



Profiles of hope: How clusters of hope relate to school variables



Dante D. Dixon^{a,*}, Frank C. Worrell^b, Zena Mello^c

^a Educational Psychology, College of Education, Wayne State University, Detroit, MI, United States

^b School Psychology, Graduate School of Education, University of California, Berkeley, Berkeley, CA, United States

^c Psychology, College of Science and Engineering, San Francisco State University, San Francisco, CA, United States

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ABSTRACT

In a diverse sample of 297 adolescents, four clusters based on the agency and pathways subscales of the Children's Hope Scale were derived via cluster analysis: high hopers ($n = 105$), high agency thinkers ($n = 73$), high pathway thinkers ($n = 57$), and low hopers ($n = 62$). We examined differences among clusters on psychological (consideration of future consequences, perceived life chances, perceived stress, and self-esteem) and educational constructs (academic self-concept, academic investment, and self-reported academic achievement). We also examined differences among hope clusters by sex, grade, and socioeconomic status. Results indicated that (a) the hope clusters derived were theoretically consistent with hope theory, (b) there were differences in the demographic makeup of the hope clusters with effect sizes ranging from small to medium, (c) students with different hope profiles differed on the outcome variables with about 50% of the effect sizes ranging from medium to large, and (d) high hopers and high agency thinkers had the most adaptive outcomes. The findings suggest that hope may be a useful variable for determining academic and psychological risk as well as a potential avenue for intervention in adolescence.

1. Introduction

Academic success during the adolescent years has been linked to several positive outcomes later in life. Adolescents with higher grade point averages (GPA) earn more money as adults (French, Homer, Popovici, & Robins, 2015; Oehrlein, 2009), are more likely to be 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 who graduate from college generally have higher status jobs, are happier overall, and live longer lives than those that do not graduate (Egarter, Braveman, Sadegh-Nobari, Grossman-Kahn, & Dekker, 2009; Pascarella & Terenzini, 2005). As can be expected, predicting academic success during adolescence is an area of research that receives substantial attention (see Hattie, 2009 for a review). Perception-based constructs have received substantial attention recently in the academic achievement literature (Paunesku et al., 2015; Yeager & Walton, 2011). This increased focus has come about for at least two reasons: (a) several perception-constructs have been implicated in academic functioning, including closing the achievement gap, and (b) interventions that target perception-based constructs can be quick, effective, and long lasting (Walton & Cohen, 2007, 2011; Yeager & Walton, 2011).

One perception-based construct that appears to have the potential to substantially impact the academic success of adolescent students is trait hope (Snyder, 2002), “a relatively stable personality disposition” (Snyder, Lopez, Shorey, Rand, & Feldman, 2003, p. 123). Although hope can also be assessed as a state (Snyder et al., 1996), that is, “a temporary frame of mind” (Snyder et al., 2003, p. 123), in this paper, all discussions of hope are in terms of hope as trait. In addition to being strongly correlated with academic achievement (e.g., $r = 0.69$; Feldman & Kubota, 2015), intervention studies have indicated that hope can be changed in as little as 90 minutes (Feldman & Dreher, 2011), and the changes have been substantial (average $d = 0.40$; Weis & Speridakos, 2011) and have been maintained for as long as 18 months (Marques, Lopez, & Pais-Ribeiro, 2011).

In this paper, we examined the relationship between hope and several psychological and educational variables that are associated with adaptive functioning in adolescence. However, first, we review hope theory and the literature on hope in schools. Next, we discuss some influential school variables and how they relate to hope. Finally, we present a study examining how different profiles based on the two components of hope relate to these variables.

* Corresponding author at: 339 College of Education, 5425 Gullen Mall, Wayne State University, Detroit, MI 48202, United States.
E-mail address: dante.dixon@Wayne.edu (D.D. Dixon).

1.1. Hope

Hope, defined as one's perceived ability to execute envisioned paths to future goals, is a two-component cognitive-motivational construct (Snyder, 2002; Snyder et al., 1991). Hope encompasses how individuals choose goals, how they plan to accomplish chosen goals, their motivation for accomplishing chosen goals, and their belief in their capacity to accomplish chosen goals. Hope is primarily measured in child and adolescent populations using the Children Hope Scale (Snyder et al., 1997) and in adult populations using the Adult Hope Scale (Snyder et al., 1991).

One component of hope is *pathways*. Pathways is one's perceived ability to envision routes to one's goals (Snyder et al., 1991). Put another way, pathways is one's perceived capacity to envision and produce a roadmap to a better future, irrespective of one's current circumstances. For example, if a student in high school wants to obtain a job as a college professor, his ability to envision himself as a professor in vivid detail will make up part of his pathways thinking, whereas his ability to envision steps to accomplish that goal (e.g., going to college, taking the Graduate Record Examination, excelling in graduate school) will make up the other part. The theoretical importance of pathways is embodied in a quote by William Ward (n.d.): "If you can imagine it, you can achieve it". Snyder (2002) argued that students who are high in pathways produce (a) more elaborate, creative, and specific plans of action to accomplish their goals, (b) more realistic goals, and (c) alternative paths to accomplish goals in the event their initial route proves to be untenable. In contrast, students who are low in pathways typically produce (a) unclear and vague courses of action to accomplish their goals and (b) idealistic and inappropriate goals for their current level of achievement; they also do not produce alternative paths to goals (Snyder, 2002).

The other component of hope is *agency*. Agency is one's belief, along with the corresponding motivation and confidence, that one can accomplish one's envisioned goals (Snyder, 2002; Snyder et al., 1991). Whereas pathways refers to individuals' perceived ability to see the goals they want to accomplish and the roadmap to achieve them, agency refers to their ability to believe in themselves to accomplish those goals, as well as the motivation to do the work that will propel them along the goal-achievement pathway. Agency also encompasses the 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, and in graduate school, and finally attain his goal of being a professor. Students who are high in agency are typically more persistent (Snyder, 1994), more motivated to accomplish their goals (Snyder, 2002), and more likely to engage in strategies that help them to persist during stressful situations (e.g., positive self-talk, Snyder, Lapointe, Crowson, & Early, 1998).

As agency and pathways are both components of hope, they are intercorrelated (Adelabu, 2008; Arif & Yousuf, 2010). However, there is substantial structural validity evidence in support of hope's 2-factor structure. In the study introducing the Adult Hope Scale, Snyder et al. (1991) reported that the 2-factor structure was supported in eight samples – six college student samples and two outpatient samples – and reported correlations among the subscales ranging from 0.38 to 0.57. This finding was replicated in the study introducing the Children's Hope Scale (CHS; Snyder et al., 1997). Snyder et al. (1991), which concluded that agency and pathways were "related, but not synonymous" and speculated that "future research may unravel differential correlates of agency and pathways and may yield information pertaining to their separate construct validity and utility" (p. 582). Although Snyder (2002) continued to theorize about the two factors, a total hope score is typically used in research. In this study, we use the two factors of hope as initially theorized.

1.1.1. Validity evidence supporting hope as a construct

Hope has been distinguished from related constructs like self-efficacy and optimism both theoretically and empirically. Researchers have argued that hope is experienced under different conditions than self-efficacy and optimism, and is elicited in different circumstances (Bruininks & Malle, 2005; Snyder, 2002). For example, optimism is likely to be experienced when students believe that they will accomplish a desirable future goal, like getting an A in a math course, but do not know how the good grade will come about. This feeling of optimism changes to hope when those students envision a pathway to getting the A in the math class; that is, when they know how they will accomplish earning the A and in turn feel a sense of agency in the process of the A coming about (Snyder, 2002). Self-efficacy is different in that it is likely to be experienced before either hope or optimism. Self-efficacy is likely to be experienced in the *can* phase whereas hope and optimism are likely to be experienced in the *will* phase (Snyder, 2002). Continuing the example from above, students are likely to experience a sense of self-efficacy when they are deciding whether or not they can get an A in the math class.

Hope has also been shown to be empirically different than self-efficacy and optimism in several studies. Using confirmatory factor analysis, Bryant and Cvengros (2004) found that a joint examination of hope and optimism items resulted in the best fit when the items from the two constructs loaded on separate factors. Feldman and Kubota (2015) found that general hope shared 44% of the variance with general self-efficacy ($r = 0.67$) and that academic hope shared a similar amount of variance with academic self-efficacy ($r = 0.66$), indicating that about 56% of the variance in the constructs is unique. Mirroring these findings, Ben-Naim, Laslo-Roth, Einav, Biran, and Margalit (2017) reported that both the pathways and agency subscales of hope shared about 42% of variance with academic self-efficacy ($r = 0.65$ & 0.64 respectively), whereas Dixon, Worrell, Olszewski-Kubilius, and Subotnik (2016) found that hope shared about 20% of variance with academic self-efficacy ($r = 0.45$). All three of these studies indicate that more than half of hope's contribution is unique. Finally, correlations between hope and optimism range from 0.23 to 0.56 (Feldman & Kubota, 2015; Magaletta & Oliver, 1999; Vacek, Coyle, & Vera, 2010).

