and hope in academically at-risk populations. Finally, I present a study examining the psychometric properties of CHS scores in samples of academically gifted, general education, and academically at-risk students.

Hope

According to Snyder (2002), hope is a two-component cognitive motivational process defined as one's perceived ability to achieve desirable future goals via envisioned routes. Hope is primarily measured using the Adult Trait Hope Scale (ATHS; Snyder et al., 1991) or the Children's Hope Scale (for those aged 8-16; Snyder et al., 1997). One of the two components is *pathways*, which has two parts: (a) the perceived ability to envision plausible routes (and alternate routes in case of impediment) to desirable future goals, and (b) the ability to quickly and efficiently refine those routes as goal attainment progresses (Snyder, 2002). The other component is *agency*, that is, one's perceived capacity to execute the envisioned routes to accomplish desirable future goals. Agency encompasses one's motivation, persistence, and

perceived ability (taking into account past goal pursues and outcomes) to accomplish the current goal being pursued (Snyder, 2002).

Pathways. Individuals who score high on the pathways component are able to quickly, decisively, and confidently envision realistic routes to their goals (Snyder, 2002; Woodbury, 1999). In addition, when envisioning routes is particularly difficult (e.g., passing a class after a poor grade on a test), individuals high in pathways engage in positive self-talk and are flexible, which facilitates their ability to envision routes and alternative routes to their goals (Day, Hanson, Maltby, Proctor, & Wood, 2010; Irving, Snyder, & Crowson, 1998; Snyder, LaPointe, Jeffrey Crowson, & Early, 1998). Conversely, individuals low in pathways are indecisive about how to accomplish their goals, envision incoherent routes to goals, and struggle to produce alternate routes to goals (Irving et al., 1998; Snyder, 2002).

Agency. Individuals who score high on the agency component are energized by their goal pursuits (Snyder, 2002). When impediments to accomplishing goals arise, high agency individuals self-motivate, are persistent, and focus their motivation and energy on what they believe is their best course of action to accomplish their goals (Snyder, 1994, 2002, Snyder et al., 1998). In contrast, those individuals who score low on the agency component generally find it harder to start working towards goals, continue towards goals, give up in difficult or stressful times of goal pursuit, and endorse more negative messages during goal pursuit (Lopez, Ciarlelli, Coffman, Stone, & Wyatt, 2000; Snyder, 1998).

High vs. low hope individuals. In almost every regard, high hope individuals fare better than their low hope counterparts (Snyder, 2002). For example, Snyder et al. (2002) gave 200 college freshmen the AHS at the beginning of their first year of college and then followed them for six years. They found that the high hope students had higher academic achievement ($M_{GPA} = 2.85$ [.65] vs. 2.44 [.81]), a higher graduation rate (56.52% vs. 40.27%), and were more than three and a half times less likely to drop out over the course of the study (7.10% vs. 25%). Additionally, high hope individuals have higher academic achievement at all levels of education (Snyder et al., 1991, 1997, 2002), are better problem-solvers (Chang, 1998), are able to handle and navigate stress better (Chang, 1998), are healthier (Harney, 1990), are better psychologically adjusted (Kwon, 2002), and have higher self-esteem (Gibb, 1990). Finally, high hope individuals generally believe they will succeed, whereas low hope individuals do not (Snyder, Shorey, & Rand, 2006). Thus, having a higher level of hope is meaningful and makes a difference.

Hope and demographics. Several studies have examined hope score differences across race, gender, SES, and age (Snyder et al. 1991, 1997; Valle, Huebner, & Suldo, 2004). Past studies indicate that hope scores on both the CHS and AHS do not differ by SES or age (Snyder et al., 1991, 1997; Valle et al., 2004). However, hope scores have been found to differ by race and gender, although the differences have been found to be either not statistically significant (Snyder et al. 1997), or to have a very small effect size (Valle et al., 2004).

The Validation and Psychometric Properties of Children Hope Scale Scores

The introduction of the CHS. Snyder et al. (1997) introduced the CHS into the literature. The first iteration of the scale consisted of 12 items, six for pathways and six for agency. The 12-item scale was given to a pre-dominantly European American sample of 8-16 year olds to simplify sentence structure and make item wording more salient. Then the 12-item scale was given to 372 (53% male) students aged 9 to 14. A principal component factor analysis (varimax rotation) with two factors requested was ran on the data. Three items from both the agency and pathways components were discarded due to low factor coefficients. The factor

analysis was repeated using the remaining six items. The agency items had high coefficients on the agency factor (.64 to .85) and low coefficients on the pathways factor (.09 to .21), whereas the pathways items had high coefficients on the pathways factor (.52 to .85) and lower coefficients on the agency factor (.02 to .41). The agency items accounted for 32.5% of the variance of the agency factor. The pathways items accounted for 25.9% of the pathways factor.

Finally, the six-item preliminary CHS was then given to five more samples to assess its psychometric properties across samples: three school aged clinical samples (170 boys diagnosed with Attention Deficit Hyperactivity Disorder [ADHD]; 91 children aged 8 to 17 with a cancer, arthritis, or sickle cell anemia diagnosis; and 143 children aged 8 to 16 that had had underwent cancer treatment) and two school aged samples (322 students aged 9 to 13 from Lawrence Kansas public schools and 74 boys aged 7 to 13 used as controls for the ADHD sample). In these additional samples, a similar factor loading pattern was reported. The reported correlations between agency and pathways ranged from .47 to .70 (*Mdn* = .59). The total variance accounted for by pathways and agency ranged from 57.2% to 69.4% (*Mdn* = 63.45). For all samples in the study ($n = 1,632$), internal consistency estimates (Cronbach alpha) ranged from .72 to .86 (*Mdn* = .77). Test-retest correlations over a week and a month were .73 ($n = 89$, $p < .001$) and .71 ($n = 359$, $p < .001$) respectively.

Convergent validity of CHS scores. As evidence of convergent validity, Snyder et al. (1997) correlated CHS scores in several of the aforementioned samples to scores on three scales: the Self-Perception Profile for Children, the Children's Attributional Style Questionnaire, and the Child Depression Inventory. Snyder et al. (1997) reported four main findings: (a) CHS scores correlated positively and statistically significantly with students' perceived competence and control (r ranged from .22 to .59), which follows because perceived competence and control are needed for goal pursuit (Snyder, 2002); (b) CHS scores correlated positively and statistically significantly with a propensity to distance one's self from negative outcomes, which follows because hope theory asserts that high hope youth link themselves to positive outcomes and distance themselves from negative outcomes (Snyder, 2002); and (c) CHS scores correlated statistically significantly with self-worth (r ranged from .23 to .55) and depression (r ranged from -.27 to -.48), which follows because hope theory asserts that higher level of hope indicates a more positive outlook on life (Snyder, 2002).

Discriminant validity of CHS scores. As evidence of discriminant validity, Snyder et al. (1997) correlated CHS scores to two scales: the Hopelessness Scale and the Wechsler Preschool and Primary Scale of Intelligence-R. Snyder et al. (1997) reported that CHS scores did not have meaningful or statistically significant associations with hopelessness (r ranged from -.24 to -.18) or intelligence (r ranged from .03 to .04). Snyder et al. (1997) concluded that CHS scores showed sound psychometric properties across their samples.

Further evaluation of the CHS. To increase the generalizability of the CHS, Valle et al. (2004) reevaluated the CHS using confirmatory factor analysis in two mostly diverse samples. In the first sample, made up of 460 high school students aged 15-19 ($Age = 16.11$, $M_{CHS} = 28.26$, $SD = 5.47$, 63% qualified for a free/reduced lunch, 52% African American, 40% European American, 2% Asian American, and 1% Hispanic American), Valle et al. (2004) tested the fit of a 1-factor model of hope compared to the theorized 2-factor correlated model of hope. They reported two main findings: (a) the 2-factor model ($df = 8$, $X^2 = 56.01$, $p < .0001$, $GFI = .961$, $CFI = .949$, $TLI = .872$, & $RMSEA = .135$) fit better than the 1-factor model ($df = 6$, $X^2 = 73.7$, $p < .0001$, $GFI = .948$, $CFI = .933$, $TLI = .874$, & $RMSEA = .133$) and (b) the 2-factor model had *good fit* overall. In addition, they reported an alpha estimate of .84, item-total correlations

ranging from .51 to .69, and that all items loaded on the theorized factor with loadings ranging from .67-.71 on Factor 1 and .54-.82 on Factor 2

In the second sample, consisting of 531 students aged 10-14 ($M_{CHS}=12.53$, $M_{CHS} = 28.89$, $SD = 5.70$, 58% qualified for a free/reduced lunch, same ethnic makeup as first sample), Valle et al. (2004) conducted a similar evaluation of the psychometric properties of the CHS. Evaluating the psychometric properties of the CHS, Valle et al. (2004) reported several findings: (a) the 2-factor correlated model ($df = 6$, $X^2 = 33.19$, $p < .0001$, $GFI = .978$, $CFI = .974$, $TLI = .934$, & $RMSEA = .092$) fit better than the 1-factor model ($df = 8$, $X^2 = 39.83$, $p < .0001$, $GFI = .974$, $CFI = .969$, $TLI = .842$, & $RMSEA = .087$), (b) the 2-factor model had good fit, (c) an alpha estimate of .83, (d) item-total correlations ranging from .55-.68, and (e) all items loaded on the theorized factor with loadings ranging from .70 to .80 on Factor 1 and .54 to .82 on Factor 2.

Valle et al. (2004) also conducted convergent validity assessments for both samples via a series of correlations. Valle et al. (2004) found that CHS scores correlated significantly with the Student Life Satisfaction Scale (r ranged from .49 to .55, p 's $< .01$), the Child and Adolescent Social Support Scale (r ranged from .53 to .59, p 's $< .01$), the Extroversion subscale of the Abbreviated Junior Eysenck Personality Questionnaire (r ranged from .16 to .18, p 's $< .01$), the externalizing behavior subscale of the Youth Self-Report form (r ranged from -.33 to -.32, p 's $< .01$), and the internalizing behavior subscale of the Youth Self-Report form (r ranged from -.33 to -.32, p 's $< .01$). Overall, Valle et al. (2004) concluded based on the fit indices of both 2-factor models of hope, the alpha estimates, the factory loadings, the item-total correlations, and the convergent validity correlations, that CHS scores were psychometrically sound in their samples.

Giftedness

Giftedness has been defined several different ways in research (see Subotnik et al., 2011 for review). Some define it as having high intellectual potential as measured by scoring higher than a specific IQ cutoff score (which is how many are identified as being gifted; National Association for Gifted Children, 2009). Others define giftedness as getting into a gifted program that bases its admission decisions on test scores, GPA, and teacher recommendations (Worrell, 2000). However, Subotnik et al. (2011) offers the following comprehensive definition of giftedness:

Giftedness is the manifestation of performance or production that is clearly at the upper end of the distribution in a talent domain even relative to that of other high-functioning individuals in that domain. (p. 7)

Studying gifted students has several key advantages, such as (a) being exposed to what a process, concept, or construct looks like when it is performed or is featured at its highest levels, (b) being able to understand the factors that result in the higher levels of functioning, and (c) to be exposed to the higher range of possibilities. More simply, studying gifted students allows researchers to see and understand a subset of the population that is performing at the highest levels possible, providing researchers with key insights into how processes, concepts, and constructs can go wrong, and how to improve them. Sometimes to understand how something does not work well, one needs to study it when it works the best.

Hope, Giftedness, and Achievement

As noted earlier, there has been very little research done on hope in gifted samples. However, there are a few studies that can shed light on the relationship among hope, giftedness, and achievement. For example, Vialle, Heaven, and Ciarrochi (2007) conducted a study to examine the relationship of personality factors, hope, social support, and emotional well-being to academic achievement in 65 gifted (as measured by standardized tests of achievement) and 625

nongifted middle school students. They found that although hope had a higher correlation with academic achievement for gifted students than nongifted students ($r = .42$ vs. $.29$ respectively), the difference was not statistically significant ($p > .2$). Nonetheless, this study suggests that hope is associated with higher academic achievement for gifted students. In a different study of hope in gifted students, Holleran (2008) wrote an autoethnography based on six academically gifted (as identified by their school) high school students based her experiences, interactions, observations, and interviews with the students. She found that among these gifted students, being gifted actually encumbered their sense of hope because being identified as gifted usually changed the standards that they were held to, increased the intensity and level of competition they were thrust into, and intensified failures. As a consequence, being classified as gifted resulted in these students having lower amounts of hope overall in their first two years of high school and over the course of high school.

Academically At-Risk

Academically at-risk students are students that generally fall into one of two categories: (a) those students who have a low level of academic achievement as measured by GPA, standardizes tests, or class rank, or (b) students who miss a substantial amount of school (due to suspension, illness, or other reasons; Bridgeland, DiIulio, & Morison, 2006). Both categories of students are at high risk for dropping out of school entirely (Bridgeland et al., 2006; National Center for Education Statistics, 2001). There are several factors that result in a student being classified as academically at-risk such as family SES (Lambert, 1988; National Center for Education Statistics, 2001), psychological risk factors (such as trauma, Salzinger, Kaplan, Pelcovitz, Samit, & Krieger, 1984), culture (Jordan & Cooper, 2003), grade retention (Jimerson, Anderson, & Whipple, 2002), parents education (National Commission on Children, 1991), health problems (National Commission on Children, 1991), low feelings of school belonging (Mahan & Johnson, 1983), low academic ability (Maxwell, 1997), low motivation (Dev, 1997), and low perceived future prospects (Worrell & Hale, 2001). The benefits of studying academically at-risk students are similar to the benefits to studying academically gifted students; simply put, at-risk students offer insights into why students do not achieve, how underachievement can be prevented, and how interventions can improve achievement.

