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Social networks, social capital, social support and academic success in higher education: A systematic review with a special focus on 'underrepresented' students

Shweta Mishra

INCHER-Kassel, University of Kassel, Mönchebergstr.17, 34109, Kassel, Germany

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ABSTRACT

Widening higher education participation has resulted in efforts directed towards increasing higher education access. However, inequality in higher education completion continues to exist. Social factors have been found to play an important role in academic achievement. Given the role of social factors, this article examines the academic outcomes of students from a social network, social capital, and social support perspective with a special focus on underrepresented groups in higher education. The article is based on a systematic review of literature where evidence shows that the networks of students including their family, ethnic and religious affiliations, friends, and faculty play a role in academic success. The article details a framework describing how network members of underrepresented groups complement each other with regard to resources offered and contribute to academic success.

1. Introduction

Widening higher education participation has gained increased political focus globally in recent years, resulting in efforts directed towards expanding higher education access (Marginson, 2016; Osborne, 2003). Indeed, these political reforms have resulted in an increase in the number and diversity of students entering higher education. For instance, in the last ten years, the enrolment of students aged 25–34 years in tertiary education has increased in all OECD countries, with some countries e.g., Australia, Czech Republic, Greece, Iceland, Italy, the Netherlands, Switzerland even reporting an increase of over 10% (OECD, 2018). Furthermore, previously underrepresented groups such as students from low social background are now increasingly becoming a part of the higher education system. Nonetheless, disparities in education achievement continue to exist as increased participation within these groups alone cannot guarantee academic success (Crozier, Reay, Clayton, Collinader, & Grinstead, 2008; Marginson, 2016). It is observed that first-generation learners (Müller & Schneider, 2013; OECD, 2018), those with migration background (Ebert & Heublein, 2017) are still at-risk of dropping out of university without obtaining a degree.

The achievement gap between students from high and low socio-economic backgrounds can be attributed partly to the differences in family's resources vis-à-vis finances, academic guidance or information, parental involvement or language skills (Willingham, 2012). Alongside family members, the role of peers and support groups at university also influence academic outcomes. Hossler, Schmidt, and Vesper (1999) highlight the importance of peer support in improving understanding of course materials and clarifying difficult concepts (Gallop & Bastien, 2016). Peer support and networks also determine student's integration and acceptance in higher education institutions which subsequently affects retention and success (Gallop & Bastien, 2016; Nagasawa & Wong, 1999).

Given the value of social factors (alongside academic and personal factors) in academic success, this article examines the link

E-mail address: mishra@incher.uni-kassel.de.

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between social networks, social capital, social support, and higher education success with a special focus on underrepresented groups in higher education. Underachievement of students from disadvantaged backgrounds is certainly a well-researched area. Yet less attention has been paid to the factors that in fact, contribute to their success (Dika, Pando, Tempest, & Allen, 2018; Nagasawa & Wong, 1999). Based on a systematic review of literature, this article examines the role of networks, social capital, and social support in shaping academic success, especially for underrepresented[1] students. Specifically, this article addresses the following research questions:

RQ1: Do social networks, social capital, and social support play a role in the success of students in higher education, with a special focus on underrepresented students?
RQ2: What are the mechanisms through which these factors influence academic success, here again, with a special focus on underrepresented students in higher education?

The article begins by differentiating the central concepts (social networks, social capital, and social support) used in the study, describing their significance for higher education success, followed by a description of the methodology and an overview of studies included in the review. The findings elaborate on the role of personal and institutional networks in academic success as well as develop a framework describing the mechanisms through which these networks influence success. The article concludes by discussing the reflections from literature review and its implications for reducing inequalities in higher education.

2. Social networks, social capital, social support and higher education outcomes

Before discussing the role of 'social network', 'social capital', and 'social support' in higher education success, it is important to elaborate on their conceptualization and disentangle the interrelationships between these interchangeably used concepts.

2.1. Social network, social capital and social support

Social network is defined as "a structure composed of a set of actors, some of whose members are connected by a set of one or more relations" (Knoke & Yang, 2008, p. 8). By virtue of membership in social networks, individuals gain access to a variety of resources (Portes, 1998; Putnam, 2000; Ryan, Sales, Tilki, & Siara, 2008; Schulz, Horr, & Hoenig, 2017).

This conceptualization is linked to Bourdieu's (1986) definition of 'social capital', defined as "the aggregate of the actual or potential resources which are linked to possession of a durable network of more or less institutionalized relationships of mutual acquaintance or recognition" (Bourdieu, 1986, p. 248). Social networks provide access to various forms of social capital such as information, social support, values and aspirations along with economic resources (Schulz et al., 2017). The mechanisms through which different forms of social capital are accessed and mobilized is complex and is dependent on the composition and characteristics of social networks.

The composition of networks focuses on the types of network relationships, such as close ties i.e., including members that are similar to each other in terms of age, education, social class e.g., connections with family and friends (Ferlander, 2007); or formal ties including members with different social and demographic characteristics, also referred to as "weak ties" by Granovetter (1973). Individuals derive "bonding" social capital, for instance social and/or emotional support from their close ties, and rely on their formal/weak ties for information-related or "bridging" social capital (Putnam, 2000). Weak ties open up opportunities for interactions across diverse setting and are especially relevant for accessing information-related social capital, which is not possible to gain otherwise by only relying on close networks of family and friends.

The characteristics of networks such as socio-economic status, education level, resources, or power of the constituent network members influence the formation of weak ties and the form of social capital gained. Certain individuals because of their socio-economic status, race/ethnicity, or gender are better positioned to form weak ties and gain access to new and diverse information which creates inequality in the distribution of resources within networks, thus benefiting certain groups over others (Bourdieu, 1986; Lin, 2001).

2.2. Social networks, social capital, social support in higher education

In the context of higher education, information-related social capital and social support are especially relevant. As students transition from high school to universities, they experience several changes in their personal, social and academic environments (Eggens, Van Der Werf, & Bosker, 2008). For many students this involves leaving their current home, family and friends and settling in an unfamiliar environment. Herein they are expected to make new friends, adapt to more independent learning and study styles and cope with financial and academic demands (Eggens et al., 2008; Wilcox, Winn, & Fyvie-Gauld, 2005). The information and support that students receive from their families, friends, and professors influence their ability to deal with the challenges associated with university life (Eggens et al., 2008; Mackinnon, 2012). Again, the type of social capital – information-related or support – is dependent on the social positions of students and composition and characteristics of their networks.

[1] The term underrepresented students, minority students, disadvantaged, and non-traditional students have been used interchangeably in this article.

2.2.1. Information-related social capital

Students whose parents already have a university degree are better positioned to access and mobilize relevant information for successful degree attainment. Information and knowledge regarding study materials, preparing for exams, dealing with academic challenges play an important role in determining success. Children from high education background are from a very young age groomed to pursue higher education (Portes, Fernandez-Kelly, & Haller, 2005). They are more endowed with norms, values, rules, and are integrated early-on within relevant educational networks. Thus, they are relatively advantaged compared to first-generation learners or other minority groups whose parents are rather limited in their ties outside of their immediate family and community. Therefore, students from disadvantaged backgrounds may lack the necessary information and knowledge to succeed at universities. This places them at a higher risk of dropping out or graduate with poor grades (Müller & Schneider, 2013).

2.2.2. Social support

In addition to information-related social capital, the role of social support, defined as "social interactions or relationships that provide individuals with actual assistance or with a feeling of attachment to a person or a group that is perceived as caring or loving" (Hobfoll & Stokes, 1988, p. 467) is significant in higher education success. The instrumental, emotional or any other form of assistance provided by the network members constitutes social support (Laireiter & Baumann, 1992). Thus, high aspiration, care, positive attitude towards education and motivation/encouragement from network members may contribute towards positive academic outcomes. For underrepresented students, high social support from network members can have a complementary effect and compensate for lack of information-related social capital, eventually contributing towards their success.

2.3. The case of successful minority students

Even with low levels of information-related social capital, not all minority students dropout or graduate with poor grades. This necessitates a detailed examination of the factors that differentiate successful minority students from those who dropout and understand how these students compensate for the lack of social capital. One explanation could be that even with different levels of capital, additional capital – apart from those accessed at home – can be acquired by investing in ties and relationships outside family. This aspect of networks relates to bridging social capital and weak ties. According to Lin (1999) an individual's access to resources (e.g. information) can be improved by building relationships and acquiring social capital through strategic ties and relationship outside their immediate networks. By developing relationships both on- and off-campus (e.g., with faculty or mentors), students can gain necessary resources required for their academic success. Like Granovetter (1973), Burt (1992) highlights the significance of absence of ties or structural holes in networks for acquiring social capital. This is because dense networks usually result in redundant information whereas presence of structural holes increases access to innovative information. Although for minority groups, Burt (1998) also stressed the importance of small networks. He argues "that these individuals feel more comfortable in small mutually supportive groups. People perform better where they are comfortable (p. 19)." This could well be the case for underrepresented groups in higher education such as first-generation students, mature learners or migrant students as these students often experience stereotypes and discrimination and are viewed as outsiders to the higher education community because of their non-elite status or lower social capital (Johnson-Ahorlu, 2013).

It must also be noted that although minority students may lack certain types of social capital, they have access to other specific forms of capital which are unique to them (Yosso, 2005). Yosso (2005) developed the concept of Community Cultural Wealth (CCW) which again emphasizes the role of familial and social support amongst others in academic success and persistence of minority students.

In order to reduce differential achievement in higher education based on students' backgrounds, it is important to examine the networks of minority students and mechanisms through which these students gain and utilize social capital and support and their role in academic success. Certainly, the student body entering higher education is changing. Innovative approaches are required to reduce inequality in academic outcomes. Emphasis on social networks and relationships is promising as higher education does not happen in isolation but rather requires constant support, advice, effort and encouragement from family members, peers, community, neighborhood, and faculty (Brown & Burdsal, 2012). The experiences of individuals at universities are embedded in their ties and relationships and this aspect makes social network analysis unique for understanding student's behavior and choices which are associated with academic achievement.

3. Method

In order to improve the quality of reporting systematic review and to minimize reporting biases, the literature search was guided by the Preferred Reporting Items for Systematic Reviews and Meta-analysis (PRISMA) statement (Moher, Liberati, Tetzlaff, Altman, & The PRISMA Group, 2009). The PRISMA statement consists of a 27 item checklist including items such as title, abstract, introduction, methods, results and discussions as well as a four phase flow diagram representing the search protocol. Please see Fig. 1 for flow diagram.

3.1. Exploration and database search

In order to identify relevant scientific output related to social networks, social capital, social support and higher education outcomes, a combination of search strategies was employed. These included (1) exploration and search through relevant databases,

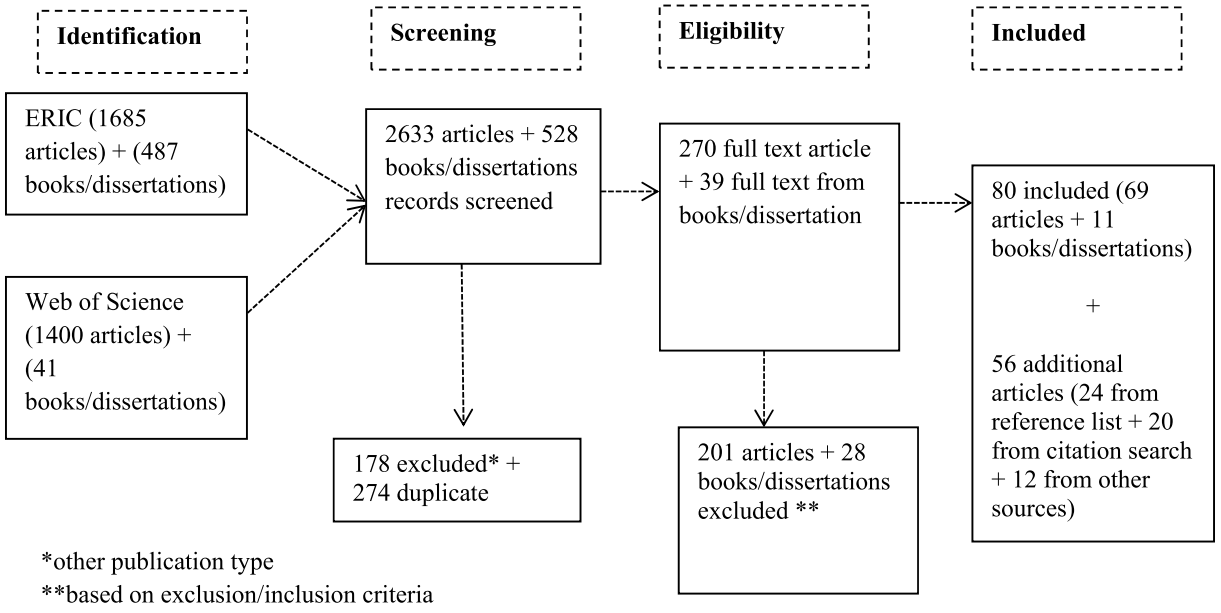

Fig. 1. Overview of the screening and selection process.
*other publication type.
**based on exclusion/inclusion criteria.

(2) reference list checking/backtracking, (3) citation searching/forward tracking, and (4) other sources (Papaioannou, Sutton, Carroll, Booth, & Wong, 2010). The search process and the literature review were completed in November 2019.

Two databases were selected for identifying relevant studies. These were Web of Science Core Collection and ERIC, latter being one of the largest collections of educational-related literature in the world. The search in both databases enabled a comprehensive review of the most recent but also historical, specific but multi-disciplinary scholarly content.

The keywords for the systematic search included a combination of the terms 'social network', 'social capital', and 'social support' with 'higher education success', 'higher education achievement', and 'academic success' together with 'underrepresented', 'non-traditional', and 'minority'. The literature search was restricted by English language. The search process was carried out in two steps. In order to guarantee a certain degree of quality, the objective of the first step was to exclusively identify published journal articles in both databases. As a second step, books, book chapters as well as dissertations were identified. The exact combination of search terms and detailed search protocol for both databases are presented in Table 1.