Hope is also meaningfully related to several educational and psychological constructs in the literature. Hope has been found to correlate with academic achievement at all levels of education, even after controlling for ability (Curry, Snyder, Cook, Ruby, & Rehm, 1997; Snyder et al., 2002) and academic engagement (Marques, Lopez, Fontaine, Coimbra, & Mitchell, 2015). Researchers have found that hope is positively associated with several additional outcomes, such as success in competition (Curry & Snyder, 2000), general wellbeing (Parker et al., 2015; Satici, 2016), problem solving ability (Snyder et al., 1991), resilience (Satici, 2016), and social competence (Sympson, 1999). Longitudinal studies have shown hope to be related to life satisfaction after a year (Marques, Lopez, & Mitchell, 2013) and to more favorable developmental trajectories over a three-year span (Schmid et al., 2011). Additionally, researchers have found 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).

1.1.2. Hope and demographic variables

Several studies have examined how hope relates to gender, race, age, and SES. Results from the majority of studies examining gender have indicated that hope scores do not differ significantly based on gender (Adelabu, 2008; Snyder et al., 1997, 2002, 2003). However, Valle, Huebner, and Suldo (2004) found that women reported significantly higher hope scores than men, but with a small effect size ($d = 0.16$). Results from studies examining whether hope scores differ significantly across race are mixed. Although some studies indicate that hope scores do not differ significantly based on race (Adelabu, 2008;

Snyder et al., 1991, 1997), some researchers have found that African Americans report higher hope scores than European Americans, although with small effect sizes (e.g., McDermott et al., 1997, $d = 0.21$; Valle et al., 2004, $d = 0.18$). Finally, studies indicate that hope scores do not differ across SES or age (Snyder et al., 1991, 1997; Valle et al., 2004).

1.1.3. Hope and academic achievement

As schooling typically involves long term goals for most students (e.g., the desire to get into honors classes, be valedictorian, to graduate, or get into college), hope, as theorized, has the potential to be a useful construct in schools. For example, students commonly have the goal of earning good grades across multiple subjects (Svanum & Bigatti, 2006). Snyder (2002) argued that successfully attaining the aforementioned academic goals is heavily influenced by a student's level of hope. However, very little research has been conducted on hope in school settings, and the studies that have been conducted have focused almost exclusively on the relationship between hope and academic achievement.

Snyder et al. (1997) found that hope scores correlated 0.50 with scores on the Iowa Test of Basic Skills in a sample of 372 students in Grades 4–6, an association similar in size to the one between IQ and school performance (Neisser et al., 1996). Subsequently, Snyder et al. (2002) conducted a 6-year longitudinal study tracking the hope levels, academic achievement, and the graduation status of 213 college freshmen (52% women, $M_{age} = 18.17$). They found, after controlling for ACT scores obtained before the study, that hope predicted higher cumulative grades ($r = 0.21$, $p < 0.01$) 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 $V = 0.19$).

Adelabu (2008) examined how future time perspective, ethnic identity, and hope relate to academic achievement in a sample of 661 financially disadvantaged youth. She reported that (a) youths who were future oriented earned higher grades ($r = 0.12$, $p < 0.01$), (b) youths with higher agency earned better grades ($r = 0.20$, $p < 0.01$), (c) youths with higher pathways did not earn better grades ($r = 0.08$, $p > 0.05$), (d) youths with higher ethnic identity earned better grades (ethnic exploration $r = 0.13$, $p < 0.01$; ethnic affirmation $r = 0.24$, $p \leq 0.01$), and (e) only agency predicted academic achievement among both rural and urban adolescents when the other variables were controlled for.

Recently, Feldman and Kubota (2015) conducted a study to determine which variable among academic self-efficacy, optimism, and academic hope was the strongest predictor of GPA after controlling for the other variables. Using path analysis with a sample of 89 college students, the researchers reported two major findings: (a) academic hope was the strongest predictor of GPA ($\beta = 0.54$), with a coefficient more than twice the coefficient for academic self-efficacy ($\beta = 0.23$), and (b) optimism did not predict GPA ($\beta = 0.01$). Similarly, Gallagher, Marques, and Lopez (2017) conducted a longitudinal study examining how hope and self-efficacy relate to academic achievement and academic persistence over the course of college in sample of 229 college students. They found that after controlling for high school GPA and ACT scores, academic hope was a significant predictor of semesters enrolled in college ($b = 0.29$, $p < 0.05$), graduating within four years ($b = 0.14$, $p < 0.05$), and academic performance ($b = 0.21$, $p < 0.01$, explaining 6.1% of GPA's variance), whereas academic self-efficacy did not contribute (p 's > 0.05). Further, they found that academic hope was meaningfully associated with cumulative GPA across all 4 years of college (r s range from 0.30 to 0.33).

Outside of correlational studies which do not differentiate students at different levels of hope, most studies that examine hope and academic achievement use arbitrary cutoffs of overall hope scores (e.g., those that have above average hope are classified as high hoppers and those that have below average hope are placed in a low hope group), and it is unclear whether the conclusions drawn from these studies are

generalizable. Students who are high in both pathways and agency are theoretically different from those students who are high in either agency or pathways alone (Snyder, 2002). However, these latter two sets of students often end up in the same group when groups are formed based on cut scores (e.g., Snyder et al., 2003). Therefore, more research needs to be conducted that creates hope groups based on more robust analyses.

One such study is that of Gilman, Dooley, and Florell (2006). These researchers used cluster analysis to create different groups of hope in a sample of 341 adolescents. They found 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 ($d = 2.34$) and low hope ($d = 3.92$). They also found that students with average hope earned significantly higher grades than those with low hope ($d = 1.94$). However, hope theory postulates that there are at least four hope groups (Snyder, 1994, 2002; Snyder et al., 1991): those that are high in both agency and pathways (high hoppers), those that are high in one and average/low in the other (high agency thinkers and high pathways thinkers), and those that have both low agency and low pathways (low hoppers). No study on hope and achievement has yet examined these four groups.

1.1.4. Hope and other variables related to achievement

There are several variables that are theoretically linked to academic achievement that could help clarify the role of hope in the school context. In this study, we examined three groups of variables related to academic functioning and schooling. The first are academic variables, including academic achievement, academic investment (i.e., how important excelling in school is to a student; Sinclair, Huntsinger, Skorinko, & Hardin, 2005), academic self-concept (Bong & Skaalvik, 2003), school belonging (i.e., one's perceived connectedness to the school community; Booker, 2006), and educational expectations (i.e., how much schooling one expects to complete). The second group consisted of two psychological variables that have been shown to be related to academic functioning, that is, self-esteem (Rosenberg, 1965) and perceived stress (Cohen, 1988). The third and final group consisted of two future-oriented variables that have been linked to academic performance: perceived life chances (i.e., one's expectations that positive events will occur in one's future; Jessor, Donovan, & Costa, 1990) and consideration of future consequences (i.e., one's consideration of distant vs. immediate consequences of potential behavior; Strathman, Gleicher, Boninger, & Scott, 1994).

The choice of outcome variables was not arbitrary. All of these variables were included in the dataset used for this study for several reasons. They have been used in previous studies and have demonstrated associations with doing well in school or with adolescent well-being (Booker, 2006; Chavous, Rivas-Drake, Smalls, Griffin, & Cogburn, 2008; Rubin, Dorle, & Sandidge, 1977; Stevenson, Maton, & Teti, 1998; Worrell & Hale, 2001; Worrell, Latto, & Perlinski, 1999). Additionally, they span three different domains – academic, wellbeing, and future-orientation – that allowed for a broad-based analysis of the different psychosocial constructs studied in adolescent students. These variables can help us understand if students with different hope profiles perceive the school environment differently. Finally, these constructs all have theoretical associations to hope (Snyder, 2002). For example, one's sense of agency and goals in the school context are directly related to how much one values school, is thriving in the school context, and how much one feels that one is a part of the school community.

1.2. The present study

The present study answers the call for more research on hope in the school environment. There were several goals for the current study. The first goal was to examine whether cluster analysis based on pathways and agency scores would yield interpretable clusters. We hypothesized

that we would find the four theorized hope groups. The second goal was to examine if hope clusters are associated gender, SES, and grade. Given the majority of previous literature indicates that hope does not differ across gender and age (e.g., Snyder et al., 2002, 2003; Valle et al., 2004), we made no hypotheses about hope cluster membership in relation to gender or grade. With regard the SES, the literature is mixed. Empirical research has indicated that hope does not differ across SES levels (Snyder et al., 1991, 1997; Valle et al., 2004), but hope theory suggests that those with more barriers are likely to have lower agency and pathways scores (Snyder, 2002) and ultimately lower levels of hope (Dixon, Keltner, Worrell, & Mello, 2017). Therefore, it was hypothesized that hope cluster membership would differ significantly across SES with higher SES students having a higher proportion of students in the high hoper cluster and lower SES students having a higher proportion of students in the low hoper cluster.