Hope, Being Academically At-Risk, and Achievement

Although Snyder, Shorey, and Rand (2006) underlined the importance of hope for academically at-risk students, there have been very few empirical studies investigating hope in academically at-risk students. A search of PsychINFO, ERIC, and Google Scholar returned just one article on hope and achievement in academically at-risk students. Worrell and Hale (2001) conducted a study focusing on how hope for the future impacts high school dropout rates. They found in a sample of 97 academically at-risk students that although frequency of cutting classes, GPA, time spent with friends, negative behaviors, and liking school did not predict dropout status of these high school students, hope did. Students that had high hope for the future graduated, those that did not dropped out. Hope correctly predicted the dropout status for 78% of the sample. Worrell and Hale (2001) measured hope with three items that were developed just for this study.

The Current Study

The current study is an examination of the psychometric properties of the CHS in three samples of students drawn from differing achievement levels: academically gifted, general education, and academically at-risk. This examination will provide insight into the utility of the CHS across the range of achievement, allowing for more hope research to be done across the

range of achievement. As previous research suggests that CHS scores are structurally sound, reliable, and have high factor coefficients (Snyder et al., 1997; Valle et al., 2004), it was hypothesized that CHS scores would exhibit good fit indices, high factor coefficients, and reliability in all three samples. In addition, in accordance with hope theory (which does not indicate that CHS scores have different patterns across gender or achievement; Snyder, 2002), it was hypothesized that CHS scores would exhibit configural, metric, and scalar invariance across achievement and gender.

Method

Participants and Procedure

Academically gifted students. The academically gifted sample consisted of 321 (60.1% female) gifted students aged 12–17 ($M_{age} = 14.39$, $SD = 1.39$; $M_{gpa} = 3.88$, $SD = 0.36$) attending a summer program at a major research university in a Western state. Students were classified as gifted on the basis of GPA, standardized test scores, and teacher recommendations. Students were asked to complete surveys at the end of the 6-week program as a part of the program evaluation. Self-reported racial/ethnic groups were African American (1%), Asian American (64.6%), European American (20.5%), Hispanic American/Latino (4.7%), and Other (9.8%). The average SES of this group was 4.43, or middle class (as measured using a self-report 7-point measure of SES from 1 = *Poor* to 7 = *Wealthy*).

General education. The general education sample consisted of a diverse sample of 318 (57.1% female) high school students aged 13–17 ($M_{age} = 15.11$, $SD = 0.72$; $M_{gpa} = 3.19$, $SD = 0.69$) recruited from a large diverse high school in an urban area in a Western state. The school distributed and collected surveys from participants as a part of school improvement program. Self-reported racial/ethnic groups were African American (17.9%), Asian American (9.2%), European American (44.4%), Hispanic American/Latino (12.8%), and Other (15.8%). The average SES of this group was 4.27 or middle class.

Academically at-risk students. The academically at-risk sample consisted of 266 (38.7% female) high school students aged 12–18 ($M_{age} = 15.94$, $SD = 1.45$; $M_{gpa} = 2.65$, $SD = 0.94$) who reported that they had been suspended from school at least once. Students are a subsample of students who were recruited from two large diverse high schools in an urban area in a Western state. The researcher recruited students during a free period during the school day. For those interested, the researchers sent home consent forms to their parents, which were returned to the researchers via the students' teachers. Self-reported racial/ethnic groups were African American (9.9%), Asian American (4.5%), European American (34.7%), Hispanic American/Latino (16.1%), American Indian (27.7%), and Other (7%). The average SES of this group was 3.59 or lower middle class. For participants younger than 18, assent was obtained from the participant and consent was obtained from the participant's parents. For participants older than 18, consent was obtained from the participant.

Measures

Hope was measured in this study using the CHS (Snyder et al., 1997). The CHS is a 6-item instrument made up of two 3-item subscales: (a) Pathways, the ability of youth to envision paths to their goals (e.g., "When I have a problem, I can come up with lots of ways to solve it") and (b) Agency, one's belief in their ability to persevere on those paths (e.g., "I am doing just as well as other kids my age"). Responses range from 1 (*None of the time*) to 6 (*All of the time*), with higher scores indicating either a higher ability to envision paths to one's goals, or a higher perceived ability to accomplish the goals one has envisioned. Missing data were handled using expectation maximization (25 iterations): 8 (0.4%) CHS scores were imputed for the gifted

group, 48 (2.5%) were imputed for the general education group, and 46 (2.9%) were imputed for the academically at-risk group.

Results

Descriptive Statistics

Table 1 contains means, standard deviations, and subscale intercorrelations by sample. The academically gifted group reported higher levels of total hope than both the general education ($p < .001$, $d = .19$) and the academically at-risk ($p < .001$, $d = .54$) samples, although only the difference between the academically gifted and academically at-risk group had a medium effect size. The general education group also reported significantly higher hope than the at-risk group ($p < .001$, $d = .35$), although the effect size was small. Moreover, differences among the groups were larger for agency ($.35 \leq d \leq .72$) than for pathways ($0 \leq d \leq .28$). The distributions of the scores were neither skewed (range = $-.66$ to $-.01$) nor kurtotic (range = $-.61$ to $.21$). The correlations between agency and pathways scores, as well as the inter-subscale correlations between agency and pathways are similar to those reported in the extant literature (Gilman, Dooley, & Florell, 2006; Snyder, 2002; Snyder et al., 1997). Internal consistency estimates – both alpha and omega (see Table 1) – for hope, agency, and pathways were equal to or greater than the widely accepted .70 cutoff (Nunnally & Bernstein, 1994).

Factor Analysis

Confirmatory factor analyses (CFAs) were used to examine the structural validity of CHS scores within achievement samples. CFAs were conducted using Mplus 7.3 (Muthén & Muthén, 1998–2014) and the robust weighted least squares estimator (WLSMV), which is considered best practice for ordinal data (Byrne, 2012; Flora & Curran, 2004; Rhemtulla, Brosseau-Liard, & Savalei, 2012). The first item of each subscale for all CFA analyses was set to 1 as an anchor item. In line with Hu and Bentler (1999), several fit indices are reported for each model: (a) the chi square, which accounts for the sizes of the correlations in the model and is a good measure of fit for samples less than 200 (Kenny, 2014); (b) the comparative fit index (CFI), which is an incremental measure of fit that accounts for the number of parameters estimated in the model; (c) the Tucker-Lewis index (TLI), which is an incremental measure of fit that accounts for model complexity; and (d) the root mean square error of approximation (RMSEA), which is an absolute measure of fit that accounts for complexity, sample size, and degrees of freedom (Kenny, 2014). Cutoffs that indicate that a model is fitting adequately are a non-significant chi square (for sample sizes between 75 and 200; Kenny, 2014), a CFI and TLI $>.90$ (Marsh, Hau, & Wen, 2004), and an RMSEA $\leq .08$ (Marsh et al., 2004).

Academically gifted. Table 2 contains fit indices for both theoretically plausible models for all samples. The first model, a 1-factor model of hope, has been used in previous literature (Ciarrochi, Heaven, & Davies, 2007; Vacek, Coyle, & Vera, 2010). The second model, a 2-factor model of hope consisting of two correlated subfactors, agency and pathways, is the theorized model of hope (Snyder, 2002; Snyder et al., 1997; Valle et al., 2004). As can be seen in Table 2, for the academically gifted sample, the 2-factor model fit slightly better than the 1-factor model. Although the CFI and the TLI were in the acceptable range for both models, the CFI was slightly higher for the 2-factor model. Both models had a significant chi square and the same RMSEA value. Factor loadings and effect sizes are reported in Table 3 for all three samples. All of the factor loadings for the 2-factor model of hope were above .5.

General education. Although both models in the general education sample had similar fit indices, the 2-factor model fit the data better. The CFI for both models was in the excellent fit range, with the CFI of the 2-factor model being slightly higher. The TLI for both models was in

the acceptable fit range, with the TLI of the 2-factor model being slightly higher. The RMSEA for both models was outside the acceptable range, with the RMSEA value of the 2-factor model being closer to the acceptable range. Both models had a significant chi square. All of the factor loadings for the 2-factor model of hope were above .5.

Academically at-risk. For the academically at-risk sample, although there were minimal differences in the pattern of fit indices, the 1-factor model fit the data better than the 2-factor model. The CFI for both models was in the acceptable range of fit, with the CFI of the 1-factor model being slightly better. The TLI for both models was in the mediocre range of fit, with the TLI of the 1-factor model being slightly better. The RMSEA for both models was outside the range of acceptable fit, with the RMSEA of the 1-factor model being slightly better. Both models had a significant chi square. Given the minimal differences in fit indices, theory supporting the 2-factor model, and the superior fit of the 2-factor model in the other two samples, the 2-factor model was used in subsequent analyses. All of the factor loadings for the 2-factor model of hope were above .5.

Invariance across achievement levels and gender. Multigroup confirmatory factor analysis was used to examine configural invariance (similar pattern of factors), measurement invariance (similar pattern of factor loadings, item intercepts, and residual variances), and scalar invariance (similar pattern of factor loadings when intercepts are constrained to equality) across gender and achievement level samples. The outcomes of these analyses are presented in Tables 4 and 5. Hirschfeld and Brachel (2014) asserted that invariance existed when: (a) the configural model has good fit and there are significant factor loadings in all groups, (b) the measurement model has better fit better than the configural model, and (c) and the scalar model has better fit than the measurement model. As can be seen in Tables 4 and 5, the fit of the multigroup confirmatory factor analysis improves going from configural to measurement, to scalar, demonstrating configural, measurement, and scalar invariance across all three samples for both achievement and gender.

Discussion

This study had three main goals: (a) to examine the structural validity and reliability of the CHS in three samples that span the range of achievement, (b) to examine whether CHS scores were invariant across achievement, and (c) examine test whether CHS scores were invariant across gender. This examination serves as evidence of how psychometrically sound CHS scores are across range of achievement and will allow researchers to study the relationship between hope and academic achievement in an academically gifted, general education, and academically at-risk population. Research on hope and achievement in these three samples will provide some insight into achievement, the generalizability of research conducted between hope and achievement, and into the relationship between perception-based constructs and academic achievement in general.

Validation of CHS in Academically Gifted and Academically At-Risk Populations

For the academically gifted and general education samples, the fit indices indicated the 2-factor correlated model fit better than the 1-factor model. In addition, all of the fit indices for the 2-factor models were either in the acceptable range or the excellent fit range, except for the RMSEA for both groups, which was much higher than the range of acceptable values. However, previous literature suggests that the RMSEA will be artificially high for models with small degrees of freedom (Kenny, 2014; Kenny, Kaniskan, & McCoach, 2015). This is such a common issue for CFA models with small degrees of freedom, that Kenny, Kaniskan, and McCoach (2015) argue not even computing the RMSEA for models with low degrees of freedom

(all CFAs in this study had small degrees of freedom). The factor loadings for the 2-factor model were also strong for both samples with all factors loading above .6. Finally, for both samples the alpha and omega, for hope and for its sub-factors, were in the acceptable range. All of this information lead to the conclusion that the CHS was valid in the academically gifted and general education populations as hypothesized.

For the academically at-risk sample the 1-factor model fit slightly better than the 2-factor model. Both the 1-factor and the 2-factor models had a significant chi square, an acceptable CFI statistic, a TLI statistic that was below the acceptable threshold of .90, and a RMSEA statistic that was well above the threshold. The 1-factor model had a slightly better CFI, TLI, and RMSEA. A reason the TLIs might be below the threshold of .90 might be because of the low sample size. Hu and Bentler (1995) found that when using a General Least Squares estimator (which Weighted Least Squares is), the TLI is related to sample size. More specifically, Hu and Bentler found that the TLI rejected true models with dependent latent variables too frequently when the sample size was less than 500. Overall, given that the differences between the two models were negligible, and theory supports the 2-factor model over the 1-factor model, the 2-factor model was chosen. In addition, the 2-factor model had acceptable factor loadings and reliability statistics. Altogether, given (a) the RMSEA and TLI were not the best indicators of fit under the conditions of the 2-factor model (i.e., low degrees of freedom and smaller sample size), and (b) 2-factor model had acceptable factor loadings and the reliability statistics, it was reasonable to conclude that the CHS was structurally valid and reliability in the academically at-risk sample as hypothesized.

Invariance Across Achievement and Gender

It was hypothesized that the CHS scores would be invariant across achievement and gender, that is exactly what was found. For both achievement and gender, the configural model showed a significant chi square, an excellent fit range CFI, an acceptable range TLI, and a high RMSEA. Given all fit statistics together, along with significant factor loadings for all models, it was concluded that configural invariance existed for both achievement and gender under the criteria outlined in Hirschfeld and Brachel (2014). In addition, moving from the configural invariance model to the measurement invariance model, for both achievement and gender, model fit improved. The achievement and gender measurement invariance model had a higher CFI, a higher TLI, and a lower RMSEA, thus demonstrating measurement invariance for both achievement and gender (Hirschfeld and Brachel, 2014). Finally, comparing the measurement invariance models for achievement and gender to the scalar invariance models of achievement and gender, model fit improved again. For achievement, the scalar invariance model had a higher TLI, lower RMSEA, and a slightly lower CFI. For gender, the scalar invariance model has a slightly higher CFI, higher TLI, and a lower RMSEA. These patterns of fit indices indicate improved fit, thus demonstrating scalar invariance for both gender and achievement. Therefore, the CHS scores were invariant across gender and achievement as hypothesized.