3.2. Eligibility criteria and rationale

The following inclusion and exclusion criteria were set up to ensure a certain degree of quality and relevance of the selected articles. Articles were included in the analyses if they met the following criteria: (1) focus on social networks, social capital, and social support in relation to higher education academic outcomes; (2) the population of interest was higher education students pursuing either Bachelor or Master degree at a four year institution; (3) focus on so-called 'traditional' or 'non-traditional' or underrepresented or minority student groups, e.g., first-generation learners, students with a migration background, ethnic and racial minority groups; and were (4) published in English language. No limits were set for the year of publication.

Studies were excluded from the analysis if they focused on students studying at community colleges, historically Black institutions, representing a rather homogeneous student population (Allen, 1992), short-term international students in general as well as those pursuing professional oriented degrees such as medicine, law, business or nursing. Furthermore, studies that exclusively targeted students with disabilities, those discussing social networks, social capital, and support without any specific reference to the field of higher education or focused on online networks, or distance learning programs were excluded from the analyses, along with those that did not explicitly or implicitly target academic outcome/achievement.

3.3. Screening and selection

Fig. 1 provides an overview of the screening and selection process. The literature search was undertaken between April 2019 and November 2019. A total of 2633 articles (1362 from Web of Science, 1271 from ERIC) were identified for screening of titles and abstracts. A database of all 2633 studies was created including the abstracts and bibliographic information. Titles and abstracts of each article were checked for inclusion/exclusion criteria. After concluding this step, 270 studies (122 from Web of Science and 148 from ERIC) that met the inclusion criteria were selected for full-text review. After reviewing the full-text, 201 studies were excluded

Table 1
Search protocol.

Database	Web of Science	ERIC
Search Period	April 2019 to Nov 2019	April 2019 to Nov 2019
Time Span	1980 - current	All years
Restriction		
Language	English	English
Discipline	None	None
Search field	Topic (TS)	All, Not Full Text (NOFT)
Search terms	(social support AND higher education achievement) OR (social support AND higher education success) OR (social networks AND higher education achievement) OR (social networks AND higher education success) OR (social capital AND higher education achievement) OR (social capital AND higher education success) OR (academic success AND social support AND non*traditional) OR (academic success AND social support and underrepresented) OR (academic success AND social support and minorit*) OR (academic success AND social network AND non*traditional) OR (academic success AND social network AND underrepresented) OR (academic success AND social network AND minorit*) OR (academic success AND social capital AND non*traditional) OR (academic success AND social capital AND underrepresented) OR (academic success AND social capital AND minorit*) *AND* LANGUAGE: (English) *AND* DOCUMENT TYPES: (Article)	
Document type	Articles	Articles
Result	1400	1685
Other publication type (books, dissertation, conference papers)	38	140
Duplicates (ERIC to WoS)		274
Final for screening titles and abstracts (after excluding other publication type and duplicates)	1362	1271
Document type	Book or Book chapter	Books and dissertation
Result and final for screening titles and abstracts	41	487

based on the inclusion/exclusion criteria and access to full-text. Finally, 69 articles were selected for thematic analysis (Dixon-Woods, Agarwal, Jones, Young, & Sutton, 2005). Furthermore, abstracts and titles of 528 books, book chapters, and dissertations were screened for inclusion/exclusion criteria and 11 sources comprising books, book chapters and dissertations were included in the final review.

To further enrich the systematic analysis, and present insights from the exploratory process, the final set of studies included was enhanced by explicitly including relevant journal articles from 'reference list checking, 'citation searching', and 'other sources'. 'Reference list checking' included studies through the bibliography of various texts searched through Web of Science and ERIC. After concluding the reference list checking, 24 articles were included in the review.

For 'citation searching', citation information for 46 out of 69 articles included in the final review was obtained through respective citations linked in Web of Science. The citation information for the remaining 23 articles could not be traced in Web of Science. This resulted in screening titles and abstracts of 911 additional articles. Based on title and abstract screening, 168 articles were selected for full-text review. Of these, 20 articles were identified as relevant and unique for the literature review.

Finally, 'other sources' included articles identified from (1) an exploratory search conducted by the author in Web of Science and JSTOR before beginning the systematic search; and (2) author's searches carried out for other projects and publications. Based on this strategy, 12 additional articles were included, making up a total of 125 journal articles and 11 books and dissertations for the final thematic analysis.

3.4. Reliability

In order to avoid biases during the selection as well as the analysis phase, the author consulted the search terms, codes, and methods regularly with a fellow researcher who is an expert in conducting literature based research and managing academic literature. Through regular discussion and random simultaneous coding and matching, the reliability of author's results has been critically revised.

Furthermore, two higher education researchers each coded one of two randomly drawn sub-samples of 100 out of the total 2633 articles from Web of Science and ERIC. Inter-rater agreement among all three researches was assessed using the average percentage agreement as well as Gwet's (2008) AC1 coefficient. The latter is similar to Cohen's (1960) kappa but produces more stable results (Wongpakaran, Wongpakaran, Weddng, & Gwet, 2013). All calculations were performed using Stata 14 (StataCorp. 2015) and the community-contributed software kappa etc. (Klein, 2018). The percentage agreement among the three authors was 87%. Gwet's AC1

Table 2
Overview of the studies included in the review.

Study characteristics	Description	N = 134[a]	%
Sample			
Underrepresented/minority students	Primarily includes African-American and Latino students and other student groups such as women, Native Americans, immigrants	82	61%
Mainstream students		52	39%
Methods			
Quantitative		70	52%
Qualitative		57	39%
Literature Review		3	3%
Mixed		4	1%
Countries (N = 131)[b]			
USA		89	68%
Canada		7	5.3%
Netherlands		7	5.3%
UK		5	3.8%
Australia		5	3.8%
Spain		4	3.0%
Italy		2	1.5%
Norway		2	1.5%
Russia		2	1.5%
Other (Germany, India, Israel, Philippines, New Zealand, Romania, Ghana, South Korea)		8	6.2%
Theme[c]			
Personal Networks			
I. Family level factors	Articles describing the role of family members- parents, siblings, partner, spouse in higher education. These include articles that discuss the relationship between parents' education background and higher education achievement of their children and articles that link social support with academic outcomes.		
II. Community	Articles describing the role of broader community, for example ethnic and religious communities, neighborhood characteristics.		
Institutional Networks			
III. Peers	Articles describing the relationship between peers/classmates and higher education outcomes. These include articles that discuss the positive effects of peer interactions and support on higher education outcomes as well as the negative influences.		
IV. Faculty	Articles describing the relationship between faculty interactions and higher education outcomes. These include articles that discuss the positive effects of faculty interactions and support on higher education outcomes as well as the negative influences.		
V. Learning community	These articles would focus on the relationship between participation in learning communities and higher education outcomes.		

[a] Excludes 2 book chapters.
[b] Excludes 3 studies based on literature review.
[c] Percentage cannot be generated because the studies fall under multiple categories.

coefficient was estimated to be 0.86. Thus, according to the benchmark scale proposed by Landis and Koch (1977), inter-rater agreement was “almost perfect”.

4. Description of the studies included in the review and major themes

Table 2 gives an overview of the 136 studies included in the review and the major themes that emerged from the selection process. A complete list of studies included in the review is presented in Appendix 1.

The studies included in the review varied considerably in terms of publication dates, sample size, target student groups and methods (Table 2 and Appendix 1). Articles included in this review could be classified into two major types: those which focused on the position of students in their networks and their role in academic achievement (e.g., Brouwer, Flache, Jansen, Hofman, & Steglich, 2018; Eckles & Stradley, 2012; Eggens et al., 2008; Gašević, Zouaq, & Jansen, 2013; Ivan & Duduciuc, 2011; Martin, 2009; Poldin, Valeeva, & Yudkevich, 2016; Thomas, 2000; Tomás-Miquel, Expósito-Langa, & Nicolau-Juliá, 2016) and those examining the role of social support, family/social capital in academic achievement in higher education (Abada, Hou, & Ram, 2009; Byfield, 2008; Ceglie & Settlage, 2016; Cheng, Ickes, & Verhofsatdt, 2012; Gofen, 2009; Herndon & Hirt, 2004; Strayhorn, 2010).

Two major themes highlighting the role of personal and institutional networks in the success of higher education students emerged from the review (Table 2). Personal networks include students’ family/parents and communities, e.g. ethnic and religious groups, whereas institutional networks highlight the role of classmates, faculty, and learning communities in higher education success.

5. Relationship between social networks, social capital, social support and academic achievement in higher education

This section presents the findings from the literature review on whether students' networks, social capital, and social support influence higher education outcomes of 'underrepresented' students. Bringing together both personal and institutional networks of students allows recognizing unique strength and barriers of each and how these relations complement one another.

RQ1: Role of social networks, social capital and social support in the success of higher education students with a special focus on underrepresented students

The results of the literature review highlight that both, students' personal and their institutional networks contribute to their higher education success.

5.1. Personal networks

5.1.1. Family/parents

Students derive two main forms of social capital from their families which influence their academic success. These include 'information-related social capital' and 'support'. The latter appears to be especially relevant for students who do not fall under the category of traditional students.

5.1.1.1. Information-related social capital. Access to information-related social capital is directly related to the educational level of parents (Rodríguez, Tinajero, & Páramo, 2017). Parents' educational qualification is positively associated with their children's higher education enrolment and completion (Abada et al., 2009; Ashtiani & Feliciano, 2018). Studies also indicate that parents' education is even more important than income in influencing their children's academic outcomes (Hansen & Mastekaasa, 2006; Helland, 2007). Parents' higher education accomplishments translate into high information-related social capital as children benefit from the personal experiences and knowledge of their parents (Abada & Tenkorang, 2009b; Carpenter, Hayden, & Long, 1998; Hansen & Mastekaasa, 2006; Helland, 2007; Ryan et al., 2008). Thus, students from higher social origins outperform their peers from medium or lower social backgrounds (Hansen & Mastekaasa, 2006; Helland, 2007; Wintre et al., 2011). The influence of parents' education is also gendered, with female students benefiting more from their mother's qualification and male students from their father's education (Abada & Tenkorang, 2009a). The benefits of information-related social capital do not decrease over time. Students with more information-related social capital perform better throughout their study programs (Hansen & Mastekaasa, 2006) and even at the Master level (Helland, 2007).

5.1.1.2. Social support. The role of family extends beyond the qualifications of parents. Family is a critical source of social support for all student groups and plays an important role in college persistence (Abukari, 2010; Johnson, 2013; Nelson, 2019; Theodore et al., 2017) but more so for underrepresented students (Cabrera, Nora, Terenzini, Pascarella, & Hagedorn, 1999). Support, encouragement and education specific values partially compensate for background related disadvantages (Cheng, Ickes, & Verhofstadt, 2012; Cutrona, Cole, Colangelo, Assouline, & Russell, 1994; Turner & Juntune, 2018).

For example, Black female students in STEM disciplines (Ceglie & Settlage, 2016), underrepresented students in Engineering (Dika et al., 2018), Native American (Guillory & Wolverton, 2008) and Latino students (Arellano & Padilla, 1996; Cerezo, Lyda, Beristianos, Enriquez, & Connor, 2013; Ong, Phinney, & Dennis, 2006) acknowledge the role of familial support in the form of advice/guidance, motivation, high education-related values/expectations in their academic success and persistence (Boveda, 2017; Gofen, 2009; Guillory & Wolverton, 2008; O'Shea, 2016; Roksa & Kinsley, 2018; Storlie, Moreno, & Portman, 2014; Strom & Savage, 2014).

Furthermore, satisfaction of parents with their children's major in college is associated with academic success (Cho & Cho, 2019). Parental support is also associated with increased satisfaction with college especially amongst African American students (Strayhorn, 2008). Parental support leads to intrinsically motivated learning implying learning for personal rewards and not for external motivators such as good employment, better income (Román & Diaz, 2008). This type of learning is positively associated with better educational outcomes. Some minority students also report receiving help from cousins or other extended family members holding a higher education degree (Ceglie & Settlage, 2016; Cerezo et al., 2013; Heagney & Benson, 2017; Herndon & Moore; III, 2002; Martin et al., 2013; Palmer & Maramba, 2015; Webber, 2017; Wong, 2018). Thus, high levels of support from family members including siblings (Johnson, 2013) buffer the adverse effects of low educational background (Ceglie & Settlage, 2016; Guiffrida & Douthit, 2010).

Gofen's (2009) three aspects, attitude towards education, interpersonal relationships and family values further elaborate the role of social support in academic success. Findings from most of the studies on social support seem to support at least one or all of these aspects.

5.1.1.3. Attitude towards education. Parent's attitude towards education is associated with academic success of their children. Even when parents have no university qualification, they are considered as role models by many students. Parent's determination to continuously acquire new knowledge from sources such as newspapers, lifelong learning programs, night schools motivates their children to work hard and succeed (Boveda, 2017; Gofen, 2009; Reyes, 2010). Across all ethnicities, parents from lower socio-economic background value education and encourage academic achievement (Arellano & Padilla, 1996; Cruz, 2012; Peralta, Caspary, & Boothe, 2013; Rondini, 2016; Russell & Atwater, 2005; Russell & Atwater, 2005). These parents see education as the only medium

to escape hardships associated with poverty and encourage their children to acquire a university degree (Arellano & Padilla, 1996; Herndon & Hirt, 2004; Gofen, 2009; Martin et al., 2013; Kraft, 1991; Russell & Atwater, 2005). This is rather contrary to the popular culture blaming approach towards underachievement of students from disadvantaged backgrounds. Parents actively participate in their children's education by regularly monitoring and discussing school results, ensuring that the homework is complete, encouraging reading and writing from an early age (Turner & Juntune, 2018), as well as setting aside finances towards education e.g., for books, computers (Gofen, 2009).