The third goal was to examine hope cluster differences across perceived stress, educational expectations, self-esteem, academic investment, consideration of future consequences, academic self-concept, perceived life chances, school belonging, and academic achievement. Based on how high hope is more adaptive than low hope (Schmid et al., 2011; Snyder, 2002), it was hypothesized that there would be significant differences across all school variables. More specifically, it was hypothesized that individuals in the high hoper cluster would report more adaptive scores across all variables than the three other clusters, and that individuals in both the high pathways and high agency clusters would report more adaptive scores across all variables than those in the low hoper cluster.

2. Method

2.1. Participants and procedures

Data used in this study were from a dataset that was collected on a scale validation project on adolescent outcomes. All of the variables in this study, including hope, were used as criterion-related measures for scores on the new scale. 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 a rural school (42%) in a Mountain state, and two urban schools (19%), and an academic program that served urban, suburban, and rural students (38%), all in the same 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/Latinx ($n = 31$), and 12.2% Multi-Ethnic/Other ($n = 36$).

SES is a complex variable incorporating family income, education levels, and social status. As adolescents often do not know how much income their family brings in and are sometimes reluctant to report parental education levels, especially if education levels are low, perceived SES was operationalized using a single question that asked students, “How would you describe your family’s socioeconomic status.” Response options were 1 (*Poor*), 2 (*Working class*), 3 (*Lower middle class*), 4 (*Middle class*), 5 (*Upper middle class*), 6 (*Lower upper class*), and 7 (*Wealthy*). Self-reported SES groups were Poor ($n = 6$, 2%), Working Class ($n = 30$, 10.1%), Lower Middle Class ($n = 31$, 10.4%), Middle Class ($n = 107$, 36%), Upper Middle Class ($n = 95$, 32%), Lower Upper Class ($n = 11$, 3.7%), and Wealthy ($n = 17$, 5.7%). As some cell sizes were quite small, for analyses, poor, working class, and lower middle class were grouped together to make a “Low SES” group, and upper middle class, lower upper class, and wealthy were grouped together to make the “High SES” group. This categorization resulted in larger and more balanced cell sizes: Low SES ($n = 67$, 22.6%), Middle SES ($n = 107$, 36%), and High SES ($n = 123$, 41.4%). This reclassification is also supported by research that found that Americans overidentify as middle class even when they are objectively lower or upper class (Morin & Motel, 2012; Shenker-Osorio, 2013; Sirin, 2005).

Two researchers and four graduate students recruited students

during students’ free periods. Those who showed interest were given parental consent forms in order to obtain parental consent, but if the student was over 18 years old, only student consent was obtained. After parental consent and student assent were obtained, students were given a survey with all of the included scales to complete and return. Students were given \$10 for participating in the study, which was approved by the institutional review board of the second author’s institution.

2.2. Measures

2.2.1. Hope

Hope was measured using Snyder et al.’s (1997) Children Hope Scale (Snyder et al., 1997). This 6-item scale measures hope via its two subscales, agency and pathways. Three items on the scale measure agency (e.g., “I think I am doing pretty well”) and the other three items measure pathways (e.g., “When I have a problem, I can come up with lots of ways to solve it”). A total hope score is based on a combination of the two subscales. Response options ranged from 1 (*None of the time*) to 6 (*All of the time*). Scores on both subscales and the total scale have been found to be valid and reliable in similar populations (e.g., Dixon, 2017; Valle et al., 2004). The alphas for hope scores in this sample were 0.70 for the agency subscale and 0.75 for the pathways subscale (omega = 0.75 for agency and 0.72 for pathways). Structural validity analyses were conducted for all of the subscales using exploratory factor analyses (EFA) with principal axis extraction. The 2-factor structure for hope scores was supported in this study. Factor coefficients were substantial, ranging from 0.60 to 0.71 for agency and 0.64 to 0.72 for pathways. Missing data were imputed using the Expectation–maximization algorithm. Seven values (0.4%) were imputed for hope.

2.2.2. 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 0.82 correlation with actual GPA (Kuncel, Credé, & Thomas, 2005). Twenty-nine values (9.7%) were imputed for grade point average.

2.2.3. Academic investment

Academic investment was measured with three items that measured how important doing well in school was to the student (Sinclair et al., 2005). The three items were, “I value academics,” “Academics are important to me,” and “I am good at academics.” Responses were on a 7-point Likert scale ranging from 1 (*Strongly disagree*) to 7 (*Strongly agree*). Sinclair et al. reported an internal consistency estimate of 0.77 for academic investment scores and the alpha for scores in this sample was 0.86. An EFA supported a 1-factor structure, with coefficients ranging from 0.69 to 0.90. Sixteen values (1.8%) were imputed for academic investment.

2.2.4. Academic self-concept

Academic self-concept was measured with six items based on Marsh’s (1993) and Reynolds, Ramirez, Magrina, and Allen’s (1980) conceptualization of academic self-concept. The items assessed 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 scores were found to be valid and reliable (Arif & Yousuf, 2010). The alpha for scores in this sample was 0.87 and factor coefficients from the single factor model ranged from 0.39 to 0.87. Twenty-one values (1.2%) were imputed for academic self-concept.

Table 1
Descriptive statistics for hope and school variables.

	1	2	3	4	5	6	7	8	9	10	11	M	SD
1. GPA	–											3.30	0.67
2. School belonging	0.21	–										5.27	1.65
3. Educational exp.	0.69*	0.18	–									4.17	1.62
4. Academic inv.	0.63*	0.29*	0.64*	–								5.52	1.35
5. Academic SC	0.70*	0.25*	0.59*	0.70*	–							4.52	0.98
6. Perceived stress	–0.07	–0.19	–0.05	–0.08	–0.17	–						3.00	0.54
7. Perceived LC	0.30*	0.05	0.33*	0.36*	0.41*	–0.32*	–					4.01	0.63
8. Consideration of FC	0.44*	0.16	0.37*	0.46*	0.39*	–0.01	0.28*	–				3.42	0.56
9. Self-esteem	0.28*	0.37*	0.27*	0.33*	0.39*	–0.49*	0.49*	0.25*	–			3.07	0.53
10. Hope agency	0.32*	0.34*	0.26*	0.38*	0.47*	–0.36*	0.50*	0.28*	0.52*	–		4.28	0.97
11. Hope pathways	0.11	0.38*	0.13*	0.26*	0.31*	–0.34*	0.41*	0.28*	0.45*	0.64*	–	4.07	0.96
12. Hope	0.24*	0.40*	0.22*	0.36*	0.44*	–0.38*	0.50*	0.31*	0.54*	0.91*	0.90*	4.17	0.87

Note. Educational exp. = educational expectations; Academic inv. = academic investment; Academic SC = academic self-concept; Perceived LC = perceived life chances; Consideration of FC = consideration of future consequences.

* $p < 0.0002$.

2.2.5. 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 used in previous research (e.g., Mello, Mallett, Andretta, & Worrell, 2012; Sidanius, Van Laar, Levin, & Sinclair, 2004). Twenty-two values (7.4%) were imputed for school belonging.

2.2.6. 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 in previous research (e.g., Mallett et al., 2011), and six values (2%) were imputed for educational expectations.

2.2.7. Perceived life chances

Perceived life chances was measured using Jessor et al.'s (1990) Measure of Perceived Life Chances (MPLC). The MPLC is a 11-item scale that assesses how positive individuals perceive they will thrive educationally, personally, and occupationally in the future. All items on the scale have the prefix, “What are the chances that,” and sample items include “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*). Scores on this measure have been found to be valid and reliable in similar populations (e.g., Worrell et al., 1999). The alpha for scores in this sample was 0.87 and factor coefficients from the single factor model ranged from 0.40 to 0.75. Seven values (0.2%) were imputed for perceived life chances.

2.2.8. Consideration of future consequences

Consideration of future consequences was measured using the Consideration of Future Consequences Scale (CFCS; 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 communalities (< 0.10) for two of the items, only 10 items were used in this study. Items with low communalities are not meaningfully related to the other items on a scale and contribute negligible to no variance (Costello & Osborne, 2005). 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 on a 5-point Likert scale that ranged from 1 (*Extremely uncharacteristic*) to 5 (*Extremely characteristic*). The alpha for CFCS scores in this sample based on the 10 items was 0.75 and the factor coefficients for the 1-factor structure ranged from 0.60 to 0.72. Eight CFCS values (0.3%) were imputed.

2.2.9. Self-esteem

Self-esteem was measured using Rosenberg's (1965) Self-Esteem Scale. This 10-item scale measures one's perception of one's 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 scores in this sample was 0.83 and the factor coefficients for the 1-factor structure ranged from 0.33 to 0.67. Seventeen values (0.4%) were imputed for self-esteem.