Conclusions and Implications

In this study the CHS was shown to be structurally valid and reliable across achievement. In addition, scores on the CHS were shown to be invariant across achievement and gender. These findings have several implications for research. First, now that the CHS has been shown to be a valid measure of hope in an academically at-risk sample and an academically gifted sample (it had already been shown to be valid in a general education population, Valle et al., 2004), the relationship between hope and achievement in these populations can be further explored to better inform hope interventions for these populations (instead of extrapolating from

general education populations). Hope interventions to improve academic achievement are cheap, time efficient, and effective, making them excellent candidates to be employed as universal interventions in schools to help raise the achievement of low hope students (Feldman & Dreher, 2011). Second, these findings allow for achievement to be understood more broadly in general. This study shows that the CHS can be used and compared across achievement levels, allowing more insight into not only the relationship between hope and achievement, but also into the relationship between achievement and perception-based constructs, as hope is a perception-based construct with a close relationship with achievement (Feldman & Kubota, 2014). Third, this study allows for an expansion of the hope literature. There is now evidence indicating that the CHS can be used in academically gifted and academically at-risk populations, allowing for a deeper understanding of hope in non-general education populations. Fourth, CHS scores can now be compared across genders with the confidence that the scores are on the same scale. Finally, this study shows that no matter where one is on the achievement spectrum, there is hope that can be studied.

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Table 1
Descriptive Statistics for Children's Hope Scale Scores

Sample	<i>M</i>	<i>SD</i>	α	95% CI	ω	1	2
Academically Gifted (<i>N</i> = 321)							
1. Agency (<i>d</i> = -.35, -.72)	4.66	0.87	.73	.67, .77	.78	–	.55
2. Pathways (<i>d</i> = 0, -.27)	4.26	0.99	.79	.75, .83	.82	.70*	–
3. Hope (<i>d</i> = -.19, -.54)	4.46	0.85	.85	.82, .87	.89		
Gender							
4. Male	4.47	0.87					
5. Female	3.44	0.84					
General Education (<i>N</i> = 318)							
1. Agency (<i>d</i> = -.35,)	4.33	0.99	.73	.68, .78	.78	–	.50
2. Pathways (<i>d</i> = -.28)	4.26	0.94	.72	.66, .77	.77	.52*	–
3. Hope (<i>d</i> = -.35)	4.30	0.88	.82	.79, .85	.87		
Gender							
4. Male	4.40	0.88					
5. Female	4.22	0.88					
Academically At-Risk (<i>N</i> = 266)							
1. Agency	3.98	1.03	.70	.63, .76	.78	–	.52
2. Pathways	3.99	1.01	.74	.68, .79	.80	.72*	–
3. Hope	3.98	0.95	.84	.81, .87	.88		
Gender							
4. Male	4.05	0.92					
5. Female	3.87	0.99					

Note. Correlations below the diagonal are for observed scores and correlations above the diagonal are for the latent constructs from the 2-factor measurement model (see Table 2).
 **p* < .001.

Table 2
Fit Indices for CHS Scores Derived from Confirmatory Factor Analyses (WLSMV)

Model	χ^2	df	CFI	TLI	RMSEA	(90% C.I.)
Academically Gifted ($N = 321$)						
1. Null	2300.62*	15				
2. 1-factor (Hope)	135.55*	9	.945	.908	.209	.179, .241
3. 2-factor (Pathways and Agency)	120.64*	8	.951	.908	.209	.177, .243
General Education ($N = 318$)						
1. Null	1148.25*	15				
2. 1-factor (Hope)	72.16*	9	.956	.927	.149	.118, .181
3. 2-factor (Pathways and Agency)	58.22*	8	.965	.934	.140	.108, .175
Academically At-Risk ($N = 266$)						
1. Null	1511.19*	15				
2. 1-factor (Hope)	121.07*	9	.925	.875	.216	.183, .251
3. 2-factor (Pathways and Agency)	122.59*	8	.923	.856	.232	.197, .269

Note. CHS = Children's Hope Scale; CFI = Comparative Fit Index; TLI = Tucker-Lewis Index; RMSEA = Robust Root Mean Square Error of Approximation; C.I. = Confidence Interval (for RMSEA).

* $p < .001$.

Table 3
Standardized Coefficients for the 2-factor Structure

	Gifted		General Education		At-Risk	
	Coefficients	R^2	Coefficients	R^2	Coefficients	R^2
Agency						
1	.78*	.61	.79*	.63	.71*	.51
3	.68*	.46	.82*	.67	.78*	.61
5	.77*	.59	.63*	.39	.67*	.45
Pathways						
2	.75*	.57	.73*	.53	.74*	.55
4	.81*	.66	.70*	.49	.68*	.46
6	.80*	.64	.70*	.49	.77*	.59

Table 4

Fit Indices for CHS Invariance across Achievement Groups Derived from Confirmatory Factor Analyses (WLSMV)

Model	χ^2	df	CFI	TLI	RMSEA	(90% C.I.)
1. Configural Invariance	294.41*	24	.949	.904	.193	.174, .213
2. Metric Invariance	205.79*	32	.967	.954	.134	.117, .152
3. Scalar Invariance	284.51*	76	.960	.977	.095	.084, .107

Note. CHS = Children's Hope Scale; CFI = Comparative Fit Index; TLI = Tucker-Lewis Index; SRMR = Standardized Root Mean Square Residual; RMSEA = Robust Root Mean Square Error of Approximation; C.I. = Confidence Interval (for RMSEA).

* $p < .001$.

Table 5

Fit Indices for CHS Invariance across Gender Groups Derived from Confirmatory Factor Analyses (WLSMV)

Model	χ^2	df	CFI	TLI	RMSEA	(90% C.I.)
1. Configural Invariance	265.46*	16	.951	.909	.186	.167, .206
2. Metric Invariance	187.03*	20	.967	.951	.136	.119, .154
3. Scalar Invariance	202.53*	42	.969	.978	.092	.080, .105

Note. CHS = Children's Hope Scale; CFI = Comparative Fit Index; TLI = Tucker-Lewis Index; RMSEA = Robust Root Mean Square Error of Approximation; C.I. = Confidence Interval (for RMSEA).

* $p < .001$.

The Magic of Hope: Hope Mediates the Relationship Between Socioeconomic Status and Academic Achievement

In America, achievement in schools is highly valued (National Center for Children Education Statistics, 2008). It is common practice for parents to push their children to achieve in schools and for students to push themselves to achieve in schools. In fact, academic achievement is so coveted that educated parents (as measured by having at least a bachelor's degree) almost uniformly expect their children to graduate from college (88%; National Center for Children Education Statistics, 2008), and many students commonly sacrifice sleep, mental health, and free time to achieve (American College Health Association, 2012; Galin, 2012). For example, Thacher (2008) found in a sample of 120 university students, 72 (60%) reported pulling at least one all-nighter in order to receive a better grade during their educational career and that these same students reported receiving on average an hour less sleep than their counterparts who did not pull all-nighters in an attempt to get better grades. These high expectations are held and these sacrifices made with the hope that achieving academically will give students more opportunities at success in life (Pryor et al., 2012).

Given the value placed on academic achievement, it is important to understand what variables predict achievement. One of the most studied and consistent predictors of academic achievement is socioeconomic status (SES, which refers to a combination of wealth, education, and occupational prestige, of the adult, or the student's family (Davies & Guppy, 1997; Davis-Kean, 2005; Mare, 1980; Sirin, 2005). SES has been shown to affect academic achievement primarily in two ways, materially and perceptually. SES has been shown to affect achievement materially through students from high SES families having access to high priced tutors, test preparation, and schools, all of which are generally higher quality than those used by students from low SES families (Aikens & Barbarin, 2008; Orr, 2003). SES has been shown affect academic achievement perceptually via social cognitive processes through which students construe their educational prospects and opportunities (Destin, Richmana, Varnerb, & Mandara, 2012; S. E. Johnson, Richeson, & Finkel, 2011; Spencer & Castano, 2007).

In this paper, two studies examine the mediational pathway between socioeconomic status to academic achievement via a perception-based construct—hope. In the first section of the paper, I briefly review literature on socioeconomic status, academic achievement, and hope. Next, I discuss how the constructs are interrelated. Then, I propose a theoretical framework for a mediational pathway from socioeconomic status to academic achievement via hope. Finally, I present two studies testing the mediational pathway of socioeconomic status to academic achievement via hope.

Socioeconomic Status

SES has been defined and measured in various ways in research (National Center for Educational Statistics, 2012). In this article, SES is defined as one's perceived family status and monetary resources as compared to others (Davies & Guppy, 1997). In addition to being a key contributor to academic achievement, SES is positively related to many other positive outcomes such as social prestige (Beeghley, 2004; Domhoff, 1998), IQ (Tucker-Drob, Rhemtulla, Harden, Turkheimer, & Fask, 2010; Turkheimer, Haley, Waldron, D'onofrio, & Gottesman, 2003), vocabulary development (Hart & Risley, 2003), and health (Adler & Ostrove, 1999). For example, in one well-known study, Hart and Risley (2003) conducted a study to examine the effects of poverty on academic growth for children seven months through three years-old. They spent one hour each month for two and a half years observing the various home-based

environment interactions of a financially diverse sample of 42 families with a child 7 to 9 months of age. They found huge differences between high SES and low SES families.

During this critical period of language development, children of high SES families heard about 30 million more words than children in low SES families in their first three years of life. The researchers also found high SES families promoted better child-parent interaction, better strategies for seeking and incorporating new and complex information, and encouraged their children to speak at a rate more than six times higher than low SES families. These differences could be the result of different patterns of thinking employed by high SES and low SES families (Kraus, Piff, Mendoza-Denton, Rheinschmidt, & Keltner, 2012).

Academic Achievement

Academic achievement, as measured by grade point average (GPA), has been associated with many positive outcomes after college graduation, such as an increased probability of gaining employment (Barr & Mcneilly, 2002), an increased probability of graduate school admittance (Attiyeh & Attiyeh, 1997), and, on average, an increased income after college (P. A. Cohen, 1984). For example, Barkume (1998) found the higher a college student's cumulative GPA at graduation, the more likely the student was to be employed, the more likely the student's employment had career potential if the student was employed, and the more likely the student was earning an advanced degree.

In addition, academic achievement has been shown to be associated with better self-discipline (Duckworth & Seligman, 2005), better decision-making skills (Fleming et al., 2005), higher IQ scores (Brookover, Thomas, & Paterson, 1964), and a better overall sense of well-being (Quinn & Duckworth, 2007). Thus, as can be seen above, academic achievement is a good indicator of several key aspects of one's life during the course of life. In the present study we will test hypotheses concerning the interaction between SES and hope in predicting academic achievement.

Hope

Hope is the perceived ability to execute envisioned routes to desirable future goals. More specifically, hope is a two-component cognitive motivational process primarily studied using Snyder's (2002) theory of hope and its accompanying scales (Snyder, 2002; Snyder et al., 1991, 1997). The first component of hope is pathways. Pathways are the envisioned paths to goals. High hope individuals, as measured by having an above average level of hope, are not only better at envisioning plausible paths to their goals, but they also produce several alternative paths to their goals and more goals in general, in case of unexpected challenges en route to goals or a goal proves unattainable (Langelle, 1989; Snyder, 2002).

The second component of hope is agency. This component encompasses the belief, as well as the corresponding motivation and persistence, that individuals have in their capacity to follow their envisioned paths to accomplish their desired goals (Snyder, 2002). High hope individuals have been shown to engage in more strategies that promote stronger beliefs in their abilities to accomplish goals (Snyder, Lapointe, Crowson, & Early, 1998).

Hope in adolescents is most typically assessed with the Children's Hope Scale (Snyder et al., 1997), and consistently predicts better outcomes in a multitude of domains. Individuals with high hope, as opposed to low hope, tend to demonstrate increased academic achievement across all grade levels, despite hope not being significantly related to verbal or full scale IQ (Snyder et al., 1997). Additionally, high hope individuals tend to fare better academically than low hope individuals even when previous achievement is controlled for (Gallagher & Lopez, 2008; Snyder, Cheavens, & Michael, 1999; Worrell & Hale, 2001). In addition, high hope in

individuals is also associated with increased performance in athletics (Curry & Snyder, 2000), better overall health (Irving et al., 1998; Kwon, 2002), better social adjustment and competence (Kwon 2002; Snyder et al., 2007), and better problem solving abilities (Michael, 2000).

In general, high hope individuals are energetic, view obstacles as challenges, generate contingency plans, gather support when needed, experience less stress and anxiety, have many ideas for their future, are excited about their future, and perceive a high likelihood of success in their endeavors (Lopez, 2010; Snyder, 2002). In contrast, this same research finds that low hope individuals have low energy, commonly feel struck, have problems envisioning paths to their goals, do not believe in or are uncertain about their ability to accomplish their goals, do not persist, experience high anxiety, do not use failed experiences to inform a new plan, and are discouraged because they focus on the likelihood of failure in their endeavors (Lopez, 2010; Snyder, 2002).

Polls of over 450,000 students, including both convenience and representative samples, found that about half of American school-aged students are hopeful (Gallup, 2009, 2013). Fortunately, for the students who are not hopeful, hope is malleable (Gallup, 2009; Lopez et al., 2004; Lopez, Rose, Robinson, Marques, & Pais-Ribeiro, 2009). In a meta-analysis of 27 studies on hope enhancement strategies, Weis and Speridakos (2011) found that one's level of hope can be significantly changed. More specifically, across studies, hope interventions have been shown to improve hope levels with an average effect size of .39 (Cohen's *d*). Thus, the data show that hope is a malleable, highly influential construct that can make a huge difference across several domains in a person's life.

Socioeconomic Status and Academic Achievement

Sirin (2005) explored the relationship of SES to academic achievement in a meta-analysis that consisted of more than 100,000 students attending more than 6,000 schools. He found that the correlation between academic achievement and SES ranged from .25 to .47 depending on how academic achievement and SES were measured. Thus, material resources have been shown to be substantially related to achievement, which may explain why many studies use objective measurements of material resources such as income to operationalize SES in studies predicting academic achievement (Sirin, 2005; Sutton & Soderstrom, 2010). However, different studies suggest that the exact mechanisms through which SES affects academic achievement do not reduce *entirely* to more material resources. These studies suggest that an individual's *perceived* SES is also related to academic achievement (Jebson & Moses, 2012; S. E. Johnson, Richeson, & Finkel, 2011; Spencer & Castano, 2007).