5.1.1.4. Interpersonal relationships. Parents with limited means make sacrifices and endure hardships to support education of their children. Children are well aware of the nature and extent of these sacrifices, the unconditional love and support of their parents, their parents' confidence in their abilities, and their high educational expectations (Strayhorn, 2010). These factors motivate children to work hard and achieve good grades (Gofen, 2009). In fact, being successful is a way for these children to acknowledge the sacrifices and contribution of their family members towards their education (Dika et al., 2018; Gofen, 2009; Guillory & Wolverton, 2008). This is especially observed among Native American students as well as Latino students in the United States. For Latino youth, the concept of *Familism,* i.e., involvement of mother and father is a strong motivator for academic achievement (Arellano & Padilla, 1996; Ong et al., 2006). Furthermore, interaction with parents in stressful situations e.g. during exams or as in the case of non-traditional students-discrimination is has a positive influence (Cutrona et al., 1994). Support from parents help to build self-confidence and students are better prepared to explore and deal with favorable and unfavorable situations (Cutrona et al., 1994).

5.1.1.5. Family values. Finally, general family-related values such as family solidarity, respect for parents and emphasis on achievement and ambition also contribute towards academic success (Gofen, 2009; Pérez II & Taylor, 2016). The value of family solidarity emphasizes taking care and supporting family members especially children. This value encourages children to take on challenges regardless of the consequences. Students with limited means also report having immense respect for their parents and their ability to provide for family even with few resources. The 'never give up' and 'working hard' attitude of parents inspire children to work hard and strive for success. Furthermore, aspects of racial ethnic socialization e.g., cultural socialization and preparation for racial bias are found to be associated with GPA (Banerjee, Rivas-Drake, & Smalls-Golver, 2017). Cultural socialization – information from parents regarding racial pride and heritage – indirectly influences GPA through academic engagement whereas preparation for racial bias – preparing children for race-related discrimination – is negatively associated with success (Banerjee, Rivas-Drake, & Smalls-Glover, 2017).

The role of family support and involvement can also influence academic outcomes negatively. Students from families that do not have high education-related values achieve poor grades because of conflicting familial and educational environment. Students are burdened with additional household responsibilities along with educational demands, resulting in poor grades (Meeuwisse, Born, & Severiens, 2011, 2014; Theodore et al., 2017).

5.1.2. Communities

The influence of residential/neighborhood communities (Nelson, 2019), ethnic and religious communities also significantly predict higher education achievement. Communities provide both information-related social capital as well as social support. In fact community networks play a significant role in compensating for the lack of information-related social capital for first-generation students.

5.1.2.1. Information-related social capital. The ethnic and religious networks (e.g. church membership) bring together individuals from different social and economic backgrounds together and therefore, those with less resources benefit from the information and knowledge of others (Abada et al., 2009; Byfield, 2008). Church is also a medium to meet other professionals from same race and background who serve as role models and as sources of information and inspiration for youth (Byfield, 2008; Dumangane, 2017; Holland, 2016) For all student groups, traditional and non-traditional alike, the characteristics of the neighborhood where students attend high school is also linked to their university GPA. Students who attend schools in neighborhoods with higher proportion of adults with a Bachelor degree have better college GPAs (Betts & Morell, 1999) compared to their peers from neighborhoods with lower educational levels.

5.1.2.2. Social support. Students report benefiting from social support received from community members, such as passing on family values, providing informal support and academic guidance. Relatedness to ethnic ancestry and growing up with friends from similar ethnic background is positively associated with successful university completion (Abada et al., 2009). Their shared values and common experiences related to discrimination and stereotypes develop a strong sense of determination (Arellano & Padilla, 1996). Furthermore, community networks exercise social control which makes children and youth more likely to conform to education related norms and values. A large network actually decreases the likelihood of delayed graduation because of its social control (Eggens et al., 2008).

Similarly, pro-education values (e.g. discipline, hard work, patience) at church encourage minority students to work hard and promote academic success and learning. It provides them an outlet to share their day to day challenges associated with university education (Donahoo & Caffey, 2010). Furthermore, these students also report relying on God in adverse times (Byfield, 2008; Ceglie & Settlage, 2016; Dumangane, 2017) which gives them the strength to address challenges (Holland, 2016). They strongly believe that the moral values associated with Christianity have helped to distance themselves from crimes, drugs, gangs. The educational activities along with networking opportunities are important forms of social capital which students gain from their church (Byfield, 2008).

To conclude, students' personal networks which include their families and communities have a role to play in their higher education success. While students from higher education background gain both information-related social capital and support from their families, minority students mostly only gain social capital in the form of support from their families. In addition to family members, the role of communities – religious and ethnic networks – also have an important role to play in the success of minority students. The detailed mechanisms have been elaborated in section 5.3.

5.2. Institutional networks

5.2.1. Peers

University life is also an opportunity for students to develop close and long term friendships. The set-up of universities such as residence halls and student organizations facilitate building close friendships which provide both information-related social capital and social support, at least for the mainstream students.

5.2.1.1. Information-related social capital. Peers play an important role in study success (Brouwer, Jansen, Flache, & Hofman, 2016; Ecklund, 2013; Johnson, 2013) and influence academic achievement in different ways. Studying together with peers enhances performance (Cole & Espinoza, 2008) by increasing understanding of the course materials (Palmer, Maramba, & Dancy II, 2011). Peers may also share other relevant information and resources (Martin, 2009), explain difficult concepts as well as introduce diverse ideas and perspectives. Furthermore, they help to take care of some of the examination related anxiety, help clarify course related expectations, and enhance students' expectations (Tinto, 2012) resulting in better outcomes (Pérez II & Taylor, 2016). Inability to discuss course materials with peers may result in negative outcomes (Kraft, 1991). Matching personality and skillsets with roommates are also associated with positive educational outcomes (Ainsworth & Maynard, 1976; Hasan & Bagde, 2013).

From a network perspective, students who occupy central[2] positions in their networks are less likely to dropout and usually have better GPAs than students who are not central in their networks (Ivan & Duduciuc, 2011; Thiele, Sauer, & Kauffeld, 2018). The central position forces them to achieve higher grades in order to meet the expectations of others and maintain their status within their networks. While integration with peers affects persistence (Wilcox et al., 2005), peer influence may also sometimes propagate at-risk behaviors as students tend to mimic the positive but also negative behavior of their peers. High achieving students in networks positively influence academic achievement whereas lower achievement of network members increases the risk for dropping out (Androushchak, Poldin, & Yudkevich, 2013; Celant, 2013; Eckles & Stradley, 2012; Oseguera & Rhee, 2009; Poldin et al., 2016; Tomás-Miquel et al., 2016). Thus, having diverse and broader ties outside of immediate peer group improves student's access to social capital and is significant for persistence (Gašević et al., 2013; Thomas, 2000).

Not just college friendships but also those formed early on in life matter. Cherng, Calarco, and Kao (2013) found that adolescent best friend's cultural and material resources as measured by friend's mother's education level and household income, respectively, are positively associated with college completion later on. Of the two, the effect of cultural resources is stronger and remained significant even after controlling for background characteristics e.g., age, race etc. Similarly entering university together with friends from high school is positively associated with GPA. Mobilization of social capital during high school by virtue of memberships in academic friendship networks (Riegle-Crumb, 2010) as well as through peers (Cerezo et al., 2013) also contributes to success at universities. Fletcher and Tienda (2009) found that freshmen at University of Texas, Austin who entered higher education with a large high school cohort report higher GPA and are more likely to persist in higher education in comparison to their peers who enter with a small cohort. Furthermore, same race cohort increases the likelihood of higher GPA and persistence with minority students benefiting more from having high-school friends at the university. This positive association results from high achievement aspiration to counteract their marginal status and segregation (Abada et al., 2009).

5.2.1.2. Social support. The experiences of underrepresented students with classmates and peers tend to differ from their mainstream counterparts. One of the ways in which classmates influence outcomes is by enhancing 'sense of belonging' (Tinto, 2012) which is associated with better grades (Etcheverry, Clifton, & Roberts, 2001; Hausmann, Ye, Schofield, & Wood, 2009; Tinto, 2012). Sense of belonging is influenced by peer contact and therefore this sense of belonging develops only for majority groups as underrepresented students tend to have very little contact with students outside of their own communities due to discrimination and negative stereotyping (Hilts, Part, & Bernacki, 2018). For example, African American students report experiencing stereotypes from their peers and classmates. They are often considered to be intellectually incapable and undeserving of university education. Their peers are unwilling to share notes or work on group projects with them (Johnson-Ahorlu, 2013). If they work together, African American students frequently receive poor evaluations from their classmates (Green, Brand, & Glasson, 2018). These stereotypes lead to a feeling of anxiety and burden amongst African American students. This is also true for adult learners and Latino students, who often struggle with accessing resources and supports and often feel socially excluded by their peers (Rubin & Wright, 2015; vanRhijn, Lero, Bridge, & Fritz, 2016) resulting in poor academic outcomes (Gilardi & Guglielmetti, 2011; Gloria, 1997; Gloria, Castellanos, Lopez, & Rosales, 2005). Consequentially, ethnic minority students are more comfortable when they have formal relationships with their fellow students and faculty compared to ethnic majority students who prefer informal interactions (Meeuwisse, Severiens, & Born, 2010).

[2] "A prominent actor has high involvement in many relations, regardless of whether sending or receiving ties." (Knoke & Yang, p.62).

Memberships in campus social organizations – clubs, students' organizations – help retention by promoting engagement (Tinto, 2012). Participation in formal social activities such as clubs and organizations is more beneficial for minority students than informal activities (Fischer, 2007). In order to cope with isolation and discrimination, minority students rely on on-campus racial and ethnic groups/organization for academic success (Bailon, 2012; Bhopal, 2011; Harper, 2015; Palmer, Maramba, & Holmes, 2011; Pérez II, 2014). For instance, Black student organizations are often cited as sources of social and academic support by African American students (Strayhorn, 2010). These organizations are significant in the persistence and retention of Black students (Brooms & Davis, 2017; Grier-Reed, Ehlert, & Dade, 2011) and expand their networks (Grier-Reed & Wilson, 2016). Membership in these organizations gives students a place to share their feelings and gain support (Brooms, 2018; Palmer et al., 2011). High achieving African American males also regard peer support from their fellow African American students as an important factor in their success (Harper, 2006). Just like traditional students, high achieving non-traditional students also read each other's papers, provide feedback and discuss relevant ideas together (Wong, 2018) that contribute to their success. However, over involvement in groups could also result in poor academic achievement (Guiffrida, 2004b) especially when group activity takes precedence over academic responsibilities. Sometimes, peer support is not related to the success of minority students, at least not directly and many times studying with peers can be distracting with students engaging in non-academic activities over studying. Students also report that quite often the support they provide to their peers is not reciprocated back (Baker, 2013).

For minority students, pursuing higher education poses an added level of complexity with regard to peer interactions. For many students, it is not easy to adapt to college life as well as maintain contacts within their community. They often report that their same-race, non-university going friends are not able to comprehend the challenges associated with higher education (Guiffrida, 2004a) and their friends' negative perceptions regarding higher education influence their success negatively.

5.2.2. Faculty relationships

Relationship with faculty is also critical for students' engagement and success (Brower et al., 2016; Fedesco, Bonem, Wang, & Henares, 2019). Opportunity to see faculty members outside class, seeking their feedback on assignments plays an important role in academic success (Pearce & Down, 2011; Williams, 2017). Universities with strong networking values including professors and peers report high success rate amongst minority students (Museus, 2011). These networks also help to influence students' expectations which is equally necessary for success (Tinto, 2012). Positive relationship with faculty members are associated with better grades (Allen, 1985, 1992) as well as feedback received and interaction improve academic performance (Cole & Espinoza, 2008). Professors have a key role to play in inculcating positive classroom environment (Thomas, 2014). A classroom where all students regardless of their ethnicity and social background are respected and have equal right to raise questions and participate in discussions enhances perceived social support and positively influences college completion intention. Moreover, a positive classroom environment also provides an opportunity to develop relationships with peers which subsequently adds to social support and leads to high college completion intentions.

Relationship and perception of faculty is reported by some students especially those from ethnic minority backgrounds to be a source of stress, characterized by formal and limited interactions (Anaya & Cole, 2001; Green et al., 2018). Students are treated differently by their professors based on their social background (Kraft, 1991). Just like from their peers, African American students are stereotyped by faculty members (Johnson-Ahorlu, 2013). Their professors continuously question their intellectual capacity, even inquiring with other classmates regarding their ability to deal with academic challenges and demands of the coursework (Johnson-Ahorlu, 2013). These stereotypes add another layer of stress and have detrimental effects on study continuation and delayed progress to degree completion. It is observed that the bias of professors can manifest in the way they grade their students' papers. African American students report receiving lower grades than their peers (Johnson-Bailey, Valentine, Cervero, & Bowles, 2009). In addition to race, faculty tend to be biased towards students with higher education background and give them better grades compared to students without higher education background (Heagney & Benson, 2017; Helland, 2007).

Similar to peer-support, minority students rely on same-race professors or those from similar backgrounds for support. Positive, supportive, and friendly interactions with same race faculty members are associated with better grades (Brooms & Davis, 2017; Dika et al., 2018; Guiffrida & Douthit, 2010). Faculty members provide them support and encouragement and help boost their self-confidence which is necessary to succeed academically (Baker, 2013). For Black male students, relationship with African American faculty – also described as "othermothering" – was particularly important (Guiffrida, 2005; Guiffrida & Douthit, 2010). Black faculty members help students in many ways including advising, mentoring, supporting, advocating for Black students at college, putting together mentoring groups (Carson, 2009; Guiffrida & Douthit, 2010, p. 312). Black faculty members also constantly push students to work hard and often raise standards and their accountability for academic progress (Guiffrida & Douthit, 2010). While some students took this positively and appreciated the efforts of the faculty members, for others this made the course more difficult.