2.2.10. 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 communalities (< 0.1) for 5 of the items, we used nine items to measure perceived stress (Costello & Osborne, 2005). 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 scores in this sample was 0.79 and factor loadings (1-factor structure) ranged from 0.36 to 0.70. Twenty-three values (0.9%) were imputed for perceived stress.

3. Results

3.1. Descriptive statistics

3.1.1. Preliminary analyses

The means, standard deviations, and intercorrelations for study variables are presented in Table 1. The distributions were neither skewed (-1.06 to 0.53) nor kurtotic (-0.82 to 0.31). There were several differences by gender and ethnicity/race that are in keeping with the extant literature. Females reported statistically higher GPAs ($d = 0.09$), academic investment scores ($d = 0.31$), and perceived stress scores ($d = .46$). Asian Americans reported higher GPAs, educational expectations, and academic self-concept than European Americans ($0.63 \leq d \leq 1.21$), African Americans ($0.92 \leq d \leq 2.55$), and Hispanic Americans ($0.64 \leq d \leq 1.38$). Asian Americans also reported higher academic investment than both European Americans ($d = 0.62$) and African Americans ($d = 1.21$). Finally, European Americans

reported higher self-esteem ($d = 0.57$) and school belonging ($d = 0.59$) than African Americans, and Asian Americans reported higher consideration for future consequences than African Americans ($d = 0.39$).

Intercorrelations among the variables are reported in Table 1. The meaningful intercorrelations (i.e., $r > 0.30$) in the table were in keeping with theory and previous research, and supported the internal validity of the study. For example, academic achievement's strongest associations were with academic self-concept, academic investment, and educational expectations. Agency, pathways, and perceived life chances were meaningfully associated, as were consideration of future consequences and educational expectations, and all of these, except hope pathways, were associated with academic achievement. Perceived stress had negative associations with all constructs, but only the associations with self-esteem, perceived life chances, and the hope subscales were meaningful. The observed correlation between pathways and agency indicated 40% shared variance and is consistent with previous literature and hope theory (Snyder, 2002).

3.1.2. Hope clusters

As the pathways and agency scores were internally consistent, structurally valid, and normally distributed, they were appropriate for use in cluster analysis. Employing K-means cluster analysis using the procedure outlined in Garson (2014), four clusters were specified using pathways and agency as variables (10 iterations, convergence criteria = 0). The K-means algorithm converged after 5 iterations. The cluster analysis yielded four meaningful groups of acceptable sizes. As average pathways and agency scores for students in the United States are around 4.0 (Gallup, 2013), 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*, $n = 62$; 32 [52.5%] boys, 29 [47.5%] girls). 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*, $n = 73$; 40 [55.6%] boys, 32 [44.4%] girls).

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*, $n = 57$; 41 [71.9%] boys, 16 [28.1%] girls). 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*, $n = 105$; 66 [62.9%] boys, 39 [37.1%] girls). As can be seen in Fig. 1, the four clusters were sufficiently distinct from each other.

3.1.3. Demographic differences by hope profile

Table 2 presents numbers and percentages of participants in the hope clusters by grade level, gender, and SES. Crosstabulations with chi square tests were used to assess demographic differences among the hope clusters for gender, SES, and grade level. Differences among hope clusters were significantly different for grade level, $\chi^2 [9] = 20.87$, $p = 0.013$, $V = 0.15$, but not significant for gender, $\chi^2 [3] = 5.75$, $p = 0.124$, $V = 0.14$, or SES, $\chi^2 [6] = 5.84$, $p = 0.441$, $V = 0.10$, and the effect sizes for these differences were small.

3.1.4. Hope profile differences on outcome variables

Means and standard deviations for outcome variables by hope clusters are presented in Table 3. As our purpose was to examine if hope cluster membership signaled mean differences in each of the outcome variables, differences among hope clusters were assessed using one-way analyses of variance (ANOVAs) and Welch's ANOVA when the assumption of homogeneity of variances was violated ($p < 0.006$). Statistically significant differences among hope clusters were found on all school variables (see Table 3), with effect sizes (η^2) ranging from small to large. To examine the specific hypotheses regarding the differences

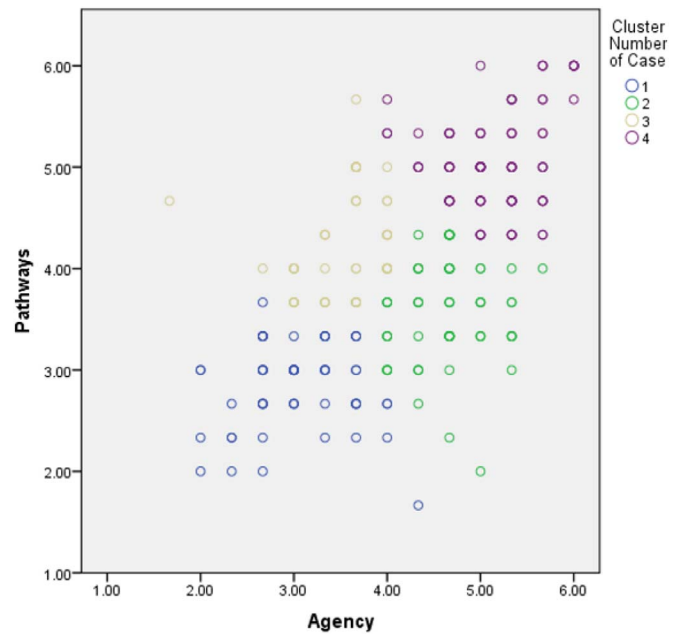


Fig. 1. Hope cluster make-up separation based on pathway and agency scores.

Table 2
Demographic representation in hope clusters.

Demographic	Low hoppers 62	High agency 73	High pathways 57	High hoppers 105	V
Grade					0.18
9th Grade	18 (32.1%)	6 (10.7%)	12 (21.4%)	20 (35.7%)	
10th Grade	23 (23.2%)	25 (25.3%)	21 (21.2%)	30 (30.3%)	
11th Grade	14 (19.2%)	26 (35.6%)	10 (13.7%)	23 (31.5%)	
12th Grade	7 (10.3%)	15 (22.1%)	14 (20.6%)	32 (47.1%)	
Gender					0.14
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					0.10
Low	16 (23.9%)	12 (17.9%)	17 (25.4%)	22 (32.8%)	
Middle	24 (22.4%)	25 (23.4%)	21 (19.6%)	37 (34.6%)	
High	22 (17.9%)	36 (29.3%)	19 (15.4%)	46 (37.4%)	
Race/ethnicity ^a					
Asian	20 (26.3%)	26 (34.2%)	9 (11.8%)	21 (27.6%)	
American African	14 (46.7%)	7 (23.3%)	3 (10%)	6 (20%)	
American Latinx	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%)	

^a Analyses were not conducted on race/ethnicity, as 11 of the 20 cells contained fewer than 10 participants.

among clusters, Cohen's d was used with interpretations based on Hattie's (2009) meta-analysis indicating that differences in the educational domain become visible when the effect size is at about 0.40. Thirty-five (65%) of the 54 differences among hope clusters had had at least a 0.40 effect size difference, and at least two meaningful differences were found for all nine outcome variables (see Table 4 for a listing).

Given the moderate intercorrelations among some of the outcome variables, we also ran a one-way MANOVA to see if substantial differences remained after accounting for the shared variance. The MANOVA was statistically significant, $F(27, 833) = 7.25$, $p < 0.001$, Wilks' $\Lambda = 0.54$, partial $\eta^2 = 0.19$, which is a large effect. Given the statistically and practically significant MANOVA, we ran a descriptive discriminant function analysis (DFA), which is the appropriate

Table 3
Hope cluster group differences on outcome variables.

Variable	Low hoppers 62		High agency 73		High pathways 57		High hoppers 105		df	F	η^2
	M	SD	M	SD	M	SD	M	SD			
GPA	3.13	0.69	3.45	0.69	3.12	0.69	3.38	0.60	F(3, 293)	4.59*	0.05
Academic self-concept	4.06	0.93	4.67	0.94	4.14	0.95	4.88	0.88	F(3, 293)	14.42*	0.13
Academic investment	4.81	1.30	5.78	1.26	5.15	1.44	5.96	1.15	F(3, 293)	13.17*	0.12
Perceived stress	3.26	0.52	2.99	0.45	3.11	0.56	2.78	0.52	F(3, 293)	12.49*	0.11
Perceived life chances	3.61	0.62	4.06	0.48	3.74	0.62	4.35	0.55	F(3, 293)	27.44*	0.22
Self-esteem	2.61	0.40	3.21	0.46	2.95	0.48	3.31	0.49	F(3, 293)	33.00*	0.25
School belonging	4.32	1.61	5.19	1.69	5.22	1.81	5.91	1.22	F(3, 137.83) ¹	37.65*	0.13
Educ expectations	3.73	1.71	4.61	1.37	3.77	1.82	4.33	1.51	F(3, 143.87) ¹	5.02*	0.05
Consideration of FC	3.18	0.49	3.42	0.56	3.35	0.49	3.61	0.59	F(3, 152.01) ¹	8.59*	0.08

Note. Educ = educational; FC = future consequences.