Spencer and Castano (2007) found that when socioeconomic identity is primed before a test or when the test is presented as diagnostic of intelligence, low SES students perform well below their average ability. Similarly, S. E. Johnson et al. (2011) reported many students that were objectively wealthy, felt academically inferior at their school because they were of a lower SES than the other students in that context. Additionally, S. E. Johnson et al. found that as a result of managing these cognitive concerns and attempting to perform academically, these students experienced a higher amount of cognitive depletion, which resulted in these students having lower academic achievement than their higher SES counterparts.

Finally, Destin et al. (2012) found that perceived SES was a significant predictor of academic achievement ($r = .17$) in a sample of 430 high school students. Hence, the pathway through which SES affects academic achievement also involves social-cognitive processes through which the student interprets his or her academic opportunities. This literature speaks to

the promise of identifying malleable social cognitive processes that mediate the relationship between SES and academic achievement. We propose that hope is one such process.

Socioeconomic Status, Hope, and Academic Achievement

Thought patterns in SES groups and perceptions of the environment. Kraus et al. (2012) argued that high SES and low SES populations engage in different patterns of thinking that are shaped by “chronic perceptions of [their] relative standing in society or in [their] community” (p. 548). These authors asserted that as a consequence of having scarce resources and living in low SES contexts, low SES individuals are exposed to various contextual factors such as lower wage jobs, job instability, lower resourced schools, dangerous neighborhoods, and less powerful social connections. They further asserted that these contextual factors constrain low SES individuals’ goals, interests, actions, economic resources, and social opportunities by orienting low SES individuals to managing external constraints, threats, crises, and situational factors. Essentially, they asserted that low SES individuals’ perception of the world is characterized by uncertainty, reduced resources, lack of individual control, and a prioritization of external contextual factors.

In contrast, high SES individuals who are endowed with greater material resources, great social connections, job stability, and fewer external constraints are positioned to prioritize individual factors. Instead of being externally oriented, they are self-oriented and motivated by their internal states such as their goals and interests, which in high SES contexts, they are encouraged to pursue. Kraus et al. (2012) argued that high SES individuals’ thought patterns and, as a consequence, their perceptions about the world, are characterized by freedom, choice, internal motivation, control, and a prioritization of individual factors.

Kraus et al. (2012) bolstered their argument by showing that low SES individuals (a) were more vigilant to threats in their environment (Chen & Matthews, 2001; Hajat et al., 2010), (b) experienced less personal control (W. Johnson & Krueger, 2005; Kraus, Piff, & Keltner, 2009), (c) were more community oriented (Hart & Edelman, 1992; Weininger & Lareau, 2009), (d) experienced more empathy for others (Kraus, Cote, & Keltner, 2010), and (e) exhibited a higher preference for contextual explanations than dispositional explanations (Beauvois & Dubois, 1988; Kluegel & Smith, 1986). Additionally, several researchers have found that the environment (i.e., contextual factors) of populations in low SES contexts account for the majority of their outcomes, whereas individual differences account for the majority of the outcomes of those populations from high SES contexts (Harden, Turkheimer, & Loehlin, 2007; Tucker-Drob, Rhemtulla, Harden, Turkheimer, & Fask, 2010; Turkheimer, Haley, Waldron, D’Onofrio, & Gottesman, 2003).

In keeping with the theory outlined in Kraus et al. (2012), hope is one possible mechanism through which SES influences academic achievement. More specifically, given that low SES individuals prioritize contextual factors, they may not be able to effectively and efficiently focus on and envision goals in the future. In essence, low SES individuals could be poor visionaries, which results in low hope and, consequently, low academic achievement. In support of this hypothesis, Snyder (2002) found that low SES individuals tend to have lower hope than high SES individuals. Ultimately, examining if hope partially¹ mediates the relationship between SES and academic achievement is important because if hope does partially

¹ Partial, as opposed to complete mediation, is appropriate because, as noted above, material resources do factor into achievement irrespective of the perception of the material resources (Aikens & Barbarin, 2008; Orr, 2003).

mediate this relationship, it might provide an effective and cost efficient conduit through which intervention can be targeted for low SES students, improving their academic achievement despite their SES disadvantage (Kraus et al., 2012; Snyder, 2000).

Study 1

In the first study, the meditational relationship between SES and academic achievement via hope was tested using a large ethnically diverse adolescent population. More specifically, relying on mediation approaches outlined by Baron and Kenny (1986) and using the theoretical framework outlined above, in the present investigation we test the following hypotheses: (a) Lower SES students would demonstrate lower academic achievement than higher-SES students, (b) lower SES students would report less hope than higher-SES students, and (c) hope would partially mediate the relationship between SES and academic.

Method

Participants. The sample consisted of 586 (51.8% female) adolescents aged 11–18 ($M_{\text{age}} = 15.69$, $SD = 1.57$; $M_{\text{grade}} = 10.29$, $SD = 1.39$) from two Western states. Participants were recruited from a summer program at a major university, two urban high schools, a suburban high school, and a rural high school. Self-reported racial/ethnic groups were African American ($n = 38$; 6.6%), Asian American ($n = 76$; 13.2%), European American ($n = 226$; 39.4%), Hispanic American/Latino ($n = 61$; 10.6%), American Indian ($n = 126$; 22%) and Other ($n = 47$, 8.2%). Twelve participants were excluded from analysis because they were missing data on key variables such as ethnicity, SES, hope, or GPA.

Procedure and measures. Graduate students and the principal investigators went to the summer program and two urban schools to recruit students to participate in the study. They left the surveys with teachers of various classes and picked them up the next week. Students took questionnaire packets home and returned them within the week. Student participants received a \$10 honorarium. In addition, data were also collected from a rural and suburban school in another state. The surveys were mailed to school administrators who administered the surveys. Completed surveys were mailed back to the principal investigators. Participation in this study was voluntary. For all participants under the legal age of consent, assent was obtained from the participant and consent was obtained from their parent or legal guardian. For all participants older than the legal age of consent, consent was obtained. This study was reviewed and sanctioned by the Internal Review Board at the University of California, Berkeley.

Hope. Hope was measured with the Child Hope Scale (CHS; Snyder et al., 1997). The CHS is a 6-item instrument made up of two subscales (a) Pathways, the ability of youth to envision paths to their goals (e.g., “When I have a problem, I can come up with lots of ways to solve it”) and (b) Agency, the youth’s belief in their ability to persevere on those paths (e.g., “I am doing just as well as other kids my age”). Responses range from 1 (*None of the time*) to 6 (*All of the time*), with higher scores indicating either a higher ability to envision paths to one’s goals, or a higher perceived ability to accomplish the goals one has envisioned. The average of all 6 items was used in this study. The CHS has been validated and scores from the measure were found to be internally consistent (alpha range .72 – .86; Snyder et al, 1997; Valle, Huebner, & Suldo, 2004).

SES. SES was measured using the MacArthur Scale of Subjective Social Status–Youth Version. This measure asks children and adolescents to mark where they perceive their family is in relation to other families in American society based on monetary resources, parental occupations, and schooling on a ladder. There are 10 rungs on the ladder to choose from, with the highest rung indicating the highest SES and the rung on the bottom indicating the lowest

SES. The MacArthur Scale of Subjective Social Status–Youth Version has been validated and scores from this measure were found to be internally consistent (Goodman et al., 2001).

Academic achievement. Current year grade point average (GPA) on a 0 to 4 scale was used to measure academic achievement. GPA was obtained from participants via self-report. Kuncel, Credé, and Thomas (2005) found in a meta-analysis consisting of over 44,00 adolescent students that adolescent self-report GPA had a .82 correlation with actual GPA.

Results

Table 1 contains means, standard deviations, and correlations among GPA, SES, and hope. Preliminary analyses found that race and gender did not affect the results reported. Correlations among hope, SES, and academic achievement were weak to moderate and positive, and all were statistically significant ($p < .05$).

Using the procedure outlined by Baron and Kenny (1986) and reaffirmed as an appropriate and accurate mediational procedure by Iacobucci (2013), I conducted three regressions to test for mediation and then conducted a Sobel test (see Figure 1). In the first regression model, SES significantly predicted GPA. In the second regression model, SES significantly predicted hope. In the final regression model with hope and SES as predictors of GPA, SES no longer predicted GPA, while hope significantly predicted GPA. However, the Aroian Sobel test was significant ($t = 4.68$, $SE = 0.008$, $p < .001$). The adjusted $R^2 = .077$ for the model.

Discussion

The goals of this study were (a) to examine the relationship between SES and both academic achievement and hope, and (b) to test the mediational relationship between SES and academic achievement via hope. This study had several notable findings. First, it was hypothesized that SES would correlate positively with academic achievement. This first hypothesis was supported; those students who reported lower perceived SES generally had lower GPAs than those students who reported a higher perceived SES, although the effect size was small. Second, it was hypothesized that SES would correlate positively with hope. This second hypothesis was supported; those students who reported lower perceived SES generally had lower hope than those students who reported a higher perceived SES, this effect size was also small. Third, it was hypothesized that hope would mediate the relationship between SES and GPA as a consequence of the different environmental effects of SES on the perceptions of low and high SES populations. The results indicated that hope was a partial mediator of the relationship between SES and GPA, suggesting that SES affects students' levels of hope, which influences their academic achievement.

Given that a major aspect of hope theory is the concept of how people deal with obstacles and stressors (high hope individuals cope with and respond to obstacles and stressors as challenges, whereas low hope individuals feel stuck and defeated; Snyder et al., 1991, 1998), a question that arises from this study is what specific role do the obstacles and stressors of the different SES contexts play in this mediational relationship? More specifically, does the obstacle and stressor aspect of hope account for a significant portion of the mediational relationship between SES and GPA? If it does, the size of the mediational effect would be different for different populations because different populations endure varying levels of obstacles and stressors (Crocker, Major, & Steele, 1998; Fiske, 1998).

Study 2

Study 2 was conducted to replicate Study 1 in an independent sample of minority students. As minority students in the US endure more challenges, obstacles, and stressors in the

academic realm than non-minorities students (Booker, 2006; G. L. Cohen, Steele, & Ross, 1999; Crocker, Major, & Steele, 1998; Fiske, 1998), it is possible the mediating effect hope has on the relationship between SES and achievement is stronger as a result of challenges and obstacles being such a big aspect of hope theory. Similar to Study 1, the following hypotheses were tested: (a) Lower SES students would demonstrate lower academic achievement, (b) lower SES students would report less hope, (c) hope would mediate the relationship between SES and academic, hope's meditational effect would be stronger in the minority population.

Method

Participants and procedure. Participants were 86 (58.1% female) 9th and 10th grade students from a large multi-ethnic urban high school in a western state. The students ranged in age from 14-17 ($M_{\text{age}} = 15.02$ years, $SD = 0.801$). Self-reported racial/ethnic groups were African American ($n = 32$; 37.2%), Asian American ($n = 23$; 26.9%), and Hispanic American/Latino ($n = 31$; 36.1%). These data were a subset of a larger data set collected data for use in school improvement activities. The high school administered the questionnaire to assess school climate and other variables of interest to the school administration.

Measures. The hope and academic achievement measures were the same as those used in Study 1. The SES measure used in this study was a 7-option SES self-report measure, with the following options: *Poor*, *Working class*, *Lower middle class*, *Middle class*, *Upper middle class*, *Lower upper class*, and *Wealthy*.

Results

Table 2 contains means, standard deviations, and correlations GPA, SES, and hope. As in Study 1, correlations among hope, GPA, and SES were small to moderate, positive, and all significant at the .05 level. Preliminary analyses found that race and gender did not affect the results reported. Again using the procedure outlined by Baron and Kenny (1986), I conducted three regressions and the Sobel test to test for mediation (see Figure 2). In the first of the three regression models, SES significantly predicted GPA. In the second model, SES significantly predicted hope. In the last model, with hope and SES as the predictors, the SES/GPA relationship was not significant, while hope was still a significant predictor of GPA. The Aroian Sobel test was significant ($t = 2.20$, $SE = 0.038$, $p = .027$) and the adjusted $R^2 = .111$ for this model.

Discussion

This study had several goals. The first goal was to replicate the findings from Study 1 through (a) examining the relationship between SES and both academic achievement and hope, and (b) testing the meditational relationship between SES and academic achievement via hope in a different population using a different measure of SES. The same pattern of findings were found: (a) SES positively correlated with both hope and academic achievement, and (b) hope partially mediated the relationship between SES and GPA, under the different study conditions, confirming and generalizing the finding from Study 1. The second goal of this study was to test whether the mediation would be stronger in a minority population than a mixed population of both minorities and non-minorities as a consequence of the additional obstacles and stressors that minorities encounter in the academic domain. However, this hypothesis was not supported. In both samples, the size of the mediation coefficient was roughly the same

General Discussion

Mediation: SES and GPA via Hope

The perception of a stressor or situation in general has powerful implications for how one responds (Adler & Ostrove, 1999; G. L. Cohen et al., 1999). A person encountering a stressor or

situation can react in way that leads to an auspicious or detrimental outcome depending on that person's perception. For instance, if the person sees the stressor as a challenge, he is more likely to act in a way that leads to an auspicious outcome. However, if he sees it as an obstacle that causes him to be stuck, he is more likely to act in a way that leads to a detrimental outcome (Snyder et al., 1991, 1998). The perception of a stressor or situation is sometimes the difference between a positive and negative outcome. In these two studies, how SES and hope relate to perception and consequently, their role in academic achievement was explored. First, these studies replicated the empirically established finding of SES positively predicting academic achievement (Sirin, 2005). Second, a positive correlation between hope and SES was found. Third, using two different populations and two different measures of SES, the relationship between SES and GPA was found to be partially mediated via hope.