Not just college faculty, but support and encouragement received from high school teachers to pursue science also plays a major role in persistence (Ashtiani & Feliciano, 2018; Palmer & Maramba, 2015; Williams, 2017), particularly, for Black male (Williams, 2017) and female students pursuing STEM disciplines (Ceglie & Settlage, 2016; Martin et al., 2013; Palmer et al., 2011), Latino students (Arellano & Padilla, 1996) and students from lower socio-economic backgrounds (Turner & Juntune, 2018). These individuals serve as role models and mentors who help them transition to and navigate through higher education. They provide information e.g., about course work, adjusting to campus life etc. which they would otherwise not have access to (Arellano & Padilla, 1996). Undocumented students usually refrain from social networks for the fear of being identified by the authorities. Therefore, their support structures play a special role. Their relationships with both high school and college counselors (Riegle-Crumb, 2010), high school faculty and staff played a significant role in higher education completion. On top of emotional and academic support these individuals helped students financially by paying for college applications, books, registrations, finding employment. When these

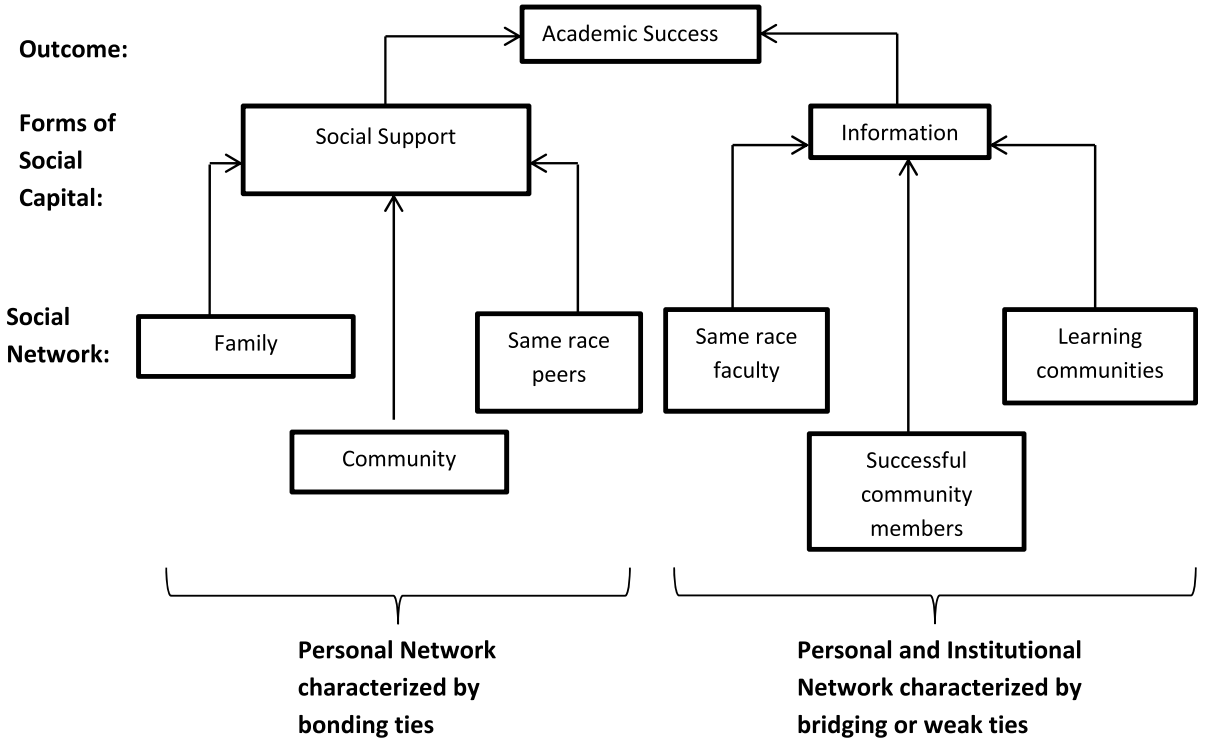

Fig. 2. Role of social networks, social capital and social support in academic success of underrepresented students.

students enter college they are not able to build a strong network because of multiple institutional structures. Few students, who manage to overcome these barriers, regard their college networks to be a source of immense support, guiding and advising students on how to secure financial aid, without which many would have dropped out of higher education (Garcia & Tierney, 2011).

RQ2: Mechanisms through which social networks, social capital, and social support influence higher education outcomes with a special focus on underrepresented students

5.3. Mechanisms through which social networks and support operate

The results of the literature review highlight the importance of network resources (information-related and social support) in the success of students. Access and mobilization of these resources is dependent on the socio-economic positioning of individuals (Lin, 2001) as well as their position within their networks (Lin, 1999). Fig. 2 presents the networks of successful underrepresented students, different forms of capitals utilized by them, and how the network members complement each other with regard to resources offered and contribute to academic success. A close examination of the networks of successful underrepresented students offers interesting insights into the mechanisms through which these students mobilize different forms of capital through various networks. Unlike traditional students, networks of non-traditional students are limited in providing one or the other form of social capital. Successful underrepresented students however manage to overcome this barrier by building ties with other individuals, mostly with those who have similar background or race/ethnicity as seen in Fig. 2.

5.3.1. Social support

Non-traditional students who are most likely first-generation learners do not acquire adequate information-related social capital from their parents. Therefore, these students are relatively disadvantaged as they do not enter higher education with adequate know-how and information about dealing with university life e.g. examination preparation, study organization.

Even with a deficit in 'information-related' social capital, some minority students succeed in higher education. For these students, the role of 'social support' or what Gofen (2009) categorizes as 'family capital' plays an especially important role (Hansen & Mastekaasa, 2006; Samuelson & Litzler, 2016) (Fig. 2). It is observed that parents of successful non-traditional students value education and its importance in breaking the cycle of poverty and therefore constantly encourage their children to pursue education (Gofen, 2009). This has positive influence on children's educational and professional aspirations. Furthermore, parents also instill values such as discipline, honesty, patience which are certainly relevant for academic success. This contradicts the culture blaming notion and shows that even though these students may be disadvantaged in many aspects, there are some forms of capital which are specific to minority groups and help them to succeed (Yosso, 2005).

Underrepresented student also derive emotional support from their peers who have similar backgrounds (Fig. 2). Their shared negative experiences related to discrimination and stereotypes binds them together and they learn to cope with the challenges by supporting each other emotionally, stressing the importance of bonding ties (Putnam, 2000). This consequentially influences their performance. The findings of this literature review are also supported by the theory developed by Nagasawa and Wong (1999) wherein they describe the reliance of minority students on students from similar backgrounds to deal with the problem of social isolation. The type of response to social isolation is also determined by the culture of individuals experiencing isolation, i.e. individualist vs. collectivist (Pfundmair, Graupmann, Frey, & Aydin, 2015). Individualist culture, mostly observed in the North American or Western Europe, places the goals and needs of individuals over group needs. Collectivist culture on the other hand as seen in Asia, Africa or South America places community needs over individual needs. The reliance on community living could well buffer the negative influence of social isolation in the case of these minority students as the majority of them trace their origin to collectivist culture (Carson, 2009). The emphasis of collectivism on group living and building a community also results in a feeling of 'giving back' which results in building a community on campus by advising and mentoring other students from similar backgrounds and origins (Carson, 2009).

5.3.2. Information-related capital

The segregation of underrepresented students restricts their expansion of networks and acquisition of social and cultural capital necessary for academic success (Ayala, 2012). If these students were able to integrate with the mainstream students and faculty, their access to 'information-related' capital would have increased, in line with Burt's (1992) theory of structural holes. This would have compensated for the lack of information at the family level. However, this is usually not the case for the majority of non-traditional students (Johnson-Ahorlu, 2013).

In order to acquire this 'information-related' social capital, students from minority groups rely on the knowledge and experiences of leaders and professionals from their own communities (Fig. 2). These contacts are initiated through their religious affiliations or memberships in ethnic networks. Additionally, same-race faculty members play a major role in helping minority students acquire this form of capital. They meet with students outside of classrooms and help them with course related difficulties, examination advice and share information about navigating through university life. The successful members from their own communities as well as same race faculty serve as a role model as well as sources of information for these students (Brooms & Davis, 2017; Dika et al., 2018; Guiffrida & Douthit, 2010). Obtaining information related social capital highlights the importance of weak (Granovetter, 1973) and bridging ties (Putnam, 2000). Undoubtedly these individuals are similar to them as they share same ethnicities or socio-economic backgrounds; however they are also dissimilar as they enjoy high social position and power. Indeed these weak ties provide resources that student cannot access through their personal networks (Burt, 1992).

The role of learning communities is also of special relevance here in providing academic support (Tinto, 2012). These not only expand students' peer networks across race and ethnicity but also provide 'information-related' social capital. These programs give them an opportunity to interact with tutors, mentors and other fellow students, develop connections, sense of community and support systems (Golden, 2011; Grills, Fingerhut, Thadani, & Machón, 2012; Lim, Tkacik, & Dika, 2017; Stolle-McAllistor, Domingo, & Carrillo, 2011) which has a positive impact on their cognitive abilities, for instance, study planning, organization of learning materials, learning study content (Arco-Tirado, Fernández-Martín, & Fernández-Balboa, 2011; Cutright & Evans, 2016; Ovink & Veazey, 2011) and persistence (Ceglie & Settlage, 2016) and improved academic outcomes (Solanki, McPartlan, Xu, & Sato, 2019). Solanki et al. (2019) also concluded that this improvement is observed across all racial and ethnic groups. Mentors are especially relevant for low income youth in degree completion compared to their peers from advantageous background (Ashtiani & Feliciano, 2018). Brown and Burdsal (2012) found that institutional factors such as community based learning experience, working with instructors, tutor, group studies were positively related to degree completion (Stolle-McAllistor, Domingo, & Carrillo, 2011) and retention (Cutright & Evans, 2016). Academic and social interactions as a result of learning communities are positively associated with self-efficacy and early study success (Brouwer, Jansen, Hofman, & Flache, 2016). These programs also enhance student's belonging and relatedness to faculty and institutions (Beachboard, Beachboard, Li, & Adkison, 2011) and compensate for the social capital of students by providing information about course requirements and helping them form support groups (Brouwer et al., 2016; Lane, 2016). Peer mentoring contribute towards integration of students and reduce dropping-out (Collings, Swanson, & Watkins, 2014). Baier (2014) and Holt and Nielson (2019) however found no positive influence of learning communities.

Female students who participate in learning community program report higher rate of persistence than their non-participant peers. This higher persistence is related to networking with female role models. Thus, the expansion of network helps women to come in close contact with other female achievers resulting in higher persistence (Hernandez et al., 2018). Similarly, Mattanah, Brooks, Brand, Quimby, & Ayers (2012) found that students who participate in a social support intervention program in their first year of college report significantly higher GPA than their peers who did not participate in the program. During the course of two years, this program gave students an opportunity to interact with other students and discuss issues such as creating new social ties, work, studies and personal life balance, issue surrounding university education etc. Student who participated in the intervention report feeling less lonely than their peers who did not participate and were able to form long-term connections with other student participants.

Although learning communities are implemented with the objective of collaborating learning; there appears to be segregation within learning communities as well. In an evaluation of the network patterns of freshmen learning communities Brouwer et al. (2018) concluded that high achieving students tend to collaborate with other high achieving students and as a result benefit more. Similarly low achieving students are more likely to depend on other low achieving peers for academic and social support.

6. Conclusion and discussion

This paper highlights the role and mechanisms through which social networks, social support, and social capital influence higher education. Support emerges as an important factor in the success of minority students. Unfortunately, discrimination and segregation experienced by underrepresented students restricts their access to support from members outside of their own communities (Ayala, 2012), with the exception of learning groups. This suggests that even though access to higher education has expanded owing to a series of reforms, the integration of new students groups remains a distant goal. These students need to be a part of the higher education system and more services e.g., peer tutoring programs, faculty mentorship, counseling services are needed at the universities to improve their relationship with professors, mentors, and peers. It is also important to bring discussion surrounding discrimination and segregation to the forefront. Although a few of the minority students are able to successfully mobilize support and access information through their networks, there are many others who drop-out of higher education due to family obligations, lack of support from families, classmates and professors (Guiffrida & Douthit, 2010; Guillory & Wolverton, 2008). Only by bridging this divide, the success of these minority groups can be ensured as these students will no longer have to rely only on their families and communities for support. At the same time, this will give minority students an opportunity to expand their networks, ties and social capital. Widening higher education access necessitates recognizing the needs of new student groups and addressing them in order to support these student groups in higher education.

6.1. Limitation and future research

The present paper has its limitations. The study did not focus on online networks and communities. Future research could address this limitation by broadening the network selection to include online networks and other forms of social media.

This review lays the foundation for future research. This topic needs detailed exploration especially by examining the positional aspects of underrepresented students within their networks. The focus of majority of the studies included in the review is on social capital, information and achievement but only a few studies examine the interrelatedness between student's positioning and embeddedness within networks and academic success. Studies using social network analysis have mainly focused on the mainstream student groups.

Several thematic observations (not necessarily limitations) were made during the literature review which could be addressed in future work. First, most of the studies included in the review originated in the United States. This may indeed result from the databases selected for the review. A detailed examination of the mechanisms through which minority students in other parts of the world utilize their social networks, social capital, and social support to achieve higher education success, based on a wider selection of database could enrich the literature and enable international comparisons. Second, when it comes to religion, the focus seems to be exclusively on African American Christian students. Expanding network analysis to other students from other religious background can contribute substantially to scholarly literature in this area.

Third, in terms of theoretical framework, most of the studies relied on student attrition, student integration, student engagement; however very few studies utilized network theories such as Structural holes (Burt, 1992) or structural positions (Lin, 1999) to understand academic success. In this regard, it is also important to make a distinction between ‘social capital’ and ‘social network’. Social capital is the resources derived from one's network of family, friends, communities. However, there are different mechanisms that influence the availability and utilization of these resources, depending upon the composition and characteristics of network members as well as the network structure as highlighted in Section 2. Focusing on the mechanisms would offer interesting insights into the networks of minority student and how their minority status hinders or facilitates access to different forms of resources. This would also entail using especially designed network instruments e.g. name and resource generator, position generator for collecting network specific data. There are only a very few studies using these instruments and certainly not for underrepresented student groups. Analyzing social networks of disadvantaged students groups could offer more insights on the coping mechanisms that lead to academic success. This has the potential to develop new framework or theoretical perspectives focusing exclusively on minority students. More studies highlighting the strength of these students instead of their weaknesses and the factors that lead to success are needed.