* $p < 0.005$.

¹ Welch's Anova.

Table 4
Effect sizes for hope cluster differences ($d \geq 0.39$).

Variable	Contrast	Mdifference	p	d
GPA	HH v HP	0.26	0.082	0.40
	HH v LH	0.25	0.090	0.39
	HA v HP	0.33	0.023	0.48
Academic SC	HA v LH	0.32	0.025	0.46
	HH v LH	0.82	0.001	0.91
	HH v HP	0.74	0.001	0.81
	HA v LH	0.61	0.001	0.65
Academic investment	HA v HP	0.53	0.006	0.56
	HH v LH	1.15	0.001	0.94
	HH v HP	0.81	0.001	0.62
	HA v LH	0.96	0.001	0.75
Perceived stress	HA v HP	0.62	0.030	0.48
	HH v LH	-0.48	0.001	0.92
	HH v HP	-0.33	0.001	0.61
	HH v HA	-0.21	0.042	0.43
Perceived life chances	HA v LH	-0.27	0.013	0.56
	HH v LH	0.74	0.001	1.26
	HH v HP	0.61	0.001	1.04
	HH v HA	0.29	0.006	0.56
Educ expectations	HA v LH	0.45	0.001	0.81
	HA v HP	0.32	0.008	0.58
	HA v LH	0.88	0.007	0.57
	HA v HP	0.84	0.015	0.54
Self-esteem	HH v LH	0.70	0.001	1.57
	HH v HP	0.36	0.001	0.74
	HA v LH	0.6	0.001	1.39
	HA v HP	0.26	0.010	0.60
School belonging	HP v LH	0.34	0.001	0.77
	HH v LH	1.59	0.001	1.11
	HH v HP	0.69	0.034	0.45
	HH v HA	0.72	0.013	0.49
Consideration of FC	HA v LH	0.87	0.007	0.53
	HP v LH	0.90	0.009	0.53
	HH v LH	0.43	0.001	0.79
	HH v HP	0.26	0.025	0.48
	HA v LH	0.24	0.064	0.46

Note. HH = high hoppers; HA = high agency thinkers; HP = high pathway thinkers; LH = low hoppers; Educ = educational; FC = future consequences.

multivariate post-hoc procedure for MANOVA. The DFA yielded two statistically significant functions, which accounted for 96% of the variance: Function 1, $\chi(27) = 128.47, p < 0.001, \text{Wilks}' \Lambda = 0.54$, and Function 2, $\chi(16) = 29.47, p = 0.02, \text{Wilks}' \Lambda = 0.90$. Variables contributing to Function 1 with coefficients $\geq |0.35|$ were GPA, school belonging, and perceived life chances and variables contributing to Function 2 were GPA, educational expectations, school belonging, self-esteem, and consideration of future consequences, and all nine variables had structure coefficients $\geq |0.35|$ on one or both functions. The functions correctly classified 72.6% of the low hoppers (prior

probability = 20.9%), 38.4% of the high agency thinkers (prior probability = 24.6%), 17.5% of the high pathways thinkers (prior probability = 19.2%), and 76.2% of the high hoppers (prior probability = 35.4%). All but the high pathways thinkers were classified at substantially greater than chance levels.

Standardized mean scores for all the variables by cluster are presented graphically in Fig. 2 to accentuate the differences among the clusters. The high hoppers reported the most adaptive profile. They had substantially above average scores (i.e., $d \geq |0.40|$) on perceived life chances, self-esteem, and school belonging; above average scores (i.e., $|0.20| \leq d < |0.40|$) on academic self-concept, academic investment, and consideration of future chances; substantially below average scores on perceived stress, and average GPA and educational expectation scores. High agency thinkers reported the next most adaptive scores: above average scores on GPA, academic investment, educational expectations, and self-esteem, and average scores on the other five constructs, including perceived stress. This group had the highest GPA and educational expectations. High pathways thinkers reported the third most adaptive scores, with substantially below average scores on perceived life chances and above average scores on perceived stress. This group had average scores on school belonging and consideration of future consequences and below average scores on the other five constructs. Finally, low hoppers reported the least adaptive profile with below average scores on GPA and educational expectations and substantially below average scores on all other variables but perceived stress, which was substantially above average. This group's self-esteem score was almost a full standard deviation below average. Importantly, values for perceived stress were inverse to the other variables, with the levels of stress being lowest for high hoppers and highest for low hoppers followed by the high pathways thinkers.

4. Discussion

In conducting this study, we had several goals. The first was to determine if cluster analysis would produce four interpretable clusters consistent with hope theory (Snyder, 2002). Second, we examined whether demographic differences existed across hope clusters. Finally, we examined differences in several educational and psychological constructs across hope clusters. As hypothesized, four clusters consistent with hope theory were found. Cluster membership did not differ by gender, nor were there differences by SES as hypothesized, but there was a statistically but not practically significant difference by grade level. Finally, individuals in hope clusters differed meaningfully in academic achievement as well as on all eight other variables examined, with the most stark differences being between low hoppers and high hoppers.

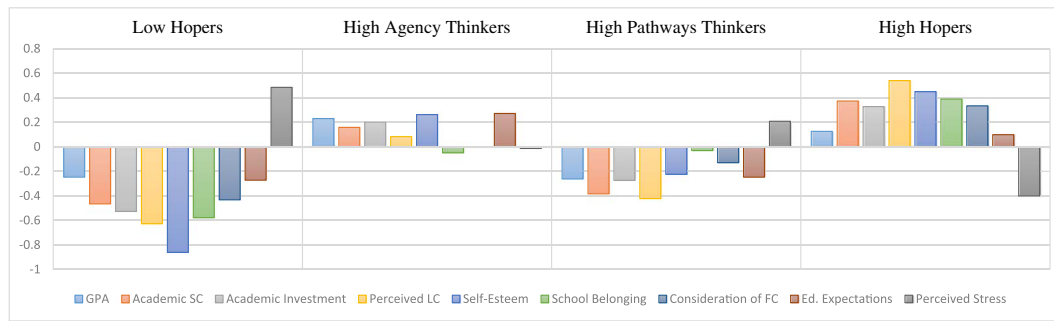


Fig. 2. Mean z-scores for outcome variables by hope cluster.

4.1. Profiles of hope and outcome variables

This study indicated that there are four school profiles of hope with most profile differences having at least a medium effect size. Generally, the more hope students reported, the more adaptive their school profile. The high hoper school profile had the highest scores on all school variables except GPA and educational expectations, where they were not statistically different from the high agency thinkers who had the highest scores on both. The low hoper school profile reported the lowest scores on all school variables, except GPA, where they reported an average GPA that was 0.01 higher than high pathway thinkers. The other two hope profiles fell in the middle. These findings suggest that students with different hope profiles may have meaningfully different academic, psychological, and future oriented perceptions about and within the school environment. These findings parallel Gilman et al.'s (2006) study, whose low and high hope groups reported the highest and lowest scores, respectively on school maladjustment, clinical maladjustment, and emotional symptoms, and the lowest and highest scores, respectively on GPA, extracurricular involvement, global satisfaction, and personal adjustment.

Although differences were found for all of the academic variables, the smallest effect sizes, relatively speaking, were for GPA and educational expectations, whereas academic investment, academic self-concept, and school belonging all had larger effect sizes. These results support the hypothesis that hope is meaningful within the school context and suggest avenues for potential interventions if the relationship is found to be causal. For example, hope may increase a student's sense of belonging within school, resulting in the student being more engaged, happier, and less likely to dropout (Booker, 2006). Hope may also affect a student's academic investment and academic self-concept, leading students to pursue more educational opportunities and better jobs (Mau & Bikos, 2000).

Hope cluster differences were found for perceived stress and self-esteem, both variables related to psychological wellbeing. It is possible that students with higher hope have a more sanguine view of stressful situations. However, it is unclear if hope makes students less susceptible to stress or increases their capacity for coping, both of which are hypotheses that should be examined in future studies. If hope interventions are able to reduce student stress levels or increase the self-esteem of students, it is possible that the students will be more engaged and committed in school (Phan & Ngu, 2014).