These studies support Kraus et al.'s (2012) theory that people of different SES groups perceive situations in different ways leading to different responses and outcomes. More practically, this study suggests being from a low SES background may have an effect on academic achievement through limiting the possibilities that the low SES individuals perceive as reasonably likely. With limited possibilities, the expectations (and as a consequence, the motivation; Feather, 1961) of low SES individuals are lowered to the standards that are typical of someone from a low SES background, such as a lower GPA (Sirin, 2005). Increased hope may have its effect on low SES individuals by broadening the possibilities they perceive as reasonably likely, increasing their ability to envision primary and alternative paths to their goals and increasing their belief that they can achieve better outcomes. A low SES individual with a high level of hope may not be limited by what is typical for someone from their SES because they are more likely to have a plan to achieve better outcomes and the motivation to realize it. Thus, a high hope individual, in spite of being low SES, may be able to overcome their SES disadvantage.

Role of Hope in the SES/Academic Achievement/Relationship

It was hypothesized that hope would have a bigger effect on the relationship between SES and academic achievement in a minority population than a population mixed with both minorities and non-minorities. This hypothesis was based on the contention that minorities encounter additional stressors (e.g., racism, discrimination, and stereotypes) in the academic realm (Booker, 2006). This hypothesis was not supported. Hope was found to be about as influential in the minority sample as in the sample mixed with both minorities and non-minorities.

In both the mixed and the minority sample, hope accounted for the majority of variance in academic achievement. These findings indicate that hope has similar influence in both populations and that the additional stressors in minority populations did not lead to hope having a bigger impact. In addition, these findings suggest that hope interventions could be implemented universally and have similar effects across populations. More importantly, to find in two different populations, using two different widely used measures of SES, that SES makes a very small unique contribution as compared to hope in the variance of academic achievement is quite surprising because SES has been touted as one of the most important factors in academic achievement (Sirin, 2005). Given that hope made a much bigger contribution in both studies, this implies that if effective hope interventions were available to low SES students, then SES would not matter as much for high academic achievement as previously believed. Additionally, this further underlines the importance of hope in future research, as well as the importance of perception on positive and negative academic outcomes.

Limitations

These studies had several limitations. First, both studies use cross-sectional data. Cross-sectional data limits the causal claims of mediation as cross-sectional data is not a psychological experiment testing for causality. Second, neither sample consisted of an all-low SES population, which limits how much can be extrapolated about that population from these mixed-population studies. Therefore, testing whether hope mediates the relationship between SES and academic in an all-low SES sample would give a more accurate understanding of hope's effect in that population. Finally, although self-report has been found to be a reliable indicator of actual GPA (Shaw & Mattern, 2005), it would have been best practice to obtain GPAs from the students' school instead of via self-report.

Implications

The practical implications of hope mediating the relationship between SES and GPA are immense. Increasing a student's SES is difficult, expensive, and highly impractical on a grand scale (Jäntti, 2006). However, increasing a student's hope can be inexpensive, highly effective, and can be employed at all levels of education (see Weis & Speridakos, 2011). Finding that hope not only mediates this relationship, but that it also accounts for the majority of the variance in academic achievement that SES and hope together explain, suggests that adolescents from low SES backgrounds may be able to achieve as much as their higher SES counterparts (all else being equal), if they receive a little extra assistance via a hope intervention. Further, these studies support that hope can be implemented universally to ethnically mixed groups of low SES adolescents and it would help them all similarly.

Finally, these studies highlight the importance of hope for mitigating the achievement gap. Many minority students who underachieve are typically of low SES (Lee, 2002). If hope interventions are employed widely and universally, they can have a very cost-effective and highly beneficial effect on low SES students. Better yet, if schools, teachers, and parents can focus on increasing the hope of youth, less hope-intensive interventions will be needed because hope interventions can make *ripples*, small amounts of hopeful energy that are given off by hopeful people that model and encourage hopeful behavior and actions, thus increasing everyone's level of hope (Lopez, 2010).

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Table 1

Study 1: Mean, SD, and Correlations among SES, Hope, and GPA Variables (N = 618)

Variables (range)	<i>M</i>	<i>SD</i>	1	2
1. SES (1-10)	5.89	1.54		
2. GPA (0-4)	3.05	0.81	0.10*	
3. Hope (0-6)	4.15	0.89	0.14**	0.28**

* $p < .05$. ** $p < .01$.

Table 2

Study 2: Mean, SD, and Correlations among SES, Hope, and GPA Variables (N = 86)

Variables (range)	<i>M</i>	<i>SD</i>	1	2
1. SES (1-6)	3.86	1.10		
2. GPA (0-4)	3.10	0.75	.22*	
3. Hope (0-6)	4.44	0.88	.30**	.34**

* $p < .05$. ** $p < .01$.

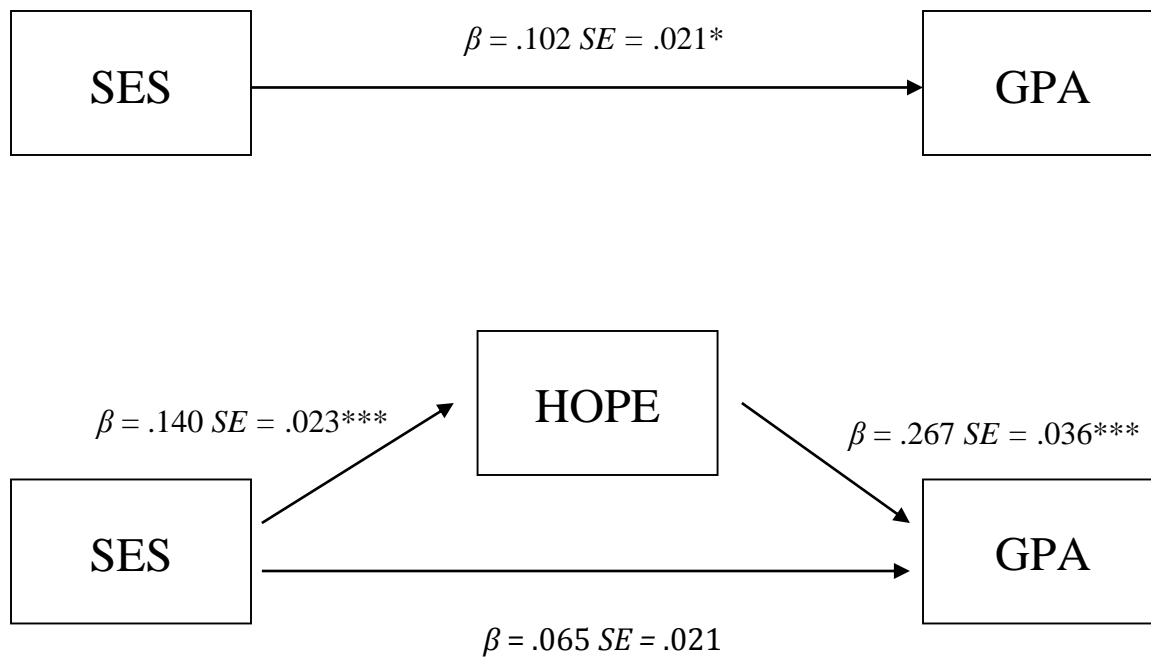


Figure 1. Standardized mediational pathway from SES to GPA via hope.

* $p < .05$. *** $p < .001$.

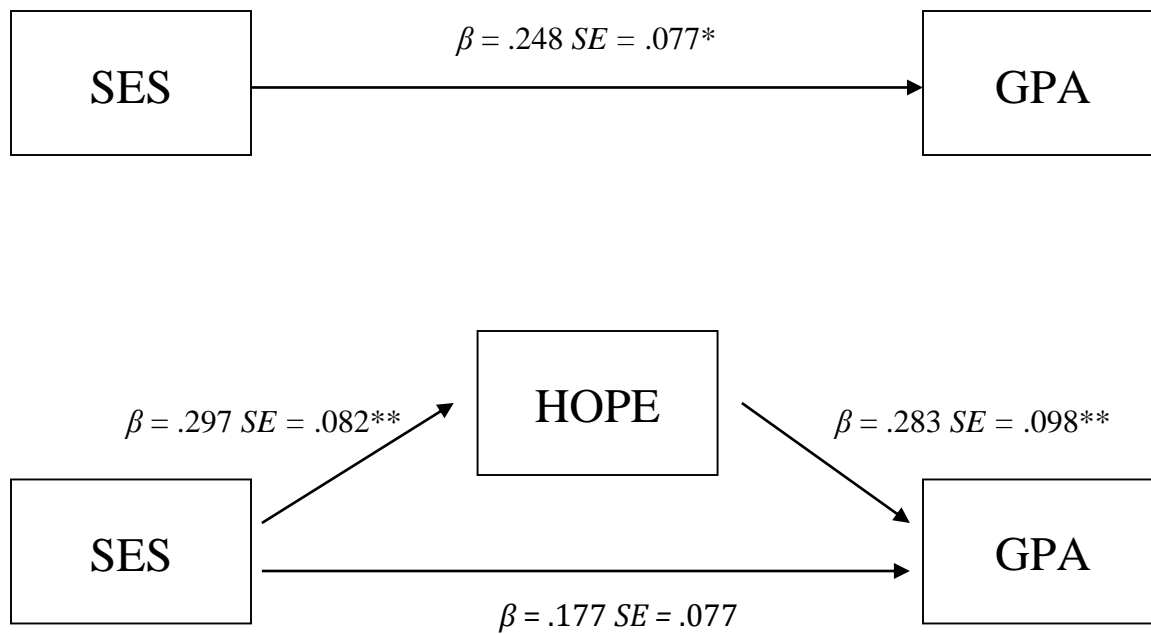


Figure 2. Standardized mediational pathway from SES to GPA via hope.

* $p < .05$. ** $p < .01$.

Profiles of Hope: How Hope Relate to School Variables

Student success during the adolescent years has been linked to several positive outcomes. Adolescents with higher grade point averages (GPA) earn more money (French, Homer, Popovici, & Robins, 2015; Oehrlein, 2009), are more likely to get accepted into highly ranked colleges (Espenshade, Hale, & Chung, 2005), are more likely to be successful in college (Noble & Sawyer, 2004), and are more likely to be hired after graduating from college (Barr & Mcneilly, 2002) than those with lower GPAs. Further, students that graduate from college generally have higher status jobs, are happier overall, and live longer lives (Egarter, Braveman, Sadegh-Nobari, Grossman-Kahn, & Gekker, 2009; Pascarella & Terenzini, 2005).

As can be expected, factors that predict academic success during adolescence is an area of research that receives substantial research attention (Hattie, 2008). One factor that have received significant attention recently is perception-based constructs (see Yeager & Walton, 2011 for review). This recent focus on academic success and perception-based constructs has come about because interventions that target perception-based constructs can be quick, effective, and long lasting (Walton & Cohen, 2007; Yeager & Walton, 2011).

One perception-based construct that appears to have the potential to substantially impact the academic success of adolescent students but has received relatively little empirical attention is hope (Snyder, 2002). Hope has been found to (a) be highly correlated with academic achievement (correlations have been as high as .69; Feldman & Kubota, 2015), (b) be changed in as little as 90 minutes (Feldman & Dreher, 2015), and (c) be changed substantially with a lasting impact (the average effect size for hope interventions is $d = .4$; Weis & Speridakos, 2011).

However, despite the potential for hope to increase the academic success of struggling students, there is very little literature on hope in school context (Snyder, 2002). Additional research on hope in schools is necessary for more effective, hope-based interventions to be developed.

In this paper, I explore the relationship between hope and several school variables. First, I review hope theory and the literature on hope in schools. Next, I discuss several influential school variables and how they relate to hope. Finally, I present a study examining how hope relate to the school variables.

Hope

Hope, defined as one's perceived ability to execute envisioned paths to future goals, is a two-component construct signaling a cognitive-motivational process (Snyder, 2002; Snyder et al., 1991). Hope encompasses how one chooses goals, how one plans to accomplish chosen goals, one's motivation for accomplishing chosen goals, and her belief in herself to accomplish chosen goals. Hope is primarily measured in child and adolescent populations using the Children's Hope Scale (CHS; Snyder et al., 1997) and in adult populations using the Adult Hope Scale (Snyder, 1991). Hope has been found to be an important construct for students as it has been found to correlate with academic achievement at all levels of education, even after controlling for ability (Curry et al., 1997; Snyder et al., 2002), optimism (Rand, Martin, & Shea, 2011), self-efficacy (Feldman & Kubota, 2015), and academic engagement (Marques, Lopez, Fontaine, Coimbra, & Mitchell, 2015). Moreover, hope has been found to be a significant construct more broadly. Researchers have found that hope predicts several positive outcomes, such as success in competition (Curry & Snyder, 2000), higher overall wellbeing (Parker, 2014), better problem solving ability (Snyder et al., 1991), better overall psychological adjustment (Kwon, 2002), and higher social competence (Sympson, 1999). Additionally, researchers have found that hope is inversely related to several negative outcomes, such as anxiety (Arnau, Rosen,

Finch, Rhudy, & Fortunato, 2007), depression (Snyder, 2004), and PTSD (Hassija, Luterek, Naragon-Gainey, Moore, & Simpson, 2012).

Pathways. One component of hope is pathways. Pathways is one's perceived ability to envision routes to his goals (Snyder et al, 1991). Put another way, pathways is one's perceived ability to envision a better future, irrespective of his current circumstances, as well as one's perceived capacity to produce a roadmap to the better future. For example, if a student in grade school wants to obtain a job as college professor, his perceived ability to envision himself as a professor in vivid detail would make up part of his pathways thinking, while his perceived ability to envision steps to accomplish that goal, such as thinking he needs to go to college, take the Graduate Record Examination (GRE), and excel in graduate school, will compose the other part. The theoretical importance of pathways to hope theory is embodied in a quote by William Ward "If you can imagine it, you can achieve it" (n.d.). Students who are high in pathways produce more elaborate, creative, specific, and clear plans of action to accomplish their goals (Snyder, 2002). In addition, students who are higher in pathways produce better goals (more realistic and more likely to be a stretch goal) and alternative paths to accomplish goals in the event their initial route proves to be untenable (Snyder, 2002). In contrast, students who are low in pathways typically produce unclear and vague courses of action to accomplish their goals, poor quality goals (idealistic and inappropriate for current level of achievement), and do not produce alternative paths to goals (Snyder, 2002).