Appendix 1. Complete list of studies included in the review (**WOS; *ERIC)

	Author(s) & Year	Sample	Theory	Country	Ind. Variable	Med. Variable	Dep. Variable	Method
1.	Abada et al. (2009)**	3300 s generation immigrants aged 25-34	Parental human capital, social, cultural and ethnic capital	Canada	Ethnic differences (Six set of variables- demography; father's and mother's education; language; ethnic networks and sense of belonging; place of residence)	Parental human, social capital and ethnic capital	University completion	Quantitative (Logistic and OLS Regression; Oaxaca decomposition analysis)

2.	Abada and Tenkorang (2009a)**	2250 s generation males and 2614 s generation female immigrants aged 25–34 years	Human capital; Social capital	Canada	Gender differences in family human capital; social capital in family and immigrant community		University completion	Quantitative (Logistic regression)
3	Abada and Tenkorang (2009b)**	10,908 s and third generation immigrants aged 18-34	Human capital; Social capital	Canada	Parental human capital; Social capital in family and community		Pursuit of university education/University completion	Quantitative (Ordinal logit regression)
4	Abukari (2010)	276 first-year college students in Ghana	Ecological theory	Ghana	Psychosocial (risk and protective) factors		Student achievement	Mixed method (Quantitative-hierarchical multiple regression)
5	Ainsworth and Maynard (1976)	63 pairs of freshmen male dormitory roommates		USA	Personality, academic ability		Achievement	Quantitative (Factor analysis)
6	Allen (1985)	695 Black undergraduate students		USA	Personal background, high school experience, college experience and student's attitudes		Social involvement, college GPA and occupational aspirations	Quantitative (correlation and multiple regression)
7	Allen (1992)*	2531 Black students (1578- PWU and 953- HBCU)		USA	Campus characteristics, campus experience, student background, and individual personality orientation		Black students academic achievement (GPA), social involvement and occupational aspirations	Quantitative (correlation and multiple regression)
8	Anaya and Cole (2001)	836 Latino college students		USA	Student-faculty interaction		College grades	Quantitative (Regression)
9	Androushchak et al. (2013)	257 students who entered economics program		Russia	Classmates' ability		Student achievement	Quantitative (Regression)
10	Arco-Tirado et al. (2011)	100 freshmen students and 41 tutors		Spain	Participation in PTP		GPA Performance Rate, Success Rate	Quantitative (Mann-Whiney and value d of Cohen techniques, ANOVA, *t*-test)
11	Arellano and Padilla (1996)	30 high achieving Latino undergraduate students at private and highly selective university	Protective influence, resilience, academic invulnerability	USA	Characteristics of academically successful students Factors that mediate success and the relationship between these factors		Academic Success	Qualitative
12	Ashtiani and Feliciano (2018)**	2819 low income students	Social capital	USA	Social capital- access and mobilization		Bachelor's degree attainment	Quantitative (multivariate logistic)
13	Ayala (2012)	Latino students	Social capital		Cultural and structural factors		Academic attainment	Literature review
14	Baier (2014)	172 freshmen	Social cognitive theory	USA	Learning communities, mentoring relationships, self- efficacy		Persistence	Quantitative (MANOVA and multiple regression)
15	Bailon (2012)	8 Filipina/o undergraduate students	Intercultural perspective	USA	Challenges		Graduation	Qualitative
16	Baker (2013)*	991 African American and 916 Latino students	Educational departure Oppositional culture; Stereotype threat	USA	Personal support (ethnic and non-ethnic peers and ethnic and non-ethnic faculty)		Academic performance (GPA)	Quantitative (OLS Regression)
17	Banerjee et al. (2017)	226 African American college students	Ecological systems theory	USA	Racial ethnic socialization	Academic engagement	Academic achievement (GPA)	Quantitative (Path Analysis)
18	Beachboard et al. (2011)**	1846 academic development and 1845 job preparation	Self determination	USA	Participation in learning communities	Relatedness	Improved motivation and academic outcome	Quantitative (*t*-test, linear and block entry regression)

19	Betts and Morell (1999)	5623 students		USA	Personal background, demographic characteristic of the neighborhood& school resources		Cumulative University GPA	Quantitative (Regression analysis)
20	Bhopal (2011)**	32 British Indian women	Social capital and support	UK	Friendship support network		Academic success	Qualitative
21	Boveda (2017)							
22	Brooms (2018)	40 Black male students	Social and cultural capital	USA	Black male Initiative Program		Academic success	Qualitative
23	Brooms and Davis (2017**)	59 Black males		USA	Relationships with peers and faculty		Academic persistence	Qualitative
24	Brouwer, Jansen, Flache, et al. (2016)	407 first year social science student	Social and academic integration and self-efficacy	The Netherlands	Learning communities, social and academic interaction, contact hours, gender, prior skills and achievement	Self-efficacy	Study success	Quantitative (Multilevel)
25	Brouwer, Jansen, Flache, et al. (2016)	407 first year university students	Social capital	The Netherlands	Social Capital (Family capital, peer capital, faculty capital)	Self-efficacy	Study success	Quantitative (Path analysis)
26	Brouwer et al. (2018)**	95 first year Bachelor's students	Social integration and social constructivism	The Netherlands	Academic networks, friendship networks		Achievement (Grades)	Quantitative (Stochastic actor based model)
27	Brown and Burdsal (2012)	3839 students (3019 after excluding missing)	Student engagement	USA	Sense of community		GPA and degree completion	Quantitative (Factor Analysis, Multiple regression)
28	Byfield (2008)**	40 Black male	Cultural capital	USA and UK	Belief in God and religious communities		Academic achievement	Qualitative
29	Cabrera et al. (1999)	1139 White and 315 African American students	Effective retention	USA	Pre-college academic abilities, parental encouragement, perception of prejudice-discrimination, academic experience, academic and intellectual development, academic performance, goal commitment, institutional commitment		Persistence	Quantitative (Structural Model)
30	Carpenter et al. (1998)	All students Two cohorts Born in 1961- entered HE age 19 and responded to the survey at age 23: 619; entered HE age 19 and responded to the survey at age 30: 538 Born in 1965-entered HE age 19 and responded to the survey at age 23: 493 Graduation rates for respondents who were enrolled in degree programs by 19: 469, 384 and 406		Australia	Parent's occupational status, parent's educational attainment and family wealth; gender		Graduation rate from higher education and degree programs	Quantitative (Multiple classification analysis)
31	Carson (2009)*	16 African American students	Collectivism	USA	Collectivism		Students' belief about value of higher education	Qualitative
32	Ceglie and Settlage (2016)**	16 women of color from science discipline	Social and cultural capital, Persistence factors	USA	Factors and strategies		Persistence in higher education	Qualitative

33	Celant (2013)	64 students		Italy	Ties and interactions		Students' academic performance	Quantitative (linear in means model for social interaction)
34	Cerezo et al. (2013)	12 Latino male students	Ecological systems theory	USA	Messages about potential to attend college; Alternatives to college; factors relating to success		Persistence	Qualitative
35	Cheng et al. (2012)*	240 students (62 men, 178 women)	Attachment theory	USA	Family support (social and economic)		GPA	Quantitative (Multiple regression; Growth Curve Analysis)
36	Cherng et al. (2013)**	3309 students each in Wave 1, 2 and 4	Social capital	USA	Friends' material and cultural resources		Degree completion	Quantitative (Logistic regression)
37	Cho and Cho (2019)	283 students	Social cognitive Career theory	South Korea	Parents students satisfaction with majors		Academic performance (GPA)	Quantitative (Regression)
38	Cole and Espinoza (2008)	146 Latino students in STEM major	Cultural capital	USA	Cultural capital, cultural congruity		Academic performance	Quantitative (Descriptive, factor, and regression)26
39	Collings et al. (2014)**	109 first year undergraduate	Student retention/attrition, Social and academic integration	UK	Peer mentoring	Integration	Intention to leave university	Quantitative (*t*-test, Chi-square, linear regression, ANOVA)
40	Cruz (2012)	7 Lationa/o students	Community cultural wealth	USA	Factors		College completion	Qualitative
41	Cutright and Evans (2016)	8 Seniors and 8 Freshmen		USA	Peer mentoring		Retention	Qualitative
42	Cutrona et al. (1994)	418 Bachelor students	Six provisions	USA	Perceived social support from parents	Low anxiety, self- efficacy	Academic performance	Quantitative (Structural equation analysis)
43	Dika et al. (2018)**	Online questionnaire-236 Junior and Senior students Focus group-6 women and 12 men from minority groups	Student attrition, Community cultural wealth, Social and cultural capital	USA	Cultural capital		Persistence	Qualitative Analysis
44	Donahoo and Caffey (2010)*	25 African American college students	Spirituality and religion	USA	Church participation		Academic performance (GPA)	Mixed method-Quantitative (ANOVA)
45	Dumangane (2017)**	15 British African Caribbean men	Social capital, cultural capital, faith capital	UK	Race, gender, class and culture	Identity	Graduation	Qualitative
46	Eckles and Stradley (2012)*	460 first year undergraduate students	Student retention theory	USA	Attrition and retention scores, degree		Students' return to the sophomore year	Quantitative (Network analysis)
47	Ecklund (2013)	12 engineering students	Student retention	USA	Social activities		Persistence	Qualitative
48	Eggens et al. (2008)**	1451 students		The Netherlands	Personal networks, social support	Achievement motivation, study & work time, procrastination & self-esteem	Study attainment	Quantitative (Multi logistic regression, step wise linear regression)
49	Etcheverry et al. (2001)*	269 students	Social capital, Social background, time management, educational attainment	Canada	Social capital		Educational attainment	Quantitative (Structural equation modeling)
50	Fedesco et al. (2019)	556 female; 321 male	Self-determination theory	USA	Peer and instructor relatedness		Academic outcomes (Perceived learning and course grade)	Quantitative (Confirmatory Factor Analysis)

51	Fischer (2007)	3294 college students	Student integration; Input – Process – Output Model	USA	College adjustment	Academic outcomes (GPA)	Quantitative (OLS Regression)
52	Fletcher and Tienda (2009)**	All students Approx. 6000 each cohort	Peer influences	USA	Number of high school classmates in the same college	GPA Persistence	Quantitative (Ordinary least square regression)
53	Garcia and Tierney (2011)**	40 undocumented immigrant students and 5 educators	Social capital	USA	Social support, educational experience	College success	Qualitative
54	Gašević et al. (2013)**	505 Master students	Social capital, network positions	Canada	Social ties	Academic performance	Quantitative (Regression)
55	Gilardi and Guglielmetti (2011)	228 Non-traditional students including who are 2 studying and those who dropped out	Interactionalist theory, student engagement	Italy	Student-faculty interaction Perceived quality of university experience	Persistence	Qualitative
56	Gloria (1997)*	357 Chicana undergraduates		USA	University environment, Perceived social support	Dropout	Quantitative (Correlation and step-wise regression)
57	Gloria et al. (2005)	99 Latino undergraduates	Social support	USA	University comfort, social support, self-beliefs	Academic non persistence decisions	Quantitative (canonical correlation, hierarchical regression)
58	Golden (2011)	13 first generation Latinas	Theory of student departure and student involvement	USA	Mentoring	Persistence and success	Mixed (Quantitative-Descriptive)
59	Gofen (2009)**	50 first generation students	Family resilience, social capital	Israel	Factors that contribute to the success of first-generation students	College success	Qualitative
60	Grier-Reed et al. (2011)*	163 African American Student network (AFAM) members		USA	Participation in AFAM networks	Retention and graduation rates	Quantitative
61	Green et al. (2018)	13 African American students	Actor network theory, theory of Practice	USA	Interactions with professors, peers, institution and society	Non persistence	Qualitative
62	Grier-Reed and Wilson (2016)	32 AFAM participants and 193 other Black students		USA	Differences in ego networks between participants and non participants	Success	Quantitative (Correlation and Kruskal-Wallis test of independent samples)
63	Grills et al. (2012)*	42 psychology students		USA	Residential learning communities	Classroom performance (GPA) and retention rate	Quantitative (Descriptive)
64	Guiffrida (2004)*	84 African American students		USA	Involvement in African American student organizations	GPAs	Qualitative
65	Guiffrida (2004)	99 African Americans	Theory of student involvement, theory of student departure	USA	Friends as assets or liabilities	College leavers, high and low achievers	Qualitative
66	Guiffrida (2005)	19 African American students		USA	Relationship with faculty	Academic success	Qualitative
67	Guiffrida and Douthit (2010)**	Black students			Relationships with family, faculty, friends, peers in Black student organizations	Academic achievement and persistence	Literature review
68	Guillory and Wolverton (2008)	30 Native American students; 6 Faculty; and 3 Presidents	Theory of student departure, Family education model	USA	Perception of native American students, state epresentative, faculty and university presidents about persistence factors and barriers to degree completion	Degree completion	Qualitative