Hope cluster differences were also found for both future-oriented variables, consideration of future consequences and perceived life chances. This finding highlights the relationship between hope and other future-oriented variables. Looking towards the future with positive expectations is a powerful force on the present as it affects present decisions, thoughts, and behaviors (Strathman et al., 1994). Hope's relationship with thoughts about one's likelihood of success in the life and consideration of how one's current behavior affects one's future highlights hope's potential to be a possible pathway of change for underachieving and disadvantaged youth. If youth who are

underperforming in school can be encouraged (a) to think about how their behaviors in the present affect their future and (b) to believe that their future has a high likelihood of success, they might be inclined to engage more in school, choose more ambitious careers, and persevere on the path to obtaining those careers.

An unexpected finding in this study involved the differences reported between the high pathway and the high agency groups. Snyder (2002) contended that although these different profiles are theoretically different, they both have their advantages and the theory implies that neither is more adaptive. However, in this study, the high agency thinkers reported more adaptive outcomes than the high pathway thinkers and were more similar to the high hoppers. The pattern of correlations in Table 1 provides a rationale for this finding. Agency scores were meaningfully correlated with the nine outcome variables whereas pathway scores were meaningfully correlated with only five of the nine outcomes. This finding also suggests that when interventions are being developed, special attention should be given to the agency aspect of hope. However, pathways thinking should not be overlooked, as the most adaptive hope profile includes high agency and high pathways scores (Snyder, 2002; Snyder et al., 1991, 1997). Moreover, the high pathways group is the one which the discriminant analysis was not able to classify at greater than chance levels, suggesting that the variables in this study do not fully explain this group. More research is needed to replicate this finding and to further our understanding of the differences among these hope clusters.

Given that perceptions exert influence on behavior within the school environment (e.g., Walton & Cohen, 2007, 2011; Yeager et al., 2014; Yeager et al., 2014; Yeager & Walton, 2011), different hope profiles may make certain academic related behaviors, like doing homework, studying for tests, or participating in classroom discussions, more or less likely. Thus, one can hypothesize that a student who is a high hoper is more likely to engage in academic behaviors that will lead to academic success than students in the other hope clusters. However, it is important to emphasize that this finding does not mean that hope causes the changes in behavior, as these results are correlational. It is possible that other factors lead to both hope cluster membership and differences in outcomes. Nonetheless, the totality of results underscores the importance of hope in the school environment and suggests that increasing the hope of students is unlikely to be detrimental and warrants further study.

4.2. Demographic differences across hope clusters

As hypothesized and consistent with previous research (Adelabu, 2008; Snyder et al., 1997, 2003; Valle et al., 2004), meaningful gender and grade differences were not found across hope clusters. Counter to our hypothesis, hope cluster differences were not found across SES either. Although hope theory posits that barriers encumber hope (Snyder, 2002) and students from low SES families generally encounter more barriers than students from high SES families (e.g., access to high quality education; Kraus, Piff, Mendoza-Denton, Rheinschmidt, & Keltner, 2012; Palardy, 2008; Snyder, 2002),

several studies have failed to find differences in hope by SES (Snyder et al., 1991, 1997; Valle et al., 2004). Possible explanations for the results in this study include the fact that almost 80% of the current sample reported being in one of the three middle class groupings and that the cell sizes at both tails of the SES distribution were very small. Additionally, SES involves more than income – it also encompasses parental education and occupations, which also need to be studied. Consequently, more research needs to be conducted to understand why studies are consistently indicating that hope does not differ across SES, whereas studies indicate that hope does differ across race (e.g., McDermott et al., 1997; Valle et al., 2004), which is correlated with SES.

The gender differences on the outcome variables also help to contextualize the results. Although females reported substantially higher perceived stress than males, females made up about half of the low hoppers and only 28% of the high pathway thinkers, and both of these groups had high perceived stress. This finding indicates that the level of perceived stress in these groups is being driven by something other than gender. Although the small cell sizes preclude drawing any conclusions based on race-ethnicity, it is worth noting that all clusters had members of all racial-ethnic groups. Thus, it is likely that the benefits associated with high hope are applicable across all demographic groups, a hypothesis that needs to be examined in larger samples of students.

5. Limitations and future research

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 the clusters, which would have allowed for more fine-grained analyses of the data. For example, it will be important to see if cluster membership differs meaningfully by ethnicity/race and geographic location (i.e., urban, rural, suburban). Second, the hope clusters were not replicated with another data set. As cluster replication is best practice, future studies should seek to replicate the clusters found in this study, which will allow for greater generalizability of the results. Third, school belonging and educational expectations were both measured with just one item, which is not best practice. Although the nomological net provided by the intercorrelations reported in Table 1 provide support that both constructs are measuring what they are intended to measure, it will be important to replicate these findings with more robust measures. Fourth, it will be important to examine how hope clusters predict achievement from school records, rather than self-reported achievement. Fifth, this study is cross-sectional; hence, causal relationships cannot be inferred from the differences among clusters. Experimental studies with appropriate manipulation of study variables are needed to determine causality.

Despite these limitations, this study contributes to and builds upon the extant hope literature. First, the study provides additional information about hope in the school context. Most previous school-based research examined hope and academic achievement alone; in this study, we also examined hope's relationship to several other variables that are correlated to achievement. This examination revealed that high hoppers and high agency thinkers outperform low hoppers and high pathways thinkers. Second, this study provides evidence in support of the four groups that are consistent with hope theory. Third, this study supports calls for more research on hope in the school context. The findings revealed substantial differences among students with different hope profiles. More research needs to be conducted within the school context to better understand the relationship between hope and both educational and psychological outcomes as well as the potential impact of hope interventions. Given research indicating that hope can be changed (Feldman & Dreher, 2011), the results of the study suggest that hope may be able to play a major role in the school context.

References

- Adelabu, D. H. (2008). Future time perspective, hope, and ethnic identity among African American adolescents. *Urban Education*, 43, 347–360. <http://dx.doi.org/10.1177/0042085907311806>.
- Arif, M. H., & Yousuf, M. I. (2010). Relationship of academic, physical and social self-concepts of students with their academic achievement. *Contemporary Issues in Education Research*, 3(3), 73–78.
- Arnau, R. C., Rosen, D. H., Finch, J. F., Rhudy, J. L., & Fortunato, V. J. (2007). Longitudinal effects of hope on depression and anxiety: A latent variable analysis. *Journal of Personality*, 75, 43–64. <http://dx.doi.org/10.1111/j.1467-6494.2006.00432.x>.
- Barr, T. F., & Mcneilly, K. M. (2002). The value of students' classroom experiences from the eyes of the recruiter: Information, implications, and recommendations for marketing educators. *Journal of Marketing Education*, 24, 168–173. <http://dx.doi.org/10.1177/0273475302242010>.
- Ben-Naim, S., Laslo-Roth, R., Einav, M., Biran, H., & Margalit, M. (2017). Academic self-efficacy, sense of coherence, hope and tiredness among college students with learning disabilities. *European Journal of Special Needs Education*, 32, 18–34. <http://dx.doi.org/10.1080/08856257.2016.1254973>.
- Bong, M., & Skaalvik, E. M. (2003). Academic self-concept and self-efficacy: How different are they really? *Educational Psychology Review*, 15, 1–40. <http://dx.doi.org/10.1023/A:1021302408382>.
- Booker, K. C. (2006). School belonging and the African American adolescent: What do we know and where should we go? *The High School Journal*, 89(4), 1–7.
- Bruininks, P., & Malle, B. F. (2005). Distinguishing hope from optimism and related affective states. *Motivation and Emotion*, 29, 324–352. <http://dx.doi.org/10.1007/s11031-006-9010-4>.
- Bryant, F. B., & Cvengros, J. A. (2004). Distinguishing hope and optimism: Two sides of a coin, or two separate coins? *Journal of Social and Clinical Psychology*, 23, 273–302. <http://dx.doi.org/10.1521/jscp.23.2.273.31018>.
- Chavous, T. M., Rivas-Drake, D., Smalls, C., Griffin, T., & Cogburn, C. (2008). Gender matters, too: The influences of school racial discrimination and racial identity on academic engagement outcomes among African American adolescents. *Developmental Psychology*, 44, 637–654. <http://dx.doi.org/10.1037/0012-1649.44.3.637>.
- Cohen, S. (1988). Perceived stress in a probability sample of the United States. In S. Spacapan, & S. Oskamp (Eds.). *The social psychology of health* (pp. 31–67). Thousand Oaks, CA, US: Sage Publications, Inc.
- Cohen, S., Kamarck, T., & Mermelstein, R. (1983). A global measure of perceived stress. *Journal of Health and Social Behavior*, 24, 385–396. <http://dx.doi.org/10.2307/2136404>.
- Costello, A. B., & Osborne, J. W. (2005). Best practices in exploratory factor analysis: Four recommendations for getting the most from your analysis. *Practical Assessment, Research & Evaluation*, 10, 173–178.
- Curry, L. A., & Snyder, C. R. (2000). Hope takes the field: Mind matters in athletic performances. In C. R. Snyder (Ed.). *Handbook of hope: Theory, measures, and applications* (pp. 243–260). San Diego, CA: Academic.
- Curry, L. A., Snyder, C. R., Cook, D. L., Ruby, B. C., & Rehm, M. (1997). Role of hope in academic and sport achievement. *Journal of Personality and Social Psychology*, 73, 1257–1267.
- Dixon, D. D. (2017). Hope across achievement: Examining psychometric properties of the children's hope scale across the range of achievement. *SAGE Open*, 7, 2158244017717304. <http://dx.doi.org/10.1177/2158244017717304>.
- Dixon, D. D., Keltner, D., Worrell, F. C., & Mello, Z. (2017). The magic of hope: Hope mediates the relationship between socioeconomic status and academic achievement. *The Journal of Educational Research*. Advance online publication <http://dx.doi.org/10.1080/00220671.2017.1302915>.
- Dixon, D. D., Worrell, F. C., Olszewski-Kubilius, P., & Subotnik, R. F. (2016). Beyond perceived ability: The contribution of psychosocial factors to academic performance: Psychosocial variables in outstanding performance. *Annals of the New York Academy of Sciences*, 1377, 67–77. <http://dx.doi.org/10.1111/nyas.13210>.
- Egarter, S., Braveman, P., Sadegh-Nobari, T., Grossman-Kahn, R., & Dekker, M. (2009). *Education matters for health*. Princeton, NY: Robert Wood Johnson Foundation.
- Espenshade, T. J., Hale, L. E., & Chung, C. Y. (2005). The frog pond revisited: High school academic context, class rank, and elite college admission. *Sociology of Education*, 78, 269–293. <http://dx.doi.org/10.1177/003804070507800401>.
- Feldman, D. B., & Dreher, D. E. (2011). Can hope be changed in 90 minutes? Testing the efficacy of a single-session goal-pursuit intervention for college students. *Journal of Happiness Studies*, 13, 745–759. <http://dx.doi.org/10.1007/s10902-011-9292-4>.
- Feldman, D. B., & Kubota, M. (2015). Hope, self-efficacy, optimism, and academic achievement: Distinguishing constructs and levels of specificity in predicting college grade-point average. *Learning and Individual Differences*, 37, 210–216. <http://dx.doi.org/10.1016/j.lindif.2014.11.022>.
- French, M. T., Homer, J. F., Popovici, I., & Robins, P. K. (2015). What you do in high school matters: High school GPA, educational attainment, and labor market earnings as a young adult. *Eastern Economic Journal*, 41, 370–386. <http://dx.doi.org/10.1057/ej.2014.22>.
- Gallagher, M. W., Marques, S. C., & Lopez, S. J. (2017). Hope and the academic trajectory of college students. *Journal of Happiness Studies*, 18, 341–352. <http://dx.doi.org/10.1007/s10902-016-9727-z>.
- Gallup (2013). 2013 overall U.S. annual report [data file]. Retrieved from <http://www.gallupstudentpoll.com/174020/2013-gallup-student-poll-overall-report.aspx>.
- Garson, G. D. (2014). *Cluster analysis*. Asheboro, NC: Statistical Associates Publishers.
- Gilman, R., Dooley, J., & Florell, D. (2006). Relative levels of hope and their relationship with academic and psychological indicators among adolescents. *Journal of Social and*