Agency. The other component of hope is agency. Agency is one's belief, along with the corresponding motivation and confidence, that one can accomplish her goals (Snyder, 2002; Snyder et al., 1991). While pathways is one's perceived ability to see the goal she wants to accomplish and the roadmap to achieve it, agency is her ability to believe in herself to accomplish that goal, as well as the motivation to do the work that will propel her along the goal-achievement process. Additionally, agency also encompasses her determination to persist throughout the goal-achievement process when setbacks occur. Continuing the example above, the student's agency would be his belief, motivation, and confidence in himself that he could excel in college, on the GRE, in graduate school, and finally reach his goal of being a professor. Students that are high in agency are typically more persistent (Snyder, 1994), more motivated to accomplish their goals (Snyder, 2002), and more likely to engage in effective strategies that help them to persist during stressful situations (e.g., positive self-talk, Snyder, Lapointe, Crowson, & Early, 1998).

High vs. low hope. According to hope theory, both agency and pathways are needed for hope to be productive, they are complementary to one another and one needs some of both to progress through the goal-achievement process (Snyder et al., 1991; Snyder, 2002). Using the hope scales, several differences have been reported between those that have high vs. low hope. For example, those that have high hope have been reported to see stressors and setbacks as challenges (Snyder et al., 1991), are better at using feedback to improve their goal pursuits (Snyder, 1999), engage in healthier behaviors (Moon, Snyder, & Rapoff, 2001), have higher academic achievement (Gilman, Dooley, & Florell, 2006), perform better in athletics when natural ability is controlled for (Curry & Snyder, 2000), have better outcomes in psychotherapy (Irving et al., 1997), and are more confident in general (Kleinke & Miller, 1998).

Hope and demographic variables. Several studies have examined how hope relates to gender, race, age, and SES. Results of studies examining gender have consistently indicated that hope scores do not significantly differ based on gender (Adelabu, 2008; Snyder et al., 1997, 2002, 2003). In addition, Dixson (2016) found that hope scores were invariant across gender in a

population that consisted of gifted, average achieving, and at-risk adolescents. However, one study, Valle Huebner, and Suldo (2004), reported a statistically significant difference of hope scores across gender (although with a small effect size). Results from studies examining whether hope scores differ significantly across race indicate mixed results. While the majority of studies indicate that hope scores do not significantly differ based on race (Adelabu, 2008; Snyder et al., 1991, 1997, Valle et al, 2004), there are studies that indicate that hope scores do differ based on race (McDermott et al., 1997; Munoz-Dunbar, 1993; Snyder, Lopez, Shorey, Rand, & Feldman, 2003). Finally, past studies indicate that hope scores do not differ across SES or age (Snyder et al., 1991, 1997, Valle et al, 2004).

Despite all of the reported differences between those that have high vs. low hope, all of the reported differences across demographic variables, and the hope literature as a whole, there have been very few studies that examine hope differences within the school context.

Hope in the School

Hope and academic achievement. Hope has the potential to be a powerful force in schools—as school consists of several different goal pursuits at the same time (Snyder, 2002). For example, students commonly have the goal of earning good grades. Given that getting a good grade in one class is a goal pursuit, getting good grades is several goal pursuits simultaneously every semester. In addition, school also consists of larger, more long terms goals for many students, including the desire to graduate, get into college, get into honors classes, and be valedictorian. According to hope theory, the success of all of these goals is heavily influenced by a student's level of hope (Snyder, 2002). However, despite hope's significant potential to impact the school environment, very little research has been conducted on hope in the school environment. Of the studies that have been conducted, the singular focus has been on the relationship between hope and academic achievement. For instance, first Snyder et al. (1997) found in a sample of 372 students in grades 4-6 that hope scores correlated .5 with the Iowa Test of Basic Skills (a statewide achievement test for K-12). Then as a follow up, Snyder et al. (2002) conducted a 6-year longitudinal study tracking the hope levels, academic achievement, and the graduation status of 213 college freshmen throughout college. Controlling for college entrance exams scores, they found that hope predicted higher cumulative grades ($r = .21, p < .01$) and that those with high hope were more likely to have graduated and less likely to have been dismissed from school over the 6-year period (Cramer's $V = .19$).

Subsequently, Adelabu (2008) conducted a study examining how future time perspective, ethnic identity, and hope relate to academic achievement in a sample of 661 financially disadvantaged youth. Using correlations and regression analysis, she reported the following findings: (a) those that were future oriented (as measured by higher scores on the Zimbardo Time Perspective Inventory future subscale) earned higher grades ($r = .12, p < .01$), (b) those with higher agency earned better grades ($r = .20, p < .01$), (c) those with higher pathways did not earn better grades ($r = .08, p > .05$), (d) those with higher ethnic identity earned better grades (ethnic exploration $r = .13, p < .01$; ethnic affirmation $r = .24, p < .01$), and (e) hope agency was the only variable to predicted academic achievement among both rural and urban adolescence when the other variables were controlled for. Finally, Feldman and Kubota (2015) conducted a study to determine which variable among self-efficacy, optimism, and hope was the strongest predictor of GPA after controlling for the other variables. Using path analysis, the researchers reported three major findings: (a) hope was the strongest predictor of GPA (standardized beta = .54), (b) optimism did not predict GPA (standardized beta = .01), and (c) academic self-efficacy only weakly predicted GPA if the path started with hope and went through academic self-efficacy

(standardized beta = .23). In addition, the researchers reported that hope had higher correlations with GPA (general hope $r = .32$, academic hope $r = .69$) than self-efficacy (general self-efficacy $r = .31$, academic self-efficacy $r = .59$) and optimism (general optimism $r = .18$).

Although examining how hope directly relates to academic achievement is important, it completely ignores the multitude of other factors that exist within the school environment that can affect one or both of the variables. Given that there is extensive literature examining how academic achievement relates to other variables, a better understanding of how hope relates to other variables in the school environment could unveil a clearer, more precise understanding of how hope relates to academic achievement as well as inform hope-based academic interventions.

Issues measuring hope in schools. Another issue with understanding hope's impact on academic achievement and to variables in schools in general is that most studies that examine hope as it relates to other variables separate those with high vs. low hope with arbitrary cutoffs of overall hope scores (e.g., those that have above average hope are grouped into high hope and those that have below average hope are placed in the low hope group, Snyder et al., 2003), making it unclear whether the conclusions drawn from these studies are generalizable. Students that are high in both pathways and agency are theoretically different from those students that are very high in either agency or pathways, and average in the other (Snyder, 2002). However, using the arbitrary cutoffs employed in several hope studies, these two groups of students commonly end up in the same group because if a student is high in one subscale and average in the other, that student would still have an overall hope average score that is above average. Therefore, more research needs to be conducted in the school context that creates hope groups in accordance with hope theory.

One such study is that of Gilman, Dooley, and Florell (2006). In yet another study examining the relationship between hope and academic achievement, they used cluster analysis (a statistical technique that groups participants based on responses) to create different groups of hope in a sample of 341 adolescents. They created three clusters of hope based on students' pathways and agency scores: high hope, average hope, and low hope. They found that those with high hope earned significantly higher grades than those with average and low hope. They also found that those average hope earned significantly higher grades than those with low hope. As a result of this study, the relationship between hope and academic achievement is slightly clearer because of the more precise grouping. However, according to hope theory, even this study's 3-group methodology was insufficient in that hope theory asserts four hope groups: those that are high in both agency and pathways (high hoppers), those that are high in one and low in the other (high agency thinkers and high pathways thinkers), and those that have both low agency and low pathways (low hoppers). In order to fully understand how hope relates to academic achievement and other variables, grouping methodology should reflect all four groups, using less than the four groups combines groups that are theoretically different.

Hope and Influential School Variables

Although there are very few empirical examinations of hope and nonacademic school variables, there are some influential nonacademic school variables that are theoretically linked to hope in the school context that could help clarify the role of hopes in the school environment as well as inform academic intervention. Some of those variables are: (a) academic importance, how important excelling in school is to a student, (b) academic self-concept, one's concept and perception about one's own academic ability (Bong & Skaalvik, 2003), (c) perceived life chances, one's expectations that positive events will occur in one's educational, personal, occupational futures (Mello & Worrell, 2008), (d) consideration of future consequences, one's

consideration of distant vs. immediate consequences of potential behavior (Strathman, Gleicher, Boninger, & Scott, 1994), (e) self-esteem, one's perception of one's global self-worth (Rosenberg, 1965), (f) school belonging, one's perceived connectedness to the school community (Booker, 2006), (g) education expectations, how much schooling one expects to complete, and (h) perceived stress, one's perceived stress level (Cohen, 1988). All of these variables have been linked to academic achievement and doing well in school overall (Booker, 2006; Chavous, Rivas-Drake, Smalls, Griffin, & Cogburn, 2008; Rubin, Dorle, & Sandidge, 1977; Stevenson, Maton, & Teti, 1998; Worrell & Hale, 2001).

Moreover, they all have ramifications for hope in school. For example, given that most goals in the school context (e.g., wanting to graduate, wanting to do well in a class) are directly related to how much one values thriving in the school context, how much one feels that they are a part of the school community, and one's perceived academic competence, academic importance, school belonging, and academic self-concept are integral to hope in school. Further, one's sense of self-worth and one's stress level are directly related to the agency subscale of hope. If one has a low sense of self-worth or is under a significant amount of stress, it is unlikely she will believe that she can accomplish her goals, unlikely will she be motivated to accomplish her goals, and unlikely to have confidence in her abilities to accomplish goals (Snyder, 2002). Finally, one's perception of one's life chances and one's educational expectations are directly related to the pathways subscale of hope. If one cannot envision achievement in his educational or occupational future, he is unlikely to be able to envision a better tomorrow, or the customized roadmap to get to the better tomorrow. Thus, examining how hope relates to the aforementioned school variables, while employing a grouping strategy consistent with hope theory will help clarify hope's importance in the school environment, hope's relationship to academic achievement, and inform hope-based academic interventions.

The Present Study

The present study answers the call for more research on hope in the school environment using precise methodology to group students based on hope scores. There were several goals for the current study. The first goal was to examine whether cluster analysis based on pathways and agency scores would produce four interpretable clusters that are consistent with the four theoretically based hope groups. It was hypothesized that the four clusters would be interpretable and consistent with the four groups of hope theory.

The second goal was to examine differences among hope clusters across race, gender, SES, and grade (as a proxy for age as grade allows for higher participants per cell for analysis). Given the majority of previous literature indicates that hope does not differ across gender and age (e.g., Dixson, 2016; Snyder et al., 2002, 2003; Valle et al., 2004), it was hypothesized that no differences would be found across gender and grade. Although the previous literature is mixed on whether there will be hope differences based on race (e.g., Adelabu, 2008; Snyder et al., 2003; Valle, Huebner, & Suldo, 2004, 2006), it was hypothesized that hope differences would be found across race. This hypothesis is supported by hope theory, which outlines how hope is affected by barriers along the goal-achievement pursuit and that minorities experience significantly more barriers than non-minorities (McWhirter, 1997; Snyder, 2002). Despite studies indicating that hope does not differ across SES (Snyder et al., 1991, 1997; Valle et al., 2004, 2006), hope theory maintains that those with more barriers have lower levels of hope (Snyder, 2002). In accordance with hope theory, it was hypothesized that hope would differ significantly across SES.

The third goal was to examine hope cluster differences across grades, perceived stress, educational expectations, self-esteem, academic importance, consideration of future consequences, academic self-concept, perceived life chances, and school belonging. Based on how high hope is theoretically more adaptive than low hope (Snyder, 2002), it was hypothesized that there would be significant differences across all school variables. More specifically, it was hypothesized that the high hoppers would report more adaptive scores on the school variables than both the high pathways and high agency thinkers, and that both the high pathways and high agency thinkers would report more adaptive scores on the school variables than the low hoppers.

Method

Participants and Procedures

The sample consisted of 297 (60.7% male) adolescents aged 13–19 ($M_{\text{age}} = 16.09$, $SD = 1.23$; $M_{\text{grade}} = 10.52$, $SD = 1.05$) from one rural school (42%), two urban schools (19%), and academic program that served both urban and rural students (38%), all in a Western state. Self-reported racial/ethnic groups were 10.1% African American ($n = 30$), 25.7% Asian American ($n = 76$), 41.6% European American ($n = 123$), 10.5% Hispanic American/Latino ($n = 31$), and 12.2% Multi-Ethnic/Other ($n = 36$). Self-reported SES memberships were Poor/Working Class ($n = 36$, 12.1%), Lower Middle Class ($n = 31$, 10.4%), Middle Class ($n = 107$, 36%), Upper Middle Class ($n = 95$, 32%), Lower Upper Class/Wealthy ($n = 28$, 9.4%). Missing data were imputed using the Expectation–maximization algorithm (the number of imputed values is listed within each variable section).

For data collection, two researchers and four graduate students recruited students at two high schools during students' free periods. Those who showed interest were given parental consent forms in order to obtain parental consent (if the student was over 18 years old, just student consent was obtained). After parental consent and student assent were obtained, students were given the survey to complete and return to their respective teachers. Researchers collected all surveys from students' teachers. Students were given \$10 in exchange for participation in the study.