69	Hansen and Mastekaasa (2006)**	All students	Cultural capital	Norway	Social class origin		Academic performance	Quantitative (Ordinal logistic regression)
70	Harper (2006)	32 African American	Internalized racism	USA	Peer support		Academic achievement	Qualitative
71	Harper (2015)	143 male African American students	Stereotype threat	USA	Race stereotype		Academic achievement	Qualitative
72	Hasan and Bagde (2013)*	2122 engineering students	Peer effects	India	Students' peers		Academic performance	Quantitative (Regression)
73	Heagney and Benson (2017)*	11 matures students		Australia	Support		Access, participation, success and retention in higher education	Qualitative
74	Hausmann, Feifei, Schofield, and Woods (2009)	254 African American students and 291 white students	Student integration model Student involvement	USA	Sense of belonging		Persistence and GPA	Quantitative (Confirmatory Factor Analysis)
75	Helland (2007)	1281 Master Economic students	Cultural capital	Norway	Social differences Parents' education, income, occupational class	Motivation and work effort Examiners assessment	Academic achievement	Quantitative (OLS)
76	Hernandez et al. (2018)**	484 college women in STEM major		USA	Participation in PROGRESS- a mentoring program		Persistence	Quantitative (Structural equation modeling)
77	Herndon and Hirt (2004)	Black students Females- 11 Males- 9 Family members- 18		USA	Families		College success	Qualitative
78	Herndon & Moore III (2002)*	African American students			Social, emotional, and financial support		Academic success	Literature review
79	Hilts et al. (2018)**	405 undergraduate students	Self-determination theory, competence and self-efficacy, relatedness, social support	USA	Friends' and peers' values, peer and classmate contact	STEM relatedness, Competence	Final grade, intent to leave	Quantitative (*t*-test)
80	Holland (2016)*	49 university students	Social cognitive theory, social capital	USA	Religious and spiritual beliefs		Academic achievement	Qualitative
81	Holt and Nielson (2019)	869 students		USA	Learning communities		Academic performance and retention	Quantitative (ANOVA)
82	Ivan and Duduciuc (2011)**	72 students		Romania	Centrality		Grades	Quantitative (Hierarchical Regression)
83	Johnson (2013)	5 African American students	IEO College impact model, Cultural and social capital	USA	Academic and social experience; barriers		College persistence	Qualitative
84	Johnson-Ahorlu (2013)	19 African American undergraduates		USA	Stereotypes		Academic success	Qualitative
85	Johnson-Bailey et al. (2009)	678 African American students	Critical race theory	USA	Social experiences		Persistence	Mixed methods (Quantitative-t-test)
86	Kraft (1991)	43 Black student	Weiner's attributional theory	USA	Perception of academic experience		Academic success	Qualitative
87	Lane (2016)	50 African American, Latino and South East Asian students	Sense of belonging, science identity, ethic of care	USA	STEM enrichment program		Retention and degree attainment	Qualitative
88	Lim, MacLeod, Tkacik, and Dika (2017)	26 engineering students mentors and mentees	Theory of situated learning	USA	Peer mentoring		Academic growth	Qualitative
89	Martin (2009)**	Elite students First year outcome: 912 Final college outcome: 795	Social capital	USA	Peer, campus and family network		Academic achievement	Quantitative (Ordinary least squares)
90	Martin et al. (2013)**	4 Hispanic women	Network theory	USA	Social capital		Persistence	Qualitative

91	Mattanah et al. (2010)*	88 first year students		USA	Social support intervention		Academic achievement (GPA)	Quantitative (ANOVA, regression)
92	Meeuwisse et al. (2010)	523 First year students (145-ethnnic minority and 378-majority)	Student retention, sense of belonging	The Netherlands	Learning environment, interactions with teachers and peers and sense of belonging		Study success	Quantitative (Structural equation modeling)
93	Meeuwisse et al. (2011)**	1656 university students	Family-study interface	The Netherlands	Family-study conflict, family-study facilitation	Effort	Academic performance (GPA)	Quantitative (structural equation modeling)
94	Meeuwisse et al. (2014)**	342 ethnic minority and 1314 ethnic majority students	Family-study interface	The Netherlands	Differences in the family study interface of ethnic minority and majority students		Academic outcomes	Quantitative (structural equation modeling)
95	Museus (2011)	65 faculty, administrators, staff, and students of color	Campus cultural framework	USA	Institutional culture		Student success	Qualitative
96	Nelson (2019)**	43 rural and non-rural college students	Community social capital	USA	Family and community social capital of rural students		Education attainment	Qualitative
97	Ong et al. (2006)**	123 Latino students	Positive adaptation, resilience	USA	Protective influence of psychological and family factors		College success	Quantitative (MANOVA)
98	Oseguera and Rhee (2009)	56,476 students		USA	Peer institutional campus climate and faculty perceived campus climate		Persistence	Quantitative (Hierarchical generalized linear modeling)
99	O'Shea (2016)**	23 first generation students	Community cultural wealth framework	Australia				Qualitative
100	Ovink and Veazey (2011)*	106 ethnic minority	Social and cultural capital	USA	Participation in BUSP		Success	Qualitative
101	Palmer, Maramba, and Dancy (2011)*	6 students of color		USA	Factors		Retention and success	Qualitative
102	Palmer, Maramba, and Dancy (2011)	19 minority students		USA	Student involvement, faculty interaction, peer support, self-accountability		Retention and success	Qualitative
103	Palmer and Maramba (2015)**	34 South East Asian American students	Social capital	USA	Social capital		Access, adjustment and success	Qualitative
104	Pearce and Down (2011)**	16 undergraduates who enter college through non-traditional entry route	Relational pedagogy	Australia	Relational pedagogy		Success	Qualitative
105	Peralta et al. (2013)*	17 Latino students	Critical race theory, community cultural wealth	USA	Family, friend and community support		College success	Qualitative
106	Pérez II (2014)*	21 Latino male achievers	Community cultural wealth	USA	Community cultural wealth, academic and social experiences		Achievement	Qualitative
107	Pérez II & Taylor (2016)	10 Latino male undergraduates	Community Cultural Wealth	USA	Factors		Success	Qualitative
108	Poldin et al. (2016)**	169 students (third year students)		Russia	Quality of student's personal network		Academic achievement	Quantitative (Network Regression Model)
109	Reyes (2010)	5 first generation Latina college students	Critical race theory; Community cultural wealth	USA	Factors		Success	Qualitative
110	Riegle-Crumb (2010)**	3641 Hispanic and non-Hispanic students	Social capital	USA	Social capital (parents, friendship, school counselors), performance, academic orientation		Post-secondary matriculation	Quantitative (Multinomial logistic regression)

111	Rodríguez et al. (2017)**	300 traditional first-year students		Spain	Pre-entry characteristic, perceived social support, university adaptation	Gender, parents' education, family support	Academic achievement	Quantitative (Structural Equation Modeling)
112	Roksa and Kinsley (2018)	728 first year low income students	Student departure	USA	Family support		Academic outcome (grade, credit accumulation, persistence)	Quantitative (logistic regression)
113	Román and Diaz (2008)	553 students	Learning approaches	Spain	Self-esteem, others' expectation, family support	Learning approaches	Academic achievement	Quantitative (Structural equation modeling)
114	Rondini (2016)	16 low income first generation students and 14 parents		USA	Redemption/failures And parental aspiration		Children's education	Qualitative
115	Rubin and Wright (2015)	376 first year undergraduate students	Social integration	Australia	Social class and friendship	Age differences	Retention	Quantitative (mediation analysis)
116	Russel & Atwater, (2005)	11 African American undergraduate seniors		USA	Factors		Persistence	Qualitative
117	Samuelson and Litzler (2016)	11 African American and 20 Latino students	Community cultural wealth	USA	Aspects of community cultural wealth		Persistence	Qualitative
118	Solanki et al. (2019)**	907 first year biology students (388-EASE & 519 non-EASE)		USA	EASE learning community		First year GPA, sense of belonging, academic integration	Quantitative (Ordinary Least Square)
119	Stolle-McAllistor et al. (2011)**	159 (primarily) Black students who were either new, currently participating of graduates of Meyerhoff program	Academic and social integration	USA	Meyerhoff program		Success in STEM	Qualitative
120	Storlie et al. (2014)*	Hispanic students		USA	Factors		Success	Qualitative
121	Strom and Savage (2014)	101 traditional students	Student departure	USA	Perceived support		Goal commitment graduation	Quantitative (hierarchical regression)
122	Strayhorn (2008)	231 African American men	Student retention, challenge and support	USA	Supportive relationship		Success in college (grades)	Quantitative (Descriptive, Ordinary Least Square, Hierarchical Linear regression)
123	Strayhorn (2010)**	171,936 African American males and 140,222 Latino males	Social and cultural capital	USA	Social and cultural capital (student background, academic preparation)		Academic achievement (GPA)	Quantitative (Hierarchical linear regression)
124	Theodore et al. (2017)**	626 Māori students		New Zealand	Helpful and challenging factors		Degree completion	Qualitative
125	Tinto (2012)							
126	Thiele et al. (2018)*	47 psychology students		Germany	Extraversion	Centrality	Academic performance	Quantitative (Multiple logistic regression)
127	Thomas (2000)	1200 students	Student integration	USA	Social networks, integration		Persistence	Quantitative (Path analysis)
128	Thomas (2014)*	260 students	Theory of planned behavior	Philippines	Factors		College completion	Quantitative (Structural equation modeling)
129	Tomás-Miquel et al. (2016)**	CD students-78 NCD students-76	Student networks	Spain	Student networks		Academic performance	Quantitative (Regression)
130	Turner and Juntune (2018)*	9 graduate students from low socio-economic status		USA	Home experiences		Academic success	Qualitative
131	vanRhijn et al. (2016)**	270 mature students		Canada	Challenges		Success	Qualitative
132	Weber (2017)*	11 mature women	Family capital	USA	Family support		Success	Qualitative

133	Wilcox (2005)	34 first year students (22 completed first year and 12 withdrew)	Social support	UK	Social integration	Decision to leave or not leave university	Qualitative
134	Williams (2017)	12 African American students	Ecological model of human development	USA	Factors	Academic success	Qualitative
135	Wintre et al. (2011)	600 students		Canada	Demographic and familial variables, psychological well- being, university adjustment	Maintain high school GPA in first year	Quantitative (Logistic regression, MANCOVA)
136	Wong (2018)*	30 high achieving non-traditional students	Habitus, social capital	UK	Factors	Academic success	Qualitative

References

Abada, T., Hou, F., & Ram, B. (2009). Ethnic differences in education attainment among the children of Canadian immigrants. *The Canadian Journal of Sociology, 34*(1), 1–28.

Abada, T., & Tenkorang, E. Y. (2009a). Gender differences in educational attainment among the children of Canadian immigrants. *International Sociology, 24*(4), 580–608.

Abada, T., & Tenkorang, E. Y. (2009b). Pursuit of university education amongst the children of immigrants in Canada: The role of parental human capital and social capital. *Journal of Youth Studies, 12*(2), 185–207.

Abukari, Z. (2010). *Risk and protective factors associated with academic achievement among Ghanaian youth (Doctoral Dissertation)*. Retrieved from Electronic Theses and Dissertations (10) https://digitalcommons.du.edu/etd/10.

Ainsworth, C., & Maynard, D. (1976). The impact of roommate personality on achievement. An exploratory study and model of analysis. *Research in Higher Education, 4*(3), 291–301.

Allen, W. R. (1985). Black student, white campus: Structural, interpersonal and psychological correlates of success. *The Journal of Negro Education, 54*(2), 134–147.

Allen, W. R. (1992). The color of success: African American college students outcomes at predominantly white and historically black public colleges and universities. *Harvard Educational Review, 62*(1), 26–44.

Anaya, G., & Cole, D. G. (2001). Latina/o student achievement: Exploring the influence of student-faculty interactions on college grades. *Journal of College Student Development, 42*(1), 3–14.

Androushchak, G., Poldin, O., & Yudkevich, M. (2013). Role of peers in student academic achievement in exogenously formed university groups. *Educational Studies, 39*(5), 568–581.

Arco-Tirado, J. L., Fernández-Martín, F. D., & Fernández-Balboa, J.-M. (2011). The impact of a peer-tutoring program on quality standards in higher education. *Higher Education, 62*(6), 773–788.

Arellano, A., & Padilla, A. (1996). Academic invulnerability among a select group of Latino university students. *Hispanic Journal of Behavioral Sciences, 18*(4), 485–507.

Ashtiani, M., & Feliciano, C. (2018). Access and mobilization: How social capital relates to low-income youth's postsecondary educational attainment. *Youth & Society, 50*(4), 439–461.

Ayala, M. I. (2012). The state of research in Latino academic attainment. *Sociological Forum, 27*(4), 1037–1045.

Baier, S. T. (2014). *The role of academic factors, self-efficacy, mentoring relationships, and learning communities in persistence and academic success of freshmen college students* (Docotral Dissertation). Retrieved from Wayne State University Dissertations. Paper 870.

Bailon, A. M. (2012). *Stories of persistence: Filipina/o American undergraduate students in a private, catholic, and predominantly white university*. (Doctoral Dissertation). Retrieved from LMU/LLS Theses and Dissertations (235) http://digitalcommons.lmu.edu/etd/235.

Baker, C. N. (2013). Social support and success in higher education: The influence of on-campus support on African American and Latino college students. *The Urban Review, 45*(5), 632–650.

Banerjee, M., Rivas-Drake, D., & Smalls-Glover, C. (2017). Racial-ethnic socialization and achievement: The mediating role of academic engagement. *Journal of Black Psychology, 43*(5), 451–463.

Beachboard, M. R., Beachboard, J. C., Li, W., & Adkison, S. R. (2011). Cohorts and relatedness: Self-determination. *Theory as an Explanation of How Learning Communities Affect Educational Outcomes Research in Higher Education, 52*(8), 853–874.

Betts, J. R., & Morell, D. (1999). The determinants of undergraduate Grade Point Average. The relative importance of family background, high school resources and peer group effects. *Journal of Human Resources, 34*(2), 268–293.

Bhopal, K. (2011). We tend to stick together and mostly we stick to our own kind': British Indian women and support networks at university. *Gender and Education, 23*(5), 519–534.

Bourdieu, P. (1986). The forms of capital. In J. Richardson (Ed.). *Handbook of theory and research for the sociology of education* (pp. 241–258). New York: Greenwood.

Boveda, M. (2017). Habitus, the social capital of working class, and the intersectionality of an Afro-Latina's experiences. In D. Y. Ford, M. T. Scott, R. B. Goings, T. T. Wingfield, & M. S. Henfield (Eds.). *R.A.C.E. Mentoring through social media (53-62)*. Charlotte, NC: Information Age Publishing Inc.