- Clinical Psychology*, 25, 166–178. <http://dx.doi.org/10.1521/jscp.2006.25.2.166>.
- Hassija, C. M., Luterek, J. A., Naragon-Gainey, K., Moore, S. A., & Simpson, T. (2012). Impact of emotional approach coping and hope on PTSD and depression symptoms in a trauma exposed sample of veterans receiving outpatient VA mental health care services. *Anxiety, Stress, and Coping*, 25, 559–573. <http://dx.doi.org/10.1080/10615806.2011.621948>.
- Hattie, J. (2009). *Visible learning: A synthesis of over 800 meta-analyses relating to achievement*. New York, NY: Routledge.
- Jessor, R., Donovan, J. E., & Costa, F. (1990). Personality, perceived life chances, and adolescent health behavior. In K. Hurrelmann, & F. Losel (Eds.), *Health hazards in adolescence* (pp. 25–42). New York, NY: Walter de Gruyter.
- Kraus, M. W., Piiff, P. K., Mendoza-Denton, R., Rheinschmidt, M. L., & Keltner, D. (2012). Social class, solipsism, and contextualism: How the rich are different from the poor. *Psychological Review*, 119, 546–572. <http://dx.doi.org/10.1037/a0028756>.
- Kuncel, N. R., Credé, M., & Thomas, L. L. (2005). The validity of self-reported grade point averages, class ranks, and test scores: A meta-analysis and review of the literature. *Review of Educational Research*, 75, 63–82.
- Magaletta, P. R., & Oliver, J. M. (1999). The hope construct, will, and ways: Their relations with self-efficacy, optimism, and general well-being. *Journal of Clinical Psychology*, 55, 539–551. [http://dx.doi.org/10.1002/\(SICI\)1097-4679\(199905\)55:5<539::AID-JCLP2>3.0.CO;2-G](http://dx.doi.org/10.1002/(SICI)1097-4679(199905)55:5<539::AID-JCLP2>3.0.CO;2-G).
- Mallett, R. K., Mello, Z. R., Wagner, D. E., Worrell, F., Burrow, R. N., & Andretta, J. R. (2011). Do I belong?: It depends on when you ask. *Cultural Diversity & Ethnic Minority Psychology*, 17, 432–436. <http://dx.doi.org/10.1037/a0025455>.
- Marques, S. C., Lopez, S. J., Fontaine, A. M., Coimbra, S., & Mitchell, J. (2015). How much hope is enough? Levels of hope and students' psychological and school functioning. *Psychology in the Schools*, 52, 325–334. <http://dx.doi.org/10.1002/pits.21833>.
- Marques, S. C., Lopez, S. J., & Mitchell, J. (2013). The role of hope, spirituality and religious practice in adolescents' life satisfaction: Longitudinal findings. *Journal of Happiness Studies*, 14, 251–261. <http://dx.doi.org/10.1007/s10902-012-9329-3>.
- Marques, S. C., Lopez, S. J., & Pais-Ribeiro, J. L. (2011). "Building Hope for the Future": A program to foster strengths in middle-school students. *Journal of Happiness Studies*, 12, 139–152. <http://dx.doi.org/10.1007/s10902-009-9180-3>.
- Marsh, H. W. (1993). Academic self-concept: Theory, measurement, and research. In J. Sulis (Ed.), *Psychological perspectives on the self* (pp. 59–98). Hillsdale, NJ: Lawrence Erlbaum.
- Mau, W.-C., & Bikos, L. H. (2000). Educational and vocational aspirations of minority and female students: A longitudinal study. *Journal of Counseling & Development*, 78, 186–194. <http://dx.doi.org/10.1002/j.1556-6676.2000.tb02577.x>.
- McDermott, D., Hastings, S. L., Gariglietti, K. P., Gingerich, K., Callahan, B., & Diamond, K. (1997). A cross-cultural investigation of hope in children and adolescents. *Resources in Education*, 1, 1–16.
- Mello, Z. R., Mallett, R. K., Andretta, J. R., & Worrell, F. C. (2012). Stereotype threat and school belonging in adolescents from diverse racial/ethnic backgrounds. *Journal of At-Risk Issues*, 17(1), 9–14.
- Morin, R., & Motel, S. (2012, September 10). A third of Americans now say they are in the lower classes. Retrieved May 15, 2017, from <http://www.pewsocialtrends.org/2012/09/10/a-third-of-americans-now-say-they-are-in-the-lower-classes/>.
- Neisser, U., Boodoo, G., Bouchard, T. J., Jr., Boykin, A. W., Brody, N., Ceci, S. J., Halpern, D. F., ... Urbina, S. (1996). Intelligence: Knowns and unknowns. *American Psychologist*, 51, 77–101. <http://dx.doi.org/10.1037/0003-066X.51.2.77>.
- Noble, J. P., & Sawyer, R. L. (2004). Is high school GPA better than admission test scores for predicting academic success in college? *College and University*, 79, 17–22.
- Oehrlein, P. (2009). Determining future success of college students. *Undergraduate Economic Review*, 5(1), Retrieved from <http://digitalcommons.iwu.edu/uer/vol5/iss1/7>.
- Palardy, G. J. (2008). Differential school effects among low, middle, and high social class composition schools: A multiple group, multilevel latent growth curve analysis. *School Effectiveness and School Improvement*, 19, 21–49.
- Parker, P. D., Ciarrochi, J., Heaven, P., Marshall, S., Sahlra, B., & Kiuru, N. (2015). Hope, friends, and subjective well-being: A social network approach to peer group contextual effects. *Child Development*, 86, 642–650. <http://dx.doi.org/10.1111/cdev.12308>.
- Pascarella, E. T., & Terenzini, P. T. (2005). *How college affects students: A third decade of research*. New York, NY: Wiley.
- Paunesku, D., Walton, G. M., Romero, C., Smith, E. N., Yeager, D. S., & Dweck, C. S. (2015). Mind-set interventions are a scalable treatment for academic underachievement. *Psychological Science*, 26, 784–793. <http://dx.doi.org/10.1177/0956797615571017>.
- Phan, H. P., & Ngu, B. H. (2014). Interrelations between self-esteem and personal self-efficacy in educational contexts: An empirical study. *International Journal of Applied Psychology*, 4, 108–120. <http://dx.doi.org/10.5923/j.ijap.20140403.05>.
- Reynolds, W. M., Ramirez, M. P., Magrini, A., & Allen, J. E. (1980). Initial development and validation of the academic self-concept scale. *Educational and Psychological Measurement*, 40, 1013–1016.
- Rosenberg, M. (1965). *Society and the adolescent self-image*. Princeton, NJ: Princeton University Press.
- Rubin, R. A., Dorle, J., & Sandidge, S. (1977). Self-esteem and school performance. *Psychology in the Schools*, 14, 503–507. <http://dx.doi.org/10.1002/1520>.
- Satici, S. A. (2016). Psychological vulnerability, resilience, and subjective well-being: The mediating role of hope. *Personality and Individual Differences*, 102, 68–73. <http://dx.doi.org/10.1016/j.paid.2016.06.057>.
- Schmid, K. L., Phelps, E., Kiely, M. K., Napolitano, C. M., Boyd, M. J., & Lerner, R. M. (2011). The role of adolescents' hopeful futures in predicting positive and negative developmental trajectories: Findings from the 4-H study of positive youth development. *The Journal of Positive Psychology*, 6, 45–56. <http://dx.doi.org/10.1080/17439760.2010.536777>.