Measures

Grade point average. Grade point average was self-reported on a 4-point scale. Students were asked “What is your current GPA.” Self-report GPA for adolescents has been found to be accurate and reliable. In a meta-analysis of more than 44,000 adolescents, self-report GPA was found to have a .82 correlation with actual GPA (Kuncel, Credé, & Thomas, 2005).

Academic importance. Academic importance was measured with three items that measured how important doing well in school was to the student. The three items were, “I value academics,” “Academics are important to me,” and “I am good at academics.” Response options were a 7-point Likert scale ranging from 1 (*Strongly disagree*) to 7 (*Strongly agree*). The alpha for this scale in this sample was .93, the factor loadings ranged from .69 to .90, and the amount of variance the items cumulatively explained was 68.61%. 16 values (1.7%) were imputed for academic importance.

Academic self-concept. Academic self-concept was measured with six items based on Marsh (1993) and Reynolds, Ramirez, Magrina, and Allen (1980) concepts of academic self-concept. The items measured how students thought about their academic abilities relative to other students their age (e.g., “Compared to others my age, I learn things quickly in most school subjects”). Response options ranged from 1 (*False*) to 6 (*True*). Similar scales, with similar items, were used in other studies to measure academic self-concept and were to found be valid and reliable (Arif & Yousuf, 2010). The alpha for this scale in this sample was .87, the factor

loadings ranged from .39 to .87, and the amount of variance the items cumulatively explained was 56.30%. 21 values (1.2%) were imputed for academic self-concept.

Perceived life chances. Perceived life chances was measured using Jessor, Donovan, and Costa's (1990) Measure of Perceived Life Chances (MPLC). The MPLC is an 11-item scale that measures how positive one perceives he will thrive educationally, personally, and occupationally in the future. All items on the scale have the prefix "What are the chances that...". Sample items are, "You will graduate from high school?", "You will have a job that pays well?", and "You will have good friends you can count on?". Response options are a 5-point Likert scale ranging from 1 (*Very low*) to 5 (*Very high*). This measure has been found to be valid and reliable in similar populations (e.g., Mello & Worrell, 2008). The alpha for this scale in this sample was .88, the factor loadings ranged from .40 to .75, and the amount of variance the items cumulatively explained was 42.19%. Seven values (0.2%) were imputed for perceived life chances.

Consideration of future consequences. consideration of future consequences was measured using the Consideration of Future Consequences scale (Strathman et al., 1994). The original scale is a 12-item scale that measures how much one weights immediate vs. distant consequences of potential behaviors (Strathman et al., 1994). However, due to low commonalities of two of the items (<.1), only the remaining ten items were used in this study. Sample items are "I consider how things might be in the future, and try to influence those things with my day to day behavior" and "I think it is more important to perform a behavior with important distant consequences than a behavior with less important immediate consequences". The response options were a 5-point Likert scale that ranged from 1 (*Extremely uncharacteristic*) and 5 (*Extremely characteristic*). The alpha for this scale in this sample was .75, the factor loadings ranged from .60 to .72, and the amount of variance the items cumulatively explained was 43.84%. Eight values (0.3%) were imputed for consideration of future consequences.

Self-esteem. Self-esteem was measured using Rosenberg's (1965) Self-Esteem scale. The 10-item scale measures one's perception of his global self-worth (e.g., "On the whole, I am satisfied with myself"). Response options are a 4-point Likert scale that ranged from 1 (*Strongly disagree*) to 4 (*Strongly agree*). The alpha for this scale in this sample was .83, the factor loadings ranged from .47 to .67, and the amount of variance the items cumulatively explained was 34.14%. 17 values (0.6%) were imputed for self-esteem.

School belonging. School belonging was measured using one item that asked students, "To what extent do you experience a sense of exclusion or a sense of belonging at your school?". Response options were a 7-point Likert scale that ranged from 1 (*Strong sense of exclusion*) to 7 (*Strong sense of belonging*). This item has been effective in previous research (e.g., Mello, Mallett, Andretta, & Worrell, 2012; Sidanius, Van Laar, Levin, & Sinclair, 2004). 22 values (7.4%) were imputed for school belonging.

Educational expectations. Educational expectations were measured using one item that asked students "How much schooling do you expect to have by the time you are 30 years old?". Options included six categories: 1 (*High school diploma*), 2 (*Certificate/License*), 3 (*Associate's degree*), 4 (*Bachelor's degree*), 5 (*Master's degree*), 6 (*Doctorate or Professional degree*). This item has been used effectively in previous research (e.g., Mallett et al., 2011). 6 values (2%) were imputed for educational expectations.

Perceived stress. Perceived stress was measured using the Perceived Stress Scale (Cohen, Kamarck, & Mermelstein, 1983). The 14-item scale measures how much one felt her life was unpredictable and uncontrollable over the previous month. Due to low commonalities

with 5 of the items (<.1), this study used the remaining 9 items to measure perceived stress. Sample items are, “In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?” and “In the last month, how often have you found that you could not cope with all the things that you had to do?”. Response options were a 5-point Likert scale format ranging from 1 (*Often*) to 5 (*Never*). The alpha for this scale in this sample was .79, the factor loadings ranged from .36 to .70, and the amount of variance the items cumulatively explained was 30.51%. 23 values (.9%) were imputed for perceived stress.

Results

Descriptive Statistics

The means, standard deviations, and intercorrelations for study variables are presented in Table 1. As can be seen, most variables related significantly to one another with effect sizes mostly falling in the medium to large range. Observed correlations between hope, pathways, and agency were consistent with previous literature and the theoretical framework of hope (Snyder, 2002).

Hope Clusters

Prior to cluster analysis, assumptions were tested and met. Employing K-means cluster analysis using the procedure outlined in Garson (2012), four clusters were specified using pathways and agency as variables (10 iterations, convergence criteria = 0). The K-means algorithm converged after 5 iterations.

Cluster validity. As most students in the United States are hopeful (average pathways and agency scores ≈ 4 , Gallup, 2015), the final cluster centers of 2.85 for pathways and 3.04 for agency for Cluster 1 (initial centers = 2 for both) appeared theoretically consistent with being a low pathways and low agency group (*low hoppers*, $n = 62$). The final cluster centers for Cluster 2 of 3.63 for pathways and 4.64 for agency (initial centers of 3 for pathways and 5.33 for agency) were theoretically consistent with being a high agency and average pathway group (*high agency thinkers*, $n = 73$). The final cluster centers for Cluster 3 of 4.19 for pathways and 3.55 for agency (initial centers of 4.67 for pathways and 1.67 for agency) were theoretically consistent with being a high pathway and average agency group (*high pathway thinkers*, $n = 57$). Finally, the final cluster centers for Cluster 4 of 5.02 for pathways and 5.15 for agency (initial centers = 6 for both) were theoretically consistent with being a high agency and high pathway group (*high hoppers*, $n = 105$). Thus, results yielded four meaningful groups of acceptable sizes. All four clusters exhibited separation from each other (see Figure 1). All four clusters exhibited criterion validity with hope cluster group means for GPA and perceived life chances (see Table 3) accurately reflecting hope theory and previous theoretical research (Snyder, 2002). Thus, four interpretable clusters consistent with the four theoretical groups of hope theory, were produced employing clusters analysis using pathways and agency scores.

Demographic Differences

Percentages of hope cluster membership in demographic groups are presented in Table 2. Chi square tests were used to assess demographic differences among the hope clusters. Racial differences were found among hope clusters ($X^2 [18] = 43.42, p = .001$) with an effect size approaching a medium effect. An examination of hope cluster membership by race shows that European Americans had the highest percentage of high hoppers, Latino Americans had the highest percentage of high pathways thinkers, Asian Americans had the highest percentage of high agency thinking, and African Americans had the highest percent of low hoppers. In addition, although there wasn't a statically significant difference among hope clusters based on SES ($X^2 [6] = 7.41, p = .285$), a small effect size difference was found. Students of a higher SES tended

to become more hopeful. Finally, grade ($X^2 [9] = 20.87, p = .013$) and gender ($X^2 [3] = 5.75, p = .124$) differences were also found among hope clusters, albeit with small effect sizes. Students tended to become more hopeful as they progressed through school. Males reported higher percentages of high pathways thinkers and high hoppers, while females reported higher percentages of high agency thinkers and low hoppers.

Hope Profile Differences on School Variables

Means and standard deviations for hope clusters on school variables are presented in Table 3. Differences between hope clusters across school variables were assessed using one-way analysis of variances (ANOVAs) and Welch's ANOVAs when the assumption of homogeneity of variances was violated ($p < .006$). Statistically significant differences between hope clusters were found on all school variables (all p 's $< .001$) with varying effect size differences. The effect size difference for GPA and educational expectations were below a small effect. The effect size difference for academic self-concept, academic importance, perceived stress, and consideration of future consequences were small effects. Finally, the effect size difference for school belonging, perceived life chances, and self-esteem were all medium size effects.

Hope Profiles

Post hoc test results with meaningful effect sizes are presented in Table 4. In addition, a graph of hope cluster differences across the school variables is presented in Figure 2. Overall, 36 statistically significant differences with medium to large effect sizes were found among hope clusters across school variables. As a group, these differences formed different school profiles. The high hoppers reported the most auspicious school profile, reporting the most adaptive scores across all school variables except GPA. Following the high hoppers, the high agency thinkers reported the most auspicious scores across the school variables. The high pathways thinkers reported the third best scores across the school variables followed by the low hoppers whom reported the less adaptive scores across all school variables.

Discussion

This study has several goals: (a) to examine whether cluster analysis would produce four interpretable clusters consistent with the four groups of hope theory, (b) to examine whether demographics differences existed across hope clusters, and (c) to examine hope cluster differences across perceived stress, educational expectations, self-esteem, academic importance, academic self-concept, perceived life chances, and school belonging.

Hope Clusters

As hypothesized, the four clusters sought employing clusters analysis based on pathways and agency scores exhibited meaningfulness, separation, appropriate size, and criterion validity. Thus, showing evidence of interpretability. In addition, the four clusters were consistent with the four hope groups of hope theory (Snyder, 2002). This indicates that it is possible to study hope in a more nuanced way in accordance with hope theory as opposed to using artificial cutoffs that result in findings with limited generalizability.

Demographics Differences Across Hope Clusters

As hypothesized, hope cluster differences were found across race with a sizable effect size. Given these findings were found using the precision of cluster analysis, they are more generalizable as they provide a more in-depth look into the relationship between race and hope theory. As opposed to simply reporting that European Americans have higher levels of hope like previous literature (e.g., Snyder et al., 2003), this study reports that European Americans report higher percentages of high hoppers and lower percentages of low hoppers than the three minority groups. In addition, this study reported that African American had the highest percentage of low

hoppers, while Latino Americans reported the highest percentage of high pathways thinkers and Asian Americans reported the highest percentage of high agency thinkers. These findings are interesting because they indicate that different minority groups might employ different strategies to accomplish their goals. Asian Americans may focus on trying to maximize their own contribution to their success through hard work, while Latino Americans might focus on envisioning the future, planning, and having high expectations; both are consistent with previous research (Cohen, Garcia, Purdie-Vaughns, Apfel, & Brzustoski, 2009; Krashen, 2013). The findings about African Americans are also consistent with previous research and hope theory's assertion that barriers that one faces in everyday life, like racism, is detrimental to one's level of hope (Snyder, 2002; Snyder et al. 2003).

As hypothesized, hope cluster differences were found across SES, although with a small effect size. This finding is consistent with previous research (e.g., Valle et al., 2004). Those students with a higher SESs tend to have high hope. This too is consistent with hope theory, low SES students tend to encounter more barriers in their everyday life than high SES students, which affects their level of hope (Dixson, Keltner, Worrell, & Mello, 2014; Kraus, Piff, Mendoza-Denton, Rheinschmidt, & Keltner, 2012; Snyder, 2002).

Counter to what was hypothesized, gender and grade differences were found with small effect sizes. Although the difference was not statistically significant for gender, these findings indicate that hope does differ across hope clusters. These findings are counter to previous research (Snyder et al., 1997, 2003; Valle et al., 2004) and could be the result of this study being the first time that differences were assessed employing clusters analysis. Assessing for differences with the precision of cluster analysis may have been a more sensitive test of gender and grade differences. These findings highlight the importance of employing cluster analysis in creating hope groups in future research. This study found that men reported higher percentages of high hoppers and high pathways thinkers, while women reported higher percentages of high agency thinkers and low hoppers. These findings may indicate the different ways in which men and women approach the goal obtainment process. Given that this is the first study to find gender differences, more research needs to be done in this area. This study also reported that students tend to be more hopeful as they progress through school. However, this result might be misleading. There was a lower number of students in the 12th grade as compared to the 9th grade in this study, it could be that the less hopeful students drop out of school resulting in the appearance of students being more hopeful as they progress through school. This explanation would be consistent with Worrell and Hale (2001), who found that students with less hope dropped out of school before graduation. To know for sure, more research is needed on hope across grade levels.

School-Based Hope Profiles

As hypothesized, this study found hope cluster differences across all school variables with effect sizes ranging from below a small effect to a medium effect size. This finding in addition to the 36 differences found among hope clusters across school variables indicates that hope theory has enormous potential in the school setting. Generally, the more hope students report, the more auspicious their school profile. The high hoper school profile reported the most auspicious scores on all school variables except GPA, where they were not statistically different from the high agency thinkers whom reported the highest. The low hoper school profile reported the most detrimental scores for all school variables. This finding underscores the importance of hope in the school environment and the need for better, more efficient, hope interventions in the school context. If better and more efficient hope interventions can be constructed, the more

widespread they can be employed. Although it is unclear whether higher hope would cause students to report more adaptive scores on school variables, it is clear that those that are in the high hoper and high agency thinker profiles are doing better in school than the high pathways thinker and low hoper profiles and that increasing the hope of students in school is unlikely to be detrimental.