Brooms, D. R. (2018). 'Building us up': Supporting black male college students in a black male initiative program. *Critical Sociology, 44*(1), 141–155.

Brooms, D. R., & Davis, A. R. (2017). Staying focused on the goal: Peer bonding and faculty mentors supporting Black males' persistence in college. *Journal of Black Studies, 48*(3), 305–326.

Brouwer, J., Flache, A., Jansen, E., Hofman, A., & Steglich, C. (2018). Emergent achievement segregation in freshmen learning community networks. *Higher Education, 76*(3), 483–500.

Brouwer, J., Jansen, E., Flache, A., & Hofman, A. (2016a). The impact of social capital on self-efficacy and study success among first-year university students. *Learning and Individual Differences, 52*, 109–118.

Brouwer, J., Jansen, E. P. W. A., Hofman, W. H. A., & Flache, A. (2016b). Een goed begin is het halve werk: Het belang van kleinschalig onderwijs voor de interactie, zelfeffectiviteit, en studiesucces in het eerste semester [Well begun is half done: The importance of small group teaching for interaction, self-efficacy and study success in the first semester]. *Pedagogische Studies, 93*(3), 119–135.

Brown, S. K., & Burdsal, C. A. (2012). An exploration of sense of community and student success using the National Survey of Student Engagement. *The Journal of General Education, 61*(4), 433–460.

Burt, R. S. (1992). *Structural holes: The social structure of competition.* Cambridge, MA: Harvard University Press.

Burt, R. S. (1998). The gender of social capital. *Rationality and Society, 10*(1), 5–46.

Byfield, C. (2008). The impact of religion on the educational achievement of black boys: A UK and USA study. *British Journal of Sociology of Education, 29*(2), 189–199.

Cabrera, A. F., Nora, A., Terenzini, P. T., Pascarella, E., & Hagedorn, L. S. (1999). Campus climate and the adjustment of students to college: A comparison between white students and African American students. *The Journal of Higher Education, 70*(2), 134–160.

Carpenter, P. G., Hayden, M., & Long, M. (1998). Social and economic influences on graduation rates from higher education in Australia. *Higher Education, 35*(4),

399–422.
Carson, L. R. (2009). “I am because we are:” collectivism as a foundational characteristic of African American college student identity and academic achievement. *Social Psychology of Education, 12*(3), 327–344.
Ceglie, R. J., & Settlage, J. (2016). College students persistence in scientific disciplines: Cultural and social capital as contributing factors. *International Journal of Science and Mathematics Education, 14*(Suppl1), S169–S186.
Celant, S. (2013). The analysis of students' academic achievement: The evaluation of peer effects through relational links. *Quality and Quantity, 47*, 615–633.
Cerezo, A., Lyda, J., Beristianos, M., Enriquez, A., & Connor, M. (2013). Latino men in college: Giving voices to their strengths and struggles. *Psychology of Men and Masculinity, 14*(4), 352–362.
Cheng, W., Ickes, W., & Verhofstadt, L. (2012). How is family support related to students' GPA scores? A longitudinal study. *Higher Education, 64*(2), 399–420.
Cherng, H. S., Calarco, J. M., & Kao, G. (2013). Along for the ride: Best friends' resources and college completion. *American Educational Research Journal, 50*(1), 76–106.
Cho, D., & Cho, J. (2019). Influence of Confucian culture and parental satisfaction with engineering majors on academic performance in engineering education. *Journal of Professional Issues in Engineering Education and Practice, 145*(3), https://doi.org/10.1061/(ASCE)EI.1943-5541.0000409.
Cohen, J. (1960). A coefficient of agreement for nominal scales. *Educational and Psychological Measurement, 20*, 37–46.
Cole, E., & Espinoza, A. (2008). Examining the academic success of Latino students in science technology engineering and mathematics (STEM) majors. *Journal of College Student Development, 49*(4), 285–300.
Collings, R., Swanson, V., & Watkins, R. (2014). The impact of peer mentoring on levels of student wellbeing, integration and retention: A controlled comparative evaluation of residential students in UK higher education. *Higher Education, 68*(6), 927–942.
Crozier, G., Reay, D., Clayton, J., Collinader, L., & Grinstead, J. (2008). Different strokes for different folks: Diverse students in diverse institutions- experiences of higher education. *Research Papers in Education, 23*(2), 167–177.
Cruz, D. E. (2012). *Nuestras experiencias: A phenomenological study of latina first generation higher education graduates*. Retrieved from UNLV Theses, Dissertations, Professional Papers, and Capstones (1553) https://digitalscholarship.unlv.edu/thesesdissertations/1553.
Cutright, T. J., & Evans, E. (2016). Year-long peer mentoring activity to enhance the retention of freshmen STEM students in a NSF scholarship program. *Mentoring & Tutoring: Partnership in learning*. https://doi.org/10.1080/13611267.2016.1222811.
Cutrona, C. E., Cole, V., Colangelo, N., Assouline, S. G., & Russell, D. W. (1994). Perceived parental social support and academic achievement: An attachment theory perspective. *Journal of Personality and Social Psychology, 66*(2), 369–378.
Dika, S. L., Pando, M. A., Tempest, B. Q., & Allen, M. E. (2018). Examining the cultural wealth of underrepresented minority engineering persisters. *Journal of Professional Issues in Engineering Education and Practice, 144*(2), Downloaded from https://ascelibrary.org/doi/10.1061/%28ASCE%29EI.1943-5541.0000358.
Dixon-Woods, M., Agarwal, S., Jones, D., Young, B., & Sutton, A. (2005). Synthesizing qualitative and quantitative evidence: A review of possible methods. *Journal of Health Services Research and Policy, 10*(1), 45–53.
Donahoo, S., & Caffey, R. A. (2010). A sense of home: The impact of church participation on African American college students. *Journal of Research on Christian Education, 19*(1), 79–104.
Dumangane, C. (2017). The significance of faith for Black men's educational aspirations. *British Educational Research Journal, 43*(5), 875–903.
Ebert, J., & Heublein, U. (2017). *Ursachen des Studienabbruchs bei Studierenden mit migrationshintergrund. Projektbericht.* Hannover: DZHW.
Eckles, J. E., & Stradley, E. G. (2012). A social network analysis of student retention using archival data. *Social Psychology of Education, 15*(2), 165–180.
Ecklund, A. P. (2013). *Male engineers: An interpretative phenomenological analysis of the experiences of persistence in higher education*(Unpublished doctoral dissertation). Fort Collins, Colorado: Colorado State University.
Eggens, L., Van Der Werf, M. P. C., & Bosker, R. J. (2008). The influence of personal networks and social support on study attainment of students in university education. *Higher Education, 55*(5), 553–573.
Etcheverry, E., Clifton, R. A., & Roberts, L. W. (2001). Social capital and educational attainment: A study of undergraduates in a faculty education. *Alberta Journal of Educational Research, XLVII*(1), 24–39.
Fedesco, H. N., Bonem, E. M., Wang, C., & Henares, R. (2019). Connections in the classroom: Separating the efforts of instructor and peer relatedness in the basic needs satisfaction scale. *Motivation and Emotion*. https://doi.org/10.1007/s11031-019-09765-x.
Ferlander, S. (2007). The importance of different forms of social capital for health. *Acta Sociologica, 50*(2), 115–128.
Fischer, M. J. (2007). Settling into campus life: Differences by race/ethnicity in college involvement and outcomes. *The Journal of Higher Education, 78*(2), 125–161.
Fletcher, J. M., & Tienda, M. (2009). High school classmates and college success. *Sociology of Education, 82*(4), 287–314.
Gallop, C. J., & Bastien, N. (2016). Supporting Success: Aboriginal students in higher education. *Canadian Journal of Higher Education, 46*(2), 206–224.
Garcia, L. D., & Tierney, W. G. (2011). Undocumented immigrants in higher education: A preliminary analysis. *Teachers College Record, 113*(12), 2739–2776.
Gašević, D., Zouaq, A., & Jansen, R. (2013). “Choose your classmates, Your GPA is at stake!” the association of cross class social ties and academic performance. *American Behavioral Scientist, 578*(10), 1460–1479.
Gilardi, S., & Guglielmetti, C. (2011). University life of non-traditional students: Engagement styles and impact on attrition. *The Journal of Higher Education, 82*(1), 33–53.
Gloria, A. M. (1997). Chicana academic persistence: Creating a university based community. *Education and Urban Society, 30*(1), 107–121.
Gloria, A. M., Castellanos, J., Lopez, A. G., & Rosales, R. (2005). An examination of academic non-persistence decisions of Latino undergraduates. *Hispanic Journal of Behavioral Sciences, 27*(2), 202–223.
Gofen, A. (2009). Family Capital: How first generation higher education students break the intergenerational cycle. *Family Relations, 58*(1), 104–120.
Golden, A. E. (2011). *First generation Latina persistence group mentoring and sophomore success*(Unpublished doctoral dissertation). Arizona State University.
Granovetter, M. (1973). The strength of weak ties. *American Journal Of Sociology, 78*, 1360–1380.
Green, A. M., Brand, B. R., & Glasson, G. E. (2018). Applying actor-network theory to identify factors contributing to non-persistence of African American students in STEM majors. *Science Education, 103*, 241–263.
Grier-Reed, T., Ehlert, J., & Dade, S. (2011). Profiling the African American student network. *TLAR, 16*(1), 21–30.
Grier-Reed, T., & Wilson, R. J. (2016). The African American student network: An exploration of Black Students' ego networks at a predominantly white institution. *Journal of Black Psychology, 42*(4), 374–386.
Grills, C. N., Fingerhut, A. W., Thadani, V., & Machón, R. A. (2012). Residential learning communities centered within a discipline: The psychology early awareness program. *New Directions for Teaching and Learning, 132*, 43–55.
Guiffrida, D. A. (2004a). Friends from home: Asset and liability to African American students attending a predominantly white institution. *NASPA Journal, 41*(4), 693–708.
Guiffrida, D. A. (2004b). How involvement in African American students organizations support and hinders academic achievement. *NACADA Journal, 24*(1&2), 88–98.
Guiffrida, D. A. (2005). Othermothering as a framework for understanding African American students' definitions of student-centered faculty. *The Journal of Higher Education, 76*(6), 701–723.
Guiffrida, D. A., & Douthit, K. Z. (2010). The Black student experience at predominantly white colleges: Implications for school and college counselors. *Journal of Counseling and Development, 88*(3), 311–318.
Guillory, R. M., & Wolverton, M. (2008). It's about family: Native American students persistence in higher education. *The Journal of Higher Education, 79*(1), 58–87.
Gwet, K. L. (2008). Computing inter-rater reliability and its variance in the presence of high agreement. *British Journal of Mathematical and Statistical Psychology, 61*, 29–48.
Hansen, M. N., & Mastekaasa, A. (2006). Social origins and academic performance at university. *European Sociological Review, 22*(3), 277–291.
Harper, S. R. (2006). Peer support for African American male college achievement: Beyond internalized racism and the burden of acting white. *The Journal of Men's Studies, 14*(3), 337–358.
Harper, S. R. (2015). Black male college achievers and resistant responses to racist stereotypes at predominantly white colleges and universities. *Harvard Educational Review, 85*(4), 646–674.

Hasan, S., & Bagde, S. (2013). The mechanics of social capital and academic performance in an Indian college. *American Sociological Review, 78*(6), 1009–1032.
Hausmann, L. R. M., Feifei, Y., Schofield, J. W., & Woods, R. L. (2009). Sense of belonging and persistence in white and African American first-year students. *Research in Higher Education, 50*, 649–669.
Heagney, M., & Benson, R. (2017). How mature-age students succeed in higher education: Implications for institutional support. *Journal of Higher Education Policy and Management, 39*(3), 216–234.
Helland, H. (2007). How does social background affect the grades and grades careers of Norwegian economics students. *British Journal of Sociology of Education, 28*(4), 489–504.
Hernandez, P. R., Bloodhart, B., Adams, A. S., Barns, R. T., Burt, M., Clinton, S. M., et al. (2018). Role modeling is a viable retention strategy for undergraduate women in the geosciences. *Geosphere, 14*(6), 2585–2593.
Herndon, M. K., & Hirt, J. B. (2004). Black students and their families: What leads to success in college. *Journal of Black Studies, 34*(4), 489–513.
Herndon, M. K., & Moore, J. L., III (2002). African American factors for student success: Implications for families and counselors. *The Family Journal: Counseling and therapy for couples and families, 10*(3), 322–327.
Hilts, A., Part, R., & Bernacki, M. L. (2018). The roles of social influences on student competence, relatedness, achievement, and retention in STEM. *Science Education, 102*(4), 744–770.
Hobfoll, S., & Stokes, S. (1988). The process and mechanics of social support. In L. Baxler, & S. Duck (Eds.). *Handbook of personal relationships* (pp. 497–517). Oxford: Wiley.
Holland, N. E. (2016). Partnering with a higher power: Academic engagement, religiosity, and spirituality of African American Urban Youth. *Education and Urban Society, 48*(4), 299–323.
Holt, E. A., & Nielson, A. (2019). Learning communities and unlinked sections: A contrast of student backgrounds, student outcomes and in-class experiences. *Research in Higher Education, 60*, 670–683.
Hossler, D., Schmit, J., & Vesper, N. (1999). *Going to college: How social, economic,& educational factors influence decisions students make.* Baltimore: John Hopkins University Press.
Ivan, L., & Duduciuc, A. (2011). Social skills, nonverbal sensitivity and academic success. The key role of centrality in student networks for higher grade achievement. *Revista de Cercetare şi Intervenţie Socială, 33*, 151–166.
Johnson, A. M. (2013). *A different world: African American first generation college women at a selective university*College Park: University of Maryland (Unpublished doctoral dissertation).
Johnson-Ahorlu, R. N. (2013). Our biggest challenge is stereotypes: Understanding stereotypes threat and the academic experiences of African American undergraduates. *The Journal of Negro Education, 82*(4), 382–392.
Johnson-Bailey, J., Valentine, T., Cervero, R. M., & Bowles, T. A. (2009). Rooted in the soil: The social experiences of Black graduate students at a southern research university. *The Journal of Higher Education, 80*(2), 178–203.
Klein, D. (2018). Implementing a general framework for assessing interrater agreement in Stata. *STATA Journal, 18*(4), 871–901.
Knoke, D., & Yang, S. (2008). *Social network analysis.* CA: Sage Publications.
Kraft, C. L. (1991). What makes a successful black student on a predominantly White campus. *American Educational Research Journal, 28*(2), 423–443.
Laireiter, A., & Baumann, U. (1992). Network structures and support functions. In H. Viele, & R. Baumann (Eds.). *The meaning and measurement of support, 35–55*. New York: Hemisphere.
Landis, J. R., & Koch, G. G. (1977). The measurement of observer agreement for categorical data. *Biometrics, 33*, 159–174.
Lane, T. B. (2016). Beyond academic and social integration: Understanding the impact of a STEM enrichment program on the retention and degree attainment of underrepresented students. *CBE-Life Sciences Education, 15*(3), 15 ar39,1-13.
Lim, J. H., MacLeod, B. P., Tkacik, P. T., & Dika, S. L. (2017). Peer mentoring in engineering: (un)shared experience of undergraduate peer mentors and mentees. *Mentoring & Tutoring: Partnership in Learning, 25*(4), 395–416.
Lin, N. (1999). Building a network theory of social capital. *Connections, 22*(1), 28–51.
Lin, N. (2001). *Social capital: A theory of social structure and action.* Cambridge, UK: Cambridge University Press.
Mackinnon, S. P. (2012). Perceived social support and academic achievement: Cross lagged panel and bivariate growth curve analyses. *Journal of Youth and Adolescence, 41*(4), 474–485.
Marginson, S. (2016). The worldwide trend to high participation higher education: Dynamics of social stratification in inclusive systems. *Higher Education, 72*(4), 413–434.
Martin, N. D. (2009). Social capital, academic achievement and postgraduation plans at an Elite private university. *Sociological Perspectives, 52*(2), 185–210.
Martin, J. P., Simmons, D. R., & Yu, S. L. (2013). The role of social capital in the experiences of hispanic women engineering majors. *Journal of Engineering Education, 102*(2), 227–243.
Mattanah, J. F., Brooks, L. J., Brand, B. L., Quimby, J. L., & Ayers, J. F. (2012). A social support intervention and academic achievement in college: Does perceived loneliness mediate the relationship. *Journal of College Counseling, 15*(1), 22–36.
Meeuwisse, M., Born, M. P., & Severiens, S. E. (2011). The family-study interface and academic outcomes: Testing a structural model. *Journal of Educational Psychology, 103*(4), 982–990.
Meeuwisse, M., Born, M. P., & Severiens, S. E. (2014). The family-study interface and academic outcomes: Differences and similarities between ethnic minority and ethnic majority students. *Cultural Diversity and Ethnic Minority Psychology, 20*(3), 401–412.
Meeuwisse, M., Severiens, S. E., & Born, M. P. (2010). Learning environment, sense of belonging, and study success in ethnically diverse student groups. *Research in Higher Education, 51*(6), 528–545.
Moher, D., Liberati, A., Tetzlaff, J., Altman, D. G., & The PRISMA Group (2009). Preferred reporting items for systematic reviews and meta-analyses: The PRISMA statement. *PLoS Medicine, 6*(7), https://doi.org/10.1371/journal.pmed.1000097.
Müller, S., & Schneider, T. (2013). Educational pathways and dropout from higher education in Germany. *Longitudinal and Life Course Studies, 4*(3), 218–241.
Museus, S. D. (2011). Generating ethnic minority student success (GEMS): A qualitative analysis of high-performing institutions. *Journal of Diversity in Higher Education, 4*(3), 147–162.
Nagasawa, R., & Wong, P. (1999). A theory of minority students' survival in college. *Sociological Inquiry, 69*(1), 76–90.
Nelson, I. A. (2019). Starting over on campus or sustaining existing ties? Social capital during college among rural and non-rural college graduates. *Qualitative Sociology, 42*(1), 93–116.
OECD (2018). Education at a glance. Downloaded from https://www.oecd-ilibrary.org/docserver/eag-2018-en.pdf?expires=1539259418&id=id&accname=guest&checksum=161112FE78D4B50C5F14D292E71A8125.
Ong, A., Phinney, J. S., & Dennis, J. (2006). Competence under challenge: Exploring the protective influence of parental support and ethnic identity in Latino college students. *Journal of Adolescence, 29*(6), 961–979.
Osborne, M. (2003). Increasing or widening participation in higher education: A European overview. *European Journal of Education, 38*(1), 5–24.
Oseguera, L., & Rhee, B. S. (2009). The influence of institutional retention climates on student persistence to degree completion: A multilevel approach. *Research in Higher Education, 50*(6), 546–569.
Ovink, S. M., & Veazey, B. D. (2011). More than 'getting us through': A case study in cultural capital enrichment of underrepresented minority undergraduates. *Research in Higher Education, 52*(4), 370–394.
O'Shea, S. (2016). Avoiding the manufacture of sameness: First in family students, cultural capital and the higher education environment. *Higher Education, 72*(1), 59–78.
Palmer, R. T., & Maramba, D. C. (2015). The impact of social capital on the access, adjustment and success of Southeast Asian American college students. *Journal of College Student Development, 56*(1), 45–60.
Palmer, R. T., Maramba, D. C., & Dancy, T. E., II (2011). A qualitative investigation of factors promoting the retention and persistence of students of color in STEM. *The*

Journal of Negro Education, 80(4), 491–504.
Palmer, R. T., Maramba, D. C., & Holmes, S. L. (2011). A contemporary examination of factors promoting the academic success of minority students at a predominantly White university. *Journal of College Student Retention, 13*(3), 329–349.
Papaioannou, D., Sutton, A., Carroll, C., Booth, A., & Wong, R. (2010). Literature searching for social science systematicreviews: Consideration of a range of search techniques. *Health Information and Libraries Journal, 27*(2), 114–122.
Pearce, J., & Down, B. (2011). Relational pedagogy for student engagement and success at university. *Australian Educational Researcher, 38*(4), 483–494.
Peralta, C., Caspary, M., & Boothe, D. (2013). Success factors impacting Latina/o persistence in higher education leading to STEM opportunities. *Cultural Studies of Science Education, 98*(4), 905–918.
Pérez, D., II (2014). Exploring the nexus between community cultural wealth and the academic and social experiences of Latino male achievers at two predominantly White research universities. *International Journal of Qualitative Studies in Education, 27*(6), 747–767.
Pérez, D., II, & Taylor, K. B. (2016). Cultivando Logradores: Nurturing and sustaining Latino male success in higher education. *Journal of Diversity in Higher Education, 9*(1), 1–19.
Pfundmair, M., Graupmann, V., Frey, D., & Aydin, N. (2015). The different behavioral intentions of collectivists and individualists in response to social exclusion. *Personality and Social Psychology Bulletin, 41*(3), 363–378.
Poldin, O., Valeeva, D., & Yudkevich, M. (2016). Which peer matters: How social ties affect peer group effects. *Research in Higher Education, 57*(4), 448–468.
Portes, A. (1998). Social capital: Its origins and applications in modern sociology. *Annual Review of Sociology, 24*, 1–24.
Portes, A., Fernandez-Kelly, P., & Haller, W. (2005). Segmented assimilation on the ground: The new second generation in early adulthood. *Ethnic and Racial Studies, 28*(6), 1000–1040.
Putnam, R. D. (2000). *Bowling alone.* New York: Simon and Schuster.
Reyes, R. A. (2010). *Proving them wrong: Academically resilient first-generation Latinas in college (unpublished doctoral dissertation)*New York: Rutgers- The state university of.
Riegle-Crumb, C. (2010). More Girls Go to College: Exploring the social and academic factors behind the female postsecondary advantage among Hispanic and White students. *Research in Higher Education, 51*, 573–593.
Rodríguez, M. S., Tinajero, C., & Páramo, M. F. (2017). Pre-entry characteristics, perceived social support, adjustment and academic achievement in first-year Spanish university students: A path model. *Journal of Psychology, 151*(8), 722–738.
Roksa, J., & Kinsley, P. (2018). The role of family support in facilitating academic success of low income students. *Research in Higher Education, 60*(4), 415–436.
Román, S., & Diaz, P. J. C. (2008). An examination of the interrelationships between self-esteem, others' expectations, family support, learning approaches and academic achievement. *Studies in Higher Education, 33*(2), 127–138.
Rondini, A. C. (2016). Healing the hidden injuries of class? Redemption narratives, aspirational proxies, and parents of low-income, first- generation college students. *Sociological Forum, 31*(1), 96–116.
Rubin, M., & Wright, C. L. (2015). Age differences explain social class differences in students' friendship at university: Implications for transition and retention. *Higher Education, 70*, 427–439.
Russell, M. L., & Atwater, M. M. (2005). Traveling the road to success: A discourse on persistence throughout the science pipeline with African American students at a predominantly white institution. *Journal of Research in Science Teaching, 42*(6), 691–715.
Ryan, L., Sales, R., Tilki, M., & Siara, B. (2008). Social Networks, social support and social capital: The experiences of recent Polish migrants in London. *Sociology, 42*(4), 672–690.
Samuelson, C. C., & Litzler, E. (2016). Community cultural wealth: An assets-based approach to persistence of engineering students of color. *Journal of Engineering Education, 105*(1), 93–117.
Schulz, B., Horr, A., & Hoenig, K. (2017). *The position generator in the NEPS (NEPS Survey Paper No. 23)*. Bamberg, Germany: Leibniz Institute for Educational Trajectories, National Educational Panel Study.
Solanki, S., McPartlan, P., Xu, D., & Sato, B. K. (2019). Success with EASE: Who benefits from a STEM learning community? *PLoS One, 14*(3), e0213827. https://doi.org/10.1371/journal.pone.0213827.
StataCorp (2015). *Stata statistical software: Release, Vol. 14*. College Station, TX: StataCorp LP.
Stolle-McAllistor, K., Domingo, M. R. S., & Carrillo, A. (2011). *Journal of Science Education and Technology, 20*, 5–16.
Storlie, C. A., Moreno, L. S., & Portman, T. A. A. (2014). Voices of hispanic college students: A content analysis of qualitative research within the hispanic journal of behavioral sciences. *Hispanic Journal of Behavioral Sciences, 36*(1), 64–78.
Strayhorn, T. L. (2008). The role of supportive relationships in facilitating African American males' success in college. *NASPA Journal, 45*(1), 26–48.
Strayhorn, T. L. (2010). When race and gender collide: Social and cultural capital's influence on the academic achievement of African American and Latino Males. *The Review of Higher Education, 33*(3), 307–332.
Strom, R. E., & Savage, M. W. (2014). Assessing the relationships between perceived support from close others, goal commitment, and persistence decisions at the college level. *Journal of College Student Development, 55*(6), 531–547.
Theodore, R., Gollop, M., Tustin, K., Taylor, N., Kiro, C., Taumoepeau, M., et al. (2017). Māori university success: What helps and hinders qualification completion. *Alternative: An international journal of indigenous peoples, 13*(2), 122–130.
Thiele, L., Sauer, N. S., & Kauffeld, S. (2018). Why extraversion is not enough: The mediating role of initial peer network centrality linking personality to long-term academic performance. *Higher Education, 76*, 789–805.
Thomas, S. L. (2000). Ties that bind: A social network approach to understanding student integration and persistence. *The Journal of Higher Education, 71*(5), 591–615.
Thomas, D. (2014). Factors that influence college completion intention of undergraduate students. *Asia Pacific Educational Research, 23*(2), 225–235.
Tinto, V. (2012). *Completing college: Rethinking institutional action.* Chicago: University of Chicago Press.
Tomás-Miquel, J.-V., Expósito-Langa, M., & Nicolau-Juliá, D. (2016). The influence of relationships networks on academic performance in higher education: A comparative study between students of creative and non-creative discipline. *Higher Education, 71*(3), 307–322.
Turner, J. S., & Juntune, J. (2018). Perceptions of the home environments of graduate students raised in poverty. *Journal of Advanced Academics, 29*(2), 91–115.
vanRhijn, T. M., Lero, D. S., Bridge, K., & Fritz, V. A. (2016). Unmet needs: Challenges to success from the perspectives of mature university students. *The Canadian Journal for the Study of Adult Education, 28*(1), 29–47 43.
Webber, L. A. (2017). Women, higher education and family capital: 'I could not have done it without my family!'. *Research in Post Compulsory Education, 22*(3), 409–428.
Wilcox, P., Winn, S., & Fyvie-Gauld, M. (2005). 'It was nothing to do with the university, it was just the people': The role of social-support in first year experience of higher education. *Studies in Higher Education, 30*(6), 707–722.
Williams, S. R. (2017). *Factors for academic success among African American men: A phenomenological study* (doctoral dissertation). Retrieved from Louisiana Tech Digital Commons Dissertation (64) https://digitalcommons.latech.edu/dissertations/64.
Willingham, D. (2012). Why does family wealth affect learning? *American Educator, 36*(1), 33–39.
Wintre, M. G., Dilouya, B., Pancer, S. M., Pratt, M. W., Birnie-Lefcovitch, S., Polivy, J., et al. (2011). Academic achievement in first-year university. Who maintains their high school average? *Higher Education, 62*(4), 467–481.
Wong, B. (2018). By chance or by plan? The academic success of nontraditional students in higher education. *AREA Open, 4*(2), 1–14.
Wongpakaran, N., Wongpakaran, T., Weddng, D., & Gwet, K. L. (2013). A comparison of Cohen's kappa and Gwet's AC1 when calculating inter-rater reliability coefficients: A study conducted with personality disorder samples. *BMC Medical Research Methodology, 61*, 1–7.
Yosso, T. J. (2005). Whose culture has capital? A critical race theory discussion of community cultural wealth. *Race, Ethnicity And Education, 8*(1), 69–91.