- Shenker-Osorio, A. (2013, August 1). Why Americans all believe they are "middle class". *The Atlantic*. Retrieved from <https://www.theatlantic.com/politics/archive/2013/08/why-americans-all-believe-they-are-middle-class/278240/>.
- Sidanius, J., Van Laar, C., Levin, S., & Sinclair, S. (2004). Ethnic enclaves and the dynamics of social identity on the college campus: The good, the bad, and the ugly. *Journal of Personality and Social Psychology*, 87, 96–110. <http://dx.doi.org/10.1037/0022-3514.87.1.96>.
- Sinclair, S., Huntsinger, J., Skorinko, J., & Hardin, C. D. (2005). Social tuning of the self: Consequences for the self-evaluations of stereotype targets. *Journal of Social and Personality Psychology*, 89, 160–175. <http://dx.doi.org/10.1037/0022-3514.89.2.160>.
- Sirin, S. R. (2005). Socioeconomic status and academic achievement: A meta-analytic review of research. *Review of Educational Research*, 75, 417–453. <http://dx.doi.org/10.3102/00346543075003417>.
- Snyder, C. R. (1994). *The psychology of hope: You can get there from here*. New York, NY: Free Press.
- Snyder, C. R. (2002). Hope theory: Rainbows in the mind. *Psychological Inquiry*, 13, 249–275. http://dx.doi.org/10.1207/S15327965PLI1304_01.
- Snyder, C. R. (2004). Hope and depression: A light in the darkness. *Journal of Social and Clinical Psychology*, 23, 347–351. <http://dx.doi.org/10.1521/jscp.2003.23.3.347>.
- Snyder, C. R., Harris, C., Anderson, J. R., Holleran, S. A., Irving, L. M., Sigmon, S. T., ... Harney, P. (1991). The will and the ways: Development and validation of an individual-differences measure of hope. *Journal of Personality and Social Psychology*, 60, 570–585. <http://dx.doi.org/10.1037/0022-3514.60.4.570>.
- Snyder, C. R., Hoza, B., Pelham, W. E., Rapoff, M., Ware, L., Danovsky, M., ... Stahl, K. J. (1997). The development and validation of the children's hope scale. *Journal of Pediatric Psychology*, 22, 399–421. <http://dx.doi.org/10.1093/jpepsy/22.3.399>.
- Snyder, C. R., Lapointe, A. B., Crowson, J. J., & Early, S. (1998). Preferences of high- and low-hope people for self-referential in-put. *Cognition & Emotion*, 12, 807–823.
- Snyder, C. R., Lopez, S. J., Shorey, H. S., Rand, K. L., & Feldman, D. B. (2003). Hope theory, measurements, and applications to school psychology. *School Psychology Quarterly*, 18, 122–139. <http://dx.doi.org/10.1521/scqp.18.2.122.21854>.
- Snyder, C. R., Shorey, H. S., Cheavens, J., Pulvers, K. M., Adams, V. H., & Wiklund, C. (2002). Hope and academic success in college. *Journal of Educational Psychology*, 94, 820–826. <http://dx.doi.org/10.1037/0022-0663.94.4.820>.
- Snyder, C. R., Sympon, S. C., Ybasco, F. C., Borders, T. F., Babyak, M. A., & Higgins, R. L. (1996). Development and validation of the state hope scale. *Journal of Personality and Social Psychology*, 70, 321–335.
- Stevenson, W., Maton, K. L., & Teti, D. M. (1998). School importance and dropout among pregnant adolescents. *Journal of Adolescent Health*, 22, 376–382. [http://dx.doi.org/10.1016/S1054-139X\(97\)00273-5](http://dx.doi.org/10.1016/S1054-139X(97)00273-5).
- Strathman, A., Gleicher, F., Boninger, D. S., & Scott, C. (1994). The consideration of future consequences: Weighing immediate and distant outcomes of behavior. *Journal of Personality and Social Psychology*, 66, 742–752. <http://dx.doi.org/10.1037/0022-3514.66.4.742>.
- Svanum, S., & Bigatti, S. (2006). Grade expectations: Informed or uninformed optimism, or both? *Teaching of Psychology*, 33, 14–18. http://dx.doi.org/10.1207/s15328023top3301_4.
- Sympon, S. (1999). *Validation of the domain specific hope scale*. Unpublished doctoral dissertation: Lawrence: Department of Psychology, University of Kansas.
- Vacek, K. R., Coyle, L. D., & Vera, E. M. (2010). Stress, self-esteem, hope, optimism, and well-being in urban, ethnic minority adolescents. *Journal of Multicultural Counseling and Development*, 38, 99–111.
- Valle, M. F., Huebner, E. S., & Suldo, S. M. (2004). Further evaluation of the children's hope scale. *Journal of Psychoeducational Assessment*, 22, 320–337. <http://dx.doi.org/10.1177/073428290402200403>.
- Walton, G. M., & Cohen, G. L. (2007). A question of belonging: Race, social fit, and achievement. *Journal of Personality and Social Psychology*, 92, 82–96. <http://dx.doi.org/10.1037/0022-3514.92.1.82>.
- Walton, G. M., & Cohen, G. L. (2011). A brief social-belonging intervention improves academic and health outcomes of minority students. *Science*, 331(6023), 1447–1451. <http://dx.doi.org/10.1126/science.1198364>.
- Ward, A. W. (n.d.). Brainy quote. Retrieved from <http://www.brainyquote.com/quotes/quotes/w/williamart110017.html>.
- Weis, R., & Speridakos, E. C. (2011). A meta-analysis of hope enhancement strategies in clinical and community settings. *Psychology of Well-Being: Theory, Research and Practice*, 1, 5–21. <http://dx.doi.org/10.1186/2211-1522-1-5>.
- Worrell, F. C., & Hale, R. L. (2001). The relationship of hope in the future and perceived school climate to school completion. *School Psychology Quarterly*, 16, 370–388. <http://dx.doi.org/10.1521/scqp.16.4.370.19896>.
- Worrell, F. C., Latto, I. K., & Perlinski, M. A. (1999). The relationship of risk status to self-esteem and perceived life chances. *The Journal of At-Risk Issues*, 5(2), 33–38.
- Yeager, D. S., Johnson, R., Spitzer, B. J., Trzesniewski, K. H., Powers, J., & Dweck, C. S. (2014). The far-reaching effects of believing people can change: Implicit theories of personality shape stress, health, and achievement during adolescence. *Journal of Personality and Social Psychology*, 106, 867–884. <http://dx.doi.org/10.1037/a0036335>.
- Yeager, D. S., Purdie-Vaughns, V., Garcia, J., Apfel, N., Brzustoski, P., Master, A., ... Cohen, G. L. (2014). Breaking the cycle of mistrust: Wise interventions to provide critical feedback across the racial divide. *Journal of Experimental Psychology: General*, 143, 804–824. <http://dx.doi.org/10.1037/a0033906>.
- Yeager, D. S., & Walton, G. M. (2011). Social-psychological interventions in education: They're not magic. *Review of Educational Research*, 81, 267–301. <http://dx.doi.org/10.3102/0034654311405999>.