An unexpected finding of this study was the differences reported between the high pathway thinkers and the high agency thinkers. The high agency thinkers reported a positive and productive school profile only bested by the high hopers. In contrast, the high pathway thinkers reported a negative and detrimental school profile that was only more adaptive than the low hopers school profile. This finding is consistent with Dixson (2016), who reported that most differences in overall hope scores are mirrored by changes in agency scores. This indicates that when interventions are being created, special attention should be given to the agency aspect of hope, as agency appears to be most closely associated with the positive outcomes of hope in the school context. However, in spite of high agency thinking's closely association with hope's positive outcomes in the school context, pathways thinking should not be overlooked. Despite the relative low association between high pathway thinking and positive school outcomes, the best hope profile exists when high agency thinking is matched with high pathways thinking, which is consistent with hope theory (Snyder, 2002; Snyder et al., 1991, 1997).

Implications

This study has several implications. First, this study provides a lot of new information about hope in the school context. Previous research about hope in the school context mostly examined hope and academic achievement; this study is the first to examine hope's relationship to several nonacademic achievement school variables. The outcome of that examination highlights hope's importance in the school context. A student's level of hope has implications for several aspects that student's educational life. More specifically, high hopers and high agency thinkers far outperform low hopers and high pathways thinkers. This finding should inform future hope-based academic interventions to focused on agency thinking more so than pathways thinking (although not totally neglect pathways thinking) and also calls for research to answer the question of whether hope causes a better overall school profile, or whether an overall school profile increases one's level of hope.

Second, this study highlights the importance of hope research employing cluster analysis to create hope groups that are consistent with hope theory. In the current study, specific, generalizable, and nuanced findings could be reported and used to inform future research in accordance with hope theory. If groups are not made using cluster analysis, or a comparable grouping methodology, results are less consistent with hope theory, less generalizable, and less nuanced. For example, this study is the first study to report gender and grade level differences across levels of hope. Previous research employed artificial cutoffs to create hope groups that are not consistent with hope theory and did not find any group or grade level difference (e.g., Valle et al., 2006). The artificial cutoff methodology may have hidden the differences that were found when students were grouped in accordance with hope theory.

Third, this study calls for more research on hope in the school context. This study found substantial differences among hope profiles within the school context. However, this is just one study. More research needs to be conducted within the school context to better understand the relationship between hope and academic achievement, the potential impact of hope interventions in the school context, and to help inform hope-based academic interventions. Given that hope

can be easily changed (Feldman & Dreher, 2015), it can really be a game changer in the school context.

Limitations

Like all research this study had its limitations. First, although adequate to conduct the analyses of this study, a larger sample size would have allowed for a larger number of students to be sorted into cells for the chi squared tests and into the clusters. This would have allowed for more robust extrapolations from the data and for the results to be more generalizable. Second, due to data limitations, the hope clusters were not replicated with another data set. As cluster replication is best practice, future studies should seek to replicate the hope clusters found in this study to complete their validity analysis. Despite these limitations, this study contributes to the hope literature and should be built upon.

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Table 1

Descriptive Statistics for Hope and School Variables

	1	2	3	4	5	6	7	8	9	10	11	<i>M</i>	<i>SD</i>
1. GPA	–											3.20	0.66
2. School Belonging	.22*	–										5.36	1.62
3. Educational Exp.	.67*	.18	–									4.32	1.52
4. Academic Imp.	.64*	.31*	.62*	–								5.55	1.30
5. Academic SC	.69*	.27*	.57*	.69*	–							4.54	0.94
6. Perceived Stress	-.12	-.20*	-.06	-.09	-.16	–						3.01	0.62
7. Perceived LC	.30*	.09	.33*	.36*	.37*	-.30*	–					4.02	0.61
8. Consideration of FC	.42*	.19	.38*	.47*	.40*	-.13	.33*	–				3.40	0.53
9. Self-Esteem	.29*	.39*	.29*	.36*	.38*	-.47*	.48*	.30*	–			3.06	0.53
10. Hope Agency	.32*	.40*	.33*	.39*	.46*	-.34*	.50*	.35*	.54*	–		4.28	0.97
11. Hope Pathways	.10	.48*	.22*	.29*	.28*	-.31*	.40*	.31*	.48*	.64*	–	4.07	0.96
12. Hope	.23*	.49*	.31*	.38*	.41*	-.36*	.50*	.36*	.57*	.91*	.90*	4.17	0.87

Note. Educational Exp. = Educational Expectations; Academic Imp.= Academic Importance; Academic SC = Academic Self-concept; Perceived LC = Perceived Life Chances; Consideration of FC = Consideration of Future Consequences. * $p < .001$.

Table 2
Demographic Representation in Hope Clusters

Demographic	Low Hoppers	High Agency	High Pathways	High Hoppers	V
Grade					.15*
9 th Grade	18 (32.1%)	6 (10.7%)	12 (21.4%)	20 (35.7%)	
10 th Grade	23 (23.2%)	25 (25.3%)	21 (21.2%)	30 (30.3%)	
11 th Grade	14 (19.2%)	26 (35.6%)	10 (13.7%)	23 (31.5%)	
12 th Grade	7 (10.3%)	15 (22.1%)	14 (20.6%)	32 (47.1%)	
Gender					.14
male	32 (17.9%)	40 (22.3%)	41 (22.9%)	66 (36.9%)	
female	29 (25%)	32 (27.6%)	16 (13.8%)	39 (33.6%)	
SES					.11
Low	6 (30%)	7 (18.4%)	12 (26.7%)	11 (25%)	
Middle	49 (23.5%)	58 (23%)	43 (17.9%)	83 (35.6%)	
High	7 (23.8%)	8 (31.6%)	2 (5.9%)	11 (38.8%)	
Race/Ethnicity					.22**
Asian American	20 (26.3%)	26 (34.2%)	9 (11.8%)	21 (27.6%)	
African American	14 (46.7%)	7 (23.3%)	3 (10%)	6 (20%)	
Latino	9 (29%)	3 (9.7%)	10 (32.3%)	9 (29%)	
European American	14 (11.4%)	25 (20.3%)	25 (20.3%)	59 (48%)	
Multi-ethnic	4 (14.3%)	9 (32.1%)	8 (28.6%)	7 (25%)	
Other	1 (12.5%)	2 (25%)	2 (25%)	3 (37.5%)	

Table 3
Hope Cluster Group Differences on School Variables

Variable	Low Hoppers 62		High Agency 73		High Pathways 57		High Hoppers 105		<i>df</i>	<i>F</i>	η^2
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>			
GPA	3.13	0.69	3.48	0.65	3.12	0.69	3.38	0.60	<i>F</i> (3, 292)	5.26*	.05
Academic Self-concept	4.14	0.84	4.71	0.89	4.14	0.95	4.87	0.88	<i>F</i> (3, 290)	13.94*	.13
Academic Importance	4.81	1.30	5.84	1.13	5.22	1.34	5.96	1.15	<i>F</i> (3, 291)	14.21*	.13
Perceived Stress	3.32	0.54	3.01	0.51	3.10	0.66	2.79	0.62	<i>F</i> (3, 290)	11.28*	.10
Perceived Life Chances	3.64	0.56	4.06	0.48	3.74	0.62	4.36	0.53	<i>F</i> (3, 291)	28.64*	.23
Self-Esteem	2.54	0.33	3.20	0.46	2.95	0.48	3.30	0.49	<i>F</i> (3, 148.29) ¹	55.55*	.29
School Belonging	4.31	1.63	5.19	0.87	5.23	1.80	6.30	0.69	<i>F</i> (3, 121.80) ¹	36.29*	.20
Ed. Expectations	3.73	1.72	4.62	1.36	3.84	1.76	4.77	1.08	<i>F</i> (3, 134.76) ¹	8.81*	.09
Consideration of FC.	3.09	0.28	3.43	0.57	3.28	0.36	3.60	0.59	<i>F</i> (3, 144.52) ¹	18.81*	.12

Note. Consideration of FC. = Consideration of Future Consequences.

**p* < .005.

¹Welch's

Table 4
Post Hoc Contrasts Between Different Clusters of Hope on School Variables

Variable	Contrast	<i>M</i> _{difference}	<i>p</i>	<i>d</i>
GPA	HH v LH	0.25	.082	.39
	HA v HP	0.36	.010	.54
	HA v LH	0.35	.011	.52
Academic SC	HH v LH	0.86	.001	.85
	HH v HP	0.74	.001	.82
	HA v HP	0.57	.002	.62
Academic Import.	HA v LH	0.57	.002	.66
	HH v LH	1.15	.001	.94
	HH v HP	0.73	.002	.60
Perceived Stress	HA v HP	0.61	.025	.50
	HA v LH	1.03	.001	.84
	HH v LH	-0.54	.001	.90
Perceived LC	HH v HP	-0.32	.006	.50
	HA v LH	-0.31	.048	.60
	HH v LH	0.72	.001	1.32
Ed. Expectations	HA v HH	0.30	.002	.59
	HA v HP	0.32	.005	.58
	HA v LH	0.42	.001	.80
	HP v HH	0.62	.001	1.10
	HH v LH	1.04	.001	.65
Self-Esteem	HA v LH	0.89	.007	.58
	HA v HP	0.78	.036	.50
	HP v HH	0.93	.003	.67
	HH v LH	0.76	.001	1.74
	HA v LH	0.67	.001	1.62
School Belonging	HP v LH	0.41	.001	.99
	HA v HP	0.26	.014	.54
	HH v HP	0.36	.001	.73
	HH v LH	1.99	.001	1.71
	HA v LH	0.88	.013	.53
Consideration of FC	HP v LH	0.92	.022	.53
	HH v HA	1.11	.001	.89
	HH v HP	1.07	.001	.86
	HH v LH	1.99	.001	1.70
	HA v LH	0.33	.001	.70
	HP v LH	0.18	.024	.56
	HH v HP	0.32	.001	.61

Note. Consideration of FC. = Consideration of Future Consequences.

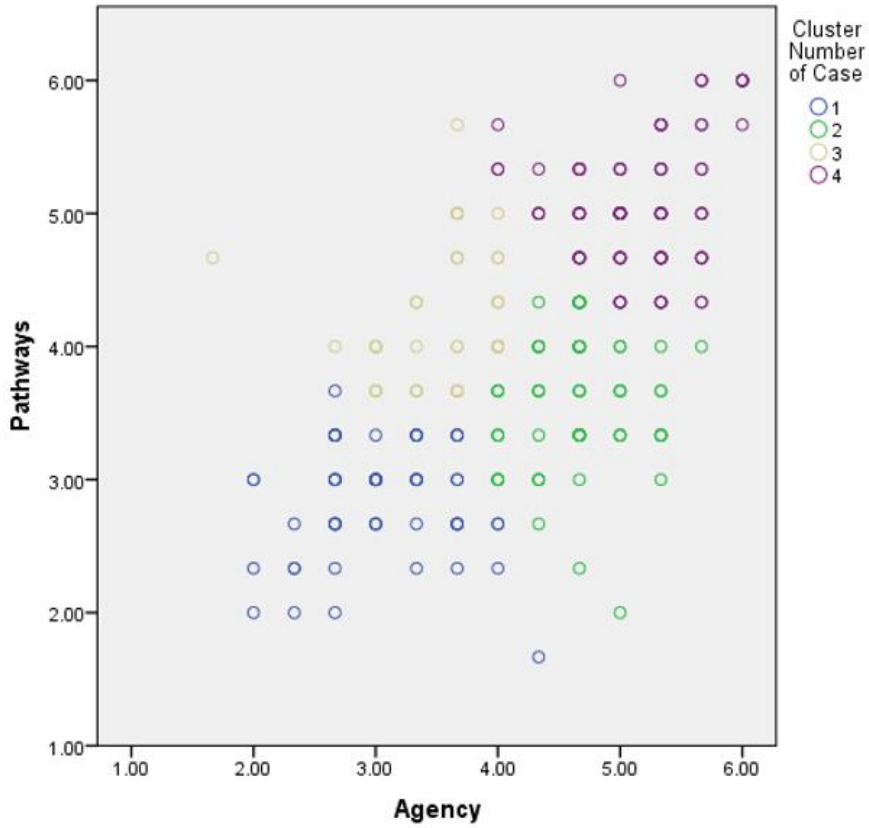


Figure 1. Cluster separation plot for hope clusters based on pathways and agency scores.

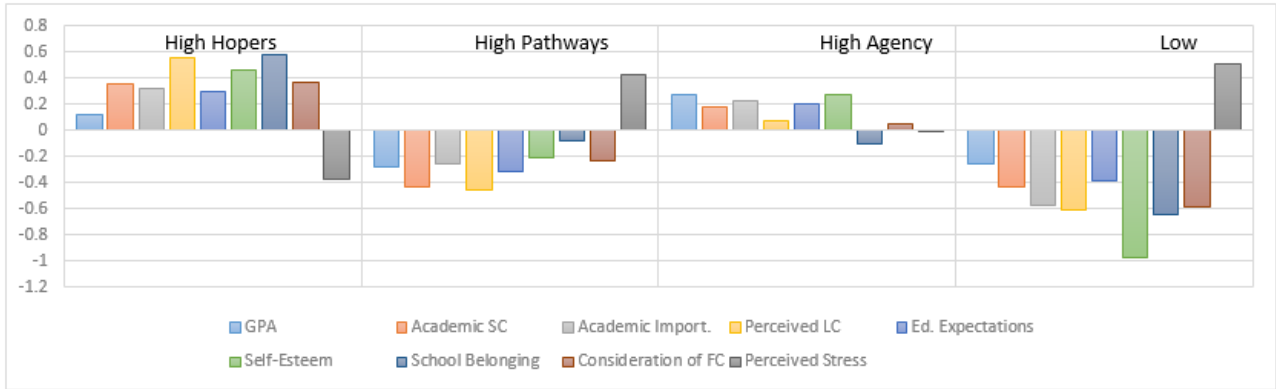


Figure 2. Z Score differences of hope clusters based on school variables.