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Identity and Academic Success among Underrepresented Ethnic Minorities: An Interdisciplinary Review and Integration

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A growing body of literature provides insight into the ingredients for academic success for underrepresented ethnic minority students at all points of the academic pipeline. Theory and research in developmental and social psychology, education, and sociology all point to the important role of identity for students' academic success. The purpose of this article is to review some of the major findings across these social science disciplines to identify points of synergy that can inform effective policy recommendations. The review is structured around three points of convergence across disciplines: (1) prejudice and stereotype threat; (2) the role of social support; and (3) the availability of options for identity development. Reviewing these three topics sheds light on how the relation between identity and academic success must be understood on individual, relational, and institutional levels of analysis.

Educational equity for underrepresented ethnic minority students (URMs) in the United States, defined as students from African, Chicano/Latino, and Native American heritages, continues to be elusive despite the many efforts of social scientists and the implementation of policies and programs to increase educational opportunities for URMs. URM students face barriers at every step of the academic

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pipeline, from preschool to the professoriate, with an increasingly smaller share of representation that is particularly pronounced in science, technology, engineering, and mathematics (STEM) fields (Cooper & Burciaga, 2011; Eccles, 2005; Gándara & Maxwell-Jolly, 1999).

Nevertheless, a growing body of literature provides insight into the ingredients for academic success for URM students at all points of the academic pipeline. Important work is being conducted across academic disciplines and subdisciplines in psychology, education, sociology, and anthropology. The primary objectives of this article are threefold: (1) to review some of the major findings from these disciplines; (2) to provide an integrated perspective that draws on the strengths of each, identifying points of synergy that can guide future work; and (3) to use this synthesis to make effective policy recommendations.

A common thread that runs through social science disciplines is the importance of identity for students' academic success and persistence throughout the pipeline. Here we construe identity broadly to mean both a sense of collective belonging (Tajfel, 1981) and an emerging sense of clarity about the self and purpose in life (Erikson, 1968). The question of identity is an interdisciplinary one pursued widely in the social sciences, humanities, and arts (Brubaker & Cooper, 2000). In this article, we attempt to provide some structure for the many conceptualizations of identities in the social sciences, how they are constructed, and how they matter for the educational success of ethnic minority youth. In particular, we highlight how identities operate at multiple levels of analysis; identity development is not solely an individual project, but rather, is carried out through important interpersonal relationships in the context of institutional structures (see Cooper, Behrens, & Trinh, 2009).

Our view of the relevant literatures point to three areas of convergence that can help elucidate such a structure: (1) prejudice and stereotype threat; (2) the role of social support; and (3) the availability of options for identity development. These three points are not the only concerns that matter for identity development or academic success, but rather, they are topics that are addressed across multiple disciplines that illustrate the levels of analysis that must be considered when examining the relations between identity and educational achievement. The remainder of this article will be organized around these three broad topics, but first, a brief review of the various disciplinary perspectives that we draw from is in order.

A Theoretical Buffet: Welcome to Research on Identity Development

Inquiry into both identity and education are inherently interdisciplinary, as questions about who people believe they are, what they want to do in life, and how education contributes to these goals can be examined from a variety of perspectives. In this article, we attempt to integrate theory and research among

several social science disciplines concerned with identity and education. The utility of considering research from different disciplines lies in their ability to shed unique light on a common problem, as in the well-known Indian fable of the five men examining an elephant in the dark, each with his own understanding of the nature of the elephant.

Psychology is generally concerned with the thoughts and behaviors of individuals, although there are variations by subdiscipline in how this is accomplished. In terms of identity, developmental psychologists draw heavily from Erikson's (1968) psychosocial theory of lifespan development. Erikson specified that forming an identity, which he viewed as a personal sense of coherence across time, context, and multiple identifications, is a formative task emerging in adolescence and continuing throughout adulthood. Subsequently, a large literature pertaining to academic and occupational identities has burgeoned, focusing on topics such as educational and career aspirations, possible selves/future orientations, school engagement, educational and occupational knowledge, and academic pathways. The overarching themes of developmental psychologists' work include documenting change over time, how earlier experiences predict later outcomes, and how at times, specific experiences can alter individuals' developmental pathways.

In contrast to developmental psychology, social psychology focuses predominantly on situational behavior. Tajfel's (1981) social identity theory serves as the basis for many social psychological inquiries into identity. Social identity theory posits that identification with social groups—such as race, ethnicity, gender, social class, and religion—is heightened in intergroup situations in which individuals view themselves as the minority and perceive some level of threat. This perceived threat leads to heightened identification with the group and depersonalization of the individual to maximize in-group solidarity and self-worth (Tajfel & Turner, 1986). Because groups wield different amounts of power, members of groups with less power may be subject to prejudice and discrimination, which can lower their self-esteem. In the case of academics, for example, URMs may become aware of negative stereotypes about their achievement potential, leading them to question their abilities and disengage from school.

As illustrated by social identity theory, many social psychologists conceptualize contexts as proximal and immediate, focusing on situations that give rise to increased identification. In contrast, researchers in educational anthropology examine in depth how cultural values and processes—which operate at both proximal and distal levels, contour the diversity and complexity of the school contexts that students inhabit. Much of this work investigates URM students' orientation toward school and features of the school context that shape their academic experiences (e.g., Gibson, Bejinez, Hidalgo, & Rolón, 2004; Ogbu, 1997; Phelan, Yu, & Davidson, 1994). The ethnographic nature of many of these studies provides a rich picture of how the educational context can encourage or discourage students

in forming academic identities and holds implications for school reforms at local, state, and national levels.

Sociological research is broadly concerned with how social structures shape behavior and is therefore less focused on the individual than psychology. Oishi, Kesibir, and Snyder (2009) suggested there are two primary facets of sociology that can be understood as macrosociology and microsociology. Macrosociology emphasizes social structures and collectives and de-emphasizes individuals. For example, schooling in the United States is a system that reproduces existing social inequalities, although many teachers and staff working in schools may hold egalitarian beliefs. In contrast, microsociology seeks to link aspects of social structures to how individuals and groups function within them. In other words, these researchers examine social interactions within the context of the cultural and historical forces that shape them and thus consider both structure and agency. Despite their differences, both sociological perspectives emphasize macrolevel influences to a greater degree than do most psychologists.

Returning to the fable of the elephant, after comparing notes about their observations on the elephant, the five men broke into an argument, each feeling that his own version of the truth was the correct representation of reality. This is an apt metaphor for the disciplines that we discuss in this article. Different disciplines, as well as investigations within disciplines, situate their research within different metaphors on the nature of human existence (Pepper, 1942). These metaphors are the basis of scientific theories that can be both incompatible with one another (Cooper, 1987), and are prone to fundamental modifications when translated across disciplines (e.g., a sociological theory can become more individual-centered when adopted by psychologists; see Syed, 2010b). Thus, our intention here is to present pertinent theory and research that may, at times, be resistant to integration, but nonetheless can provide both complementary and distinct insights into the question of how identity is associated with the academic experiences of URM students.

Identifying with School: Stereotype Threat and Academic Identities

There are many negative stereotypes about URM students and their ability to succeed in academics. Although many researchers, educational practitioners, and policy makers have challenged these stereotypes or deficit interpretations of URM students, these interpretations are resistant to change (Good & Aronson, 2008). Indeed, a federal panel of scientific researchers and educators convened in 2008 to seek answers to why URM students are not better represented in science (Schmidt, 2008). Many concluded that the major issue was lack of preparation, rooted in social class and parenting styles, as opposed to attendance in underresourced schools. Most on the panel believed that URM students should not attend rigorous academic institutions, and should choose lower-tier colleges that are better aligned with the preparation they received in high school. Thus, the conclusion was one of

deficient ability within a fair and just system, without deep questions about how the system itself might perpetuate the inequalities.

The social psychological literature on prejudice, discrimination, and stereotyping is extensive (for reviews see Stangor, 2009, and edited volumes by Nelson, 2009, and Quintana & McKown, 2008). Within the context of academics, the concept of stereotype threat (Steele, 1997) has emerged as one of the most influential social psychological theories—or psychological theories more broadly—pertaining to academic inequalities. Stereotype threat refers to the phenomenon that negative stereotypes about particular groups can be internalized by individuals in high-stakes situations (e.g., educational testing), thus impairing their performance and confirming the stereotype (Steele, 1997). In the following section, we will discuss some of the major findings on stereotype threat, attempt to delimit situations in which it is appropriate for the theory to be applied, and illustrate how incorporating perspectives outside of social psychology both complicates and clarifies the role of stereotype threat in URMs' academic experiences.

The original stereotype threat research focused on the performance of African Americans on a test of intelligence (Steele & Aronson, 1995). By manipulating instructions, the researchers demonstrated that African Americans underperformed on such tests when they believed them to be diagnostic of their ability, compared with African American students who did not believe the test was diagnostic. No such difference was observed for White students. When African Americans had reason to believe that the negative stereotype did not apply, that stereotype was no longer threatening to them in that situation. These general findings, in various forms, have been replicated many times (see Davis & Simmons, 2009; Smith, 2004; Walton & Cohen, 2003, for reviews and discussion of mediators and moderators) and extended to other groups facing stereotypes about ability, such as women in math and the sciences (Spencer, Steele, & Quinn, 1999). The stereotype threat effect has been robust throughout the experimental literature.

Perhaps the chief criticism of the stereotype threat phenomenon is its ecological validity. Nearly all of the research demonstrating the effect has come from experimental studies conducted in controlled laboratories, prompting questions about whether and how it translates to the real world and thus its relevance to educational policy (Cullen, Hardison, & Sackett, 2004; Sackett, Hardison, & Cullen, 2004; Whaley, 2009). Several studies investigating this question have emerged, with findings still inconclusive (see Danaher & Crandall, 2008; Stricker & Ward, 2004, 2008, for an exchange on this issue). Field experiments are limited by the ethical and logistical constraints of altering the procedures for administering high-stakes tests, making it difficult for findings to translate directly (Cullen et al., 2004, but see Good, Aronson, & Harder, 2008 for an innovative approach with women in math). Despite questions about whether the stereotype threat phenomenon is applicable to the real world, many URM students feel a lack of belonging in classrooms, either from being aware of their underrepresentation or because of stereotypes

explicitly or implicitly activated by teachers and classmates (Syed, 2010c; Tinto, 2000). Students' experiences with these stereotypes can threaten their sense of belonging in academic settings, highlighting the importance of identity.

Appropriate Applications and Expanded Perspectives

The stereotype threat phenomenon is most applicable to those students who highly identify with the domain being threatened, such as high-achieving African American students. As a result, in the context of stereotype threat, identity emerges as an important construct for understanding the academic experiences of URM students. Unfortunately, identity has seldom been examined in studies of stereotype threat. Research has examined how the participants identify in terms of gender or racial identity (Cohen & Garcia, 2005; Pronin, Steele, & Ross, 2004), but seldom how much they identify with the academic domain of interest. That is, high math-achieving African American students should be particularly susceptible to stereotype threat because they are highly math-identified. Math identity is typically inferred from students' presence at an elite university or enrollment in honors or advanced placement courses. Although students often identify with domains in which they excel (Brown & Lent, 1996), these factors are neither necessary nor sufficient for identification. One rare study assessed math identity among male and female high school students in Germany (Keller, 2007). Whereas men's performance was not affected by math identity or the threat manipulation, women's performance was. High math-identified women performed worse under the threat condition than did low math-identified women in the threat condition and high math-identified women in the no-threat condition. Thus, domain-specific academic identities play an important role in how students react to stereotypes.

Other research on stereotype threat—although still scant—has examined school or academic identities more broadly, rather than in specific domains. Osborne and Walker (2006) assessed identification with schooling among an ethnically diverse sample of incoming ninth graders. School-identified ethnic minority students were more likely to withdraw from school within 2 years of entering than were low school-identified ethnic minority students. No such association was found for the White students. These findings provide indirect evidence that the URM students most highly identified with academics are at the greatest risk for adverse academic outcomes. Unfortunately, the pervasiveness of these negative stereotypes in schools and society make it difficult to implement policy changes (Good & Aronson, 2008). Still, we know that identities are dynamic and ever-evolving (Erikson, 1968). As a result, if identity is an important aspect of URM educational success, it is crucial to understand how students come to identify and de-identify with school in the first place.

Whether or not students identify with school is not a simple question, and the paths that students take toward school identification are not linear (Cooper,

Domínguez, & Rosas, 2005). The heterogeneity in how and when students create and maintain academic identities calls for theoretical and methodological research strategies that are appreciative of these individual differences. Researchers in educational anthropology and developmental psychology have attempted to chart the variety of paths that students take through school—both successful and not—while providing perspectives on how students negotiate, or succumb to, the academic challenges they face. Germane to the current discussion is the shift away from universal models of what is normative or typical toward more context-dependent models of identity development. This is accomplished somewhat differently in different fields, as described below.

Developmental psychologists are increasingly recognizing that there is not one normative path to positive development that youth follow. Indeed, the developmental concepts of equifinality and multifinality are proving to be compelling, particularly with regard to educational pathways (Cauce, Coronada, & Watson, 1998; Garcia Coll, Akerman, & Cicchetti, 2000). Equifinality refers to how individuals may follow different life paths to the same outcome, whereas multifinality refers to individuals sharing a common starting point yet ending up in different places. Cooper and colleagues have demonstrated these concepts in the context of students' math and language pathways (Cooper, Cooper, Azmitia, Chavira, & Gullatt, 2002; Cooper et al., 2005; see also Garcia Coll, Szalacha, & Palacios, 2005). Looking across the high school years and into college, they found evidence in three longitudinal studies for a group of students who performed consistently high as well as a declining group who started with high grades and then steadily decreased, illustrating multifinality. Equifinality can be seen in the pathways of the decliners and the persistently low-achieving students; both groups were doing poorly in math at the end of high school. Thus, the declining group shared similarities with both the consistently high and low achievers, depending on the point in time in high school considered. The policy implications of this perspective on development are twofold: that "one-size fits all" interventions are not likely to be effective, and that heterogeneity in developmental trajectories must be considered.

A complementary approach is taken by researchers in educational anthropology who take a multidimensional perspective on the nature of the school context. Ogbu's (1997) influential cultural–ecological framework situated educational disparities between Whites and ethnic minorities, particularly African Americans, within broader systems of inequality in the United States. In doing so, he paid particular attention to the heterogeneity within URM populations by examining the interplay between school factors, historical and systemic factors, and what he called community forces, which includes language, culture, social interactions, and identity. As Ogbu described, he approached his study of ethnic minorities' academic experiences as an anthropologist would, considering each group as its own culture and examining all aspects of their experiences. This approach enabled him to understand the similarities and differences among ethnic groups in the

role of different factors (e.g., school, historical, community) for school performance. How these factors interact is unique to different schools, giving rise to context-specific opportunities and constraints for identity development.

An example of the approach described by Ogbu can also be seen in Gibson's (2005) study of a California high school consisting predominantly of White and Mexican-heritage students, many of the latter being children of migrant farm workers. Gibson described the school environments of these two groups as so different as to practically constitute two different schools. The Mexican-heritage students occupied marginalized positions that compromised their sense of belonging and academic engagement, influencing their choice of classes, their participation in extracurricular activities, and even the physical space they occupied on campus. The school's Migrant Education Program, however, provided a welcoming space and supportive environment for these students. Through their involvement in the program, Mexican-heritage students—whether children of migrant farm workers or not—could find a sense of belonging within the larger context of feeling alienated in the school. Although positive, as Gibson rightly points out, such a program only served a small number of students and did little to alter the structures of the school that promoted lack of belongingness and disengagement.

A notable strength of school-based research is the interconnection between observed behaviors and the school context in which they occurred. This strength gives rise to the opportunity to implement changes to policies at the school level that can then be potentially extrapolated to districts, and perhaps even states. An example of this approach is the Papahana Kaiapuni Hawaiian language immersion program, whose development was documented by Yamauchi, Ceppi, and Lau-Smith (1999), a group of educational psychologists. Due to colonialist policies that banned the use of the native Hawaiian language, by the 1980s the number of native speakers had decreased to such low levels that the language was on the verge of disappearing forever. In response, Hawaiian language immersion preschools were established. Once these children were ready for kindergarten, their parents lobbied to implement an immersion program in the public schools, which was approved for K-1 classes. Through continued parental commitment and tireless lobbying, the immersion program was extended to K-6, and then to K-12. In 2004, there were over 1,500 students enrolled in the program at 19 different sites across the state (Yamauchi, Lau-Smith, & Luning, 2008). What began as a small effort by parents and activists ultimately became a statewide effort to revive the Hawaiian language and culture. As demonstrated in other work (Yamauchi, Billig, Meyer, & Hofschire, 2006), a high school program that integrated aspects of the Hawaiian culture into the curriculum fostered a greater sense of belonging to school and community as well as career identity among its students.

In this section, we have traveled from the controlled laboratory of the social psychologists studying stereotype threat to the sociocultural uprising of Hawaiian-

language immersion schools. In doing so, we have attempted to highlight variations in identification and school performance over time and context, and how context-specific research can be effective for translating research to policy. In his critique of stereotype threat research, Whaley (2009) states the policy implications flowing from stereotype threat research “would focus our efforts on minimizing the impact of racial stereotypes instead of promoting a strong ethnic/racial identity and racial socialization” (p. 493). In other words, Whaley argues for the need of proactive rather than reactive policies. Ethnic identity and racial socialization have been shown to have protective effects in a number of life domains, including academic achievement and motivation, well-being, substance use, and the ability to successfully cope with discriminatory experiences (Neblett, Terzian, Harriott, 2010). Indeed, attention to how we can promote strong identities that can serve as resources to overcome a variety of stereotypes may have a wider and more long-lasting impact. We address this issue throughout the remainder of this article by examining identities in the context of interpersonal relationships and institutions.

Supportive Agents: Identity and Education as a Shared Enterprise

Academic achievement and educational advancement do not rest on the shoulders of the students alone. Indeed, research on identity and schooling has consistently highlighted the importance of mentors and the social and instrumental support from families, peers, teachers, and programs for students’ academic success throughout the pipeline. These agents provide both instrumental and socioemotional support that students draw on to pursue their career goals and maintain positive mental health. Social support is viewed as directly related to identity development, as different support figures can act as “identity agents” or “cultural brokers”—individuals who have a vested interest and play an active role in the development of youths’ identities (Cooper, Denner, & Lopez, 1999; Schachter & Ventura, 2008). Although students from all ethnic backgrounds require and benefit from such support, for URM students the needs are heightened in response to qualitatively different experiences that must be negotiated, such as feelings of isolation and stereotypes about their ability to succeed. In this section, we will describe these experiences and illustrate how URM students draw from multiple sources of support who may act as both resources and challenges (Cooper et al., 2002).

Mentors and Role Models

Research in a variety of disciplines has contributed to understanding how key social support figures can be motivational for success for ethnic minority youth, and how the lack of such figures can act as a barrier to advancement.

For example, some research has pointed to the importance of role models and mentors who come from similar ethnic backgrounds as the students (Zirkel, 2002). These figures are believed to provide prototypes that facilitate students' ability to envision themselves occupying these positions and instill a sense of academic self-efficacy (Markus & Nurius, 1986). In the context of STEM education, the ability to construct such an imagined future is hindered considerably by the very small number of ethnic minority teachers and professors in those fields (Gándara & Maxwell-Jolley, 1999). Thus, the relatively few URM students in STEM, paired with the low availability of same-ethnicity mentors, suggest that having a match may be particularly important for URM adolescents.

The research evidence on the benefit of matched mentors, however, is equivocal (Gándara & Mejorado, 2005). One shortcoming of past research is that much of it was based on the assumption that having a mentor with the same background was important to the student. That is, the fact that there are likely individual differences among URM youth in how important it is for the student to have a matched mentor has been largely overlooked. A study of adolescents participating in a 4-week STEM summer program addressed this limitation by independently assessing how much contact with a matched mentor the adolescents had and how important it was to them have such a mentor (Syed, Goza, Chemers, & Zurbruggen, in press). URM students were less likely to report having contact and more likely to endorse having a matched mentor as important, although there were important individual differences (see also Blake-Beard, Bayne, Crosby & Muller, 2011). Those students who placed importance on having a matched mentor and reported that they received mentoring during the course of the program showed greater increases in feelings of identity and belongingness as a science student, which are essential components of committing to a career in science (Chemers et al., 2010; Chemers, Zurbruggen, Syed, Goza, & Bearman, 2011; see also Erikson, 1968). Thus, the identity-making function of having a matched mentor appears to be most powerful for those students who are yearning for such a relationship, rather than all URM students. Exploring individual differences such as these helps move away from stereotypical assumptions of what URM students want or need to be successful in school.

Beyond Mentors: Broad Conceptions of Social Support

Although academic mentors can be important for URM educational success, they are not the only resources that students draw upon. In particular, research indicates that family members, peers, and teachers can contribute to—yet also restrict—academic success for URM students. Families are often the first to be credited for successes as well as the first to be blamed for problems. In terms of URM academic experiences, the latter has been the norm. Going back to the infamous notion of the “culture of poverty” (Lewis, 1966), URM students' families have

been thought of as a hindrance to their success, which can be seen in the 2008 federal report on URMs in science discussed previously. Theories of social and cultural capital advanced by sociologists are aimed at providing a structural rather than dispositional account of the challenges faced by URMs (Bourdieu, 1977; Coleman, 1988). Social capital (e.g., social networks, connections) and cultural capital (e.g., parent education, dominant cultural mores, and knowledge of how systems work) have been viewed as just as important as economic capital in social reproduction, and highlight the role of access and privilege for social mobility. Ostensibly lifting blame from families and placing it within social structures, social and cultural capital theories became quite popular and, in many ways, overextended (see Kao & Rutherford, 2007).

In her critique of the social capital approach, Yosso (2005) describes how social capital has often been used as a deficit model, holding the forms of capital held by the White middle class as the norm to which all others are judged (see also Carter, 2003, but for arguments on the value of social capital models, see Portes & Fernández-Kelly, 2008). Yosso proposes the concept of “community cultural wealth,” which addresses the forms of capital that are relevant to different cultural communities, particularly communities of color. For example, Yosso proposes that familial capital can provide a sense of community, belonging, and shared experience that serves as a resource in times of struggle. Yosso sees familial capital as not limited to the immediate family, but can include extended family members (living or dead) and friends (see also Stack & Burton, 1993, on “kinscripts” within African American families and Ebaugh & Curry, 2000, on “fictive kin”).

The concepts of community cultural wealth and familial capital are consistent with the work in educational anthropology on “funds of knowledge” (Moll, Amanti, Neff, & Gonzalez, 1992). The funds of knowledge approach seeks to understand how the rich knowledge and skills found in households can be integrated into classroom learning. For example, through knowledge of household practices, a sixth-grade teacher learned of a parent who made Mexican candies. The teacher created a unit that built from this expertise, including having the parent visit the class to share her knowledge. Through carefully crafted curriculum, students were able to explore topics related to math, science, health, consumer education, cross-cultural practices, advertising, and food production, all centered around a topic in which they were interested. Importantly, seeing parents from diverse backgrounds as educational resources helped provide greater integration between home and school life.

Complementary work in other fields has considered the different ways that parents of URM students contribute to, rather than hinder, their academic success. Several studies have documented that parents with low educational attainment have high expectations for their children (Chang, Chen, Greenberger, Dooley, & Heckhausen, 2006; Cooper et al., 1994). Not only does their disadvantaged background serve as inspiration and motivation for their children to succeed, but

parents also frequently communicate to their children how their lack of education has limited their options in life and thus, their children should go to college to have a better life (Cooper et al., 1994, 2005; Syed, 2010a). As Tierney and Auerbach (2006) explain, these parents make use of “invisible strategies” such as verbal encouragement and financial sacrifice, rather than the communication with teachers and volunteering practices seen in White middle-class families. Finally, as Hughes et al. (2006) suggest, parents can also discuss stigma and prejudice with their children, thus helping them develop strategies that will help them cope with negative stereotypes at school and society.

Parents can play an important role in youth’s academic experiences, but they are not their only source of support. Developmental research on adolescents’ “multiple worlds” has examined how ethnic-minority youth coordinate different support systems, or worlds, of friends, families, teachers, and communities, to foster academic success (Cooper et al., 2002; Phelan et al., 1994). Importantly, social support is conceptualized as a dynamic network or system that can be both additive and compensatory (Levitt, Weber, & Guacci, 1993; Reis, Azmitia, Syed, Radmacher, & Gills, 2009). One key finding from this line of research is that different supportive agents seem to play different roles for positive youth development (Azmitia, Cooper, & Brown, 2009). For example, in a school-based sample, while family support and guidance—both emotional and educational—was the strongest predictor of math grades among Latino adolescents, teachers also played an important role by helping with homework. Thus, while families can serve as an important resource for building academic aspirations, teachers provide instrumental support necessary for achievement.

Conceptualizing social support as an evolving constellation of systems requires understanding how support is a dynamic process. An important contribution of the developmental literature is the changing nature of these sources of support over time. Research with mostly White youth indicates that, as they move through adolescence and into young adulthood, they increasingly rely on friends for social and emotional support relative to family (Buhrmester & Furman, 1987; Furman & Buhrmester, 1992). Even over short time periods, support is dynamic, as research has documented that peers in particular are viewed as both a resource and a challenge for students’ academic achievement (Azmitia & Cooper, 2001; Cooper, 2011).

The increasing importance of peers and institutional supports is highlighted in a recent mixed-methods study of young adults’ transition to college (Azmitia, Syed, & Radmacher, 2011). Quantitative analyses indicated that family support was not related to mental health trajectories over the first year of college, but friends’ support was associated with more positive mental health. Analysis of the interview data generally supported the quantitative findings. In particular, peers and friends stood out as being especially important to the students’ transition to college. The students discussed the importance of feeling like they belonged

at college and finding a group of peers who shared their interests and helped them feel like they belonged there. In this way, peers served as identity agents that could facilitate social integration through introducing them to new people or inviting them to campus events. Because White students were more likely to attend college with friends from high school and to be familiar with college activities and practices, they typically found creating academic and social niches easier than URM students, who also were more likely to struggle with creating an academic identity that integrated other identity domains, such as ethnicity, race, and social class (see also Azmitia, Syed, & Radmacher, 2008).

The centrality of peers during the transition to college does not suggest that families are not important. Indeed, research that has examined networks or support has found that students with integrated support across multiple domains (i.e., peers, families, teachers) have better mental health than those who have high friend support but are lacking family support (Azmitia et al., 2011; Reis et al., 2009). A further consideration is that the college context that the students inhabit may have an impact on what support systems they draw from. The research described previously was situated in a residential university, meaning that the vast majority of students moved there from other towns and lived on campus their first year. This type of transition experience calls for the development of new support figures that are in the immediate environment, roles that are largely filled by peers. But the reality of contemporary college-going is that most students do not fill the mold of so-called “traditional” college students. Nearly three-quarters all students in United States are considered “nontraditional” (U.S. Department of Education, 2002), meaning that they are older than age 22, work at least part time, live at home, and/or have families of their own. These college students inhabit quite different social and educational contexts than do students who go off to college on their own. Unfortunately, research that examines these students’ experiences has been slow to catch up with the changing nature of college-going. Some evidence comes from research with Latino students attending a community college, for whom families remain the most salient sources of support (Cooper, Burciaga, Domínguez, & Su, 2008). That students’ social support networks may vary as a function of their college context highlights how institutions can contour the identity development process. In the next section, we discuss the ways in which institutions can restrict access to educational equity for URM students and constrain the identities that URM students can develop.

Institutional Affordances: Availability of Options and Identity Constraints

Given its disciplinary focus on understanding individual behavior and mental processes, it is not surprising that psychology has generally come up short in incorporating macrolevel factors into its theorizing about the individual experience. This perspective has largely been the terrain of education, law, sociology, and

anthropology. Despite this disciplinary cleavage, the need for integrating perspectives across disciplines has been advocated by many (Cooper & Denner, 1998; Oishi et al., 2009). In this section, we highlight how such a perspective can contribute to deeper understanding of the academic landscape that URM students must negotiate. In particular, we examine educational options that students ostensibly have available to them, and how institutional structures constrain these options for many URM students.

Tracking Disparities: The Impact of Ability Grouping in Schools

Ability grouping, also called tracking, is a widely implemented educational system that refers to using perceived ability to assign students to instructional groups, with the primary goal of facilitating academic instruction and achievement (Ansalone, 2004). The concept of tracking in high schools in the United States can be traced back to the origins of formal compulsory schooling itself, wherein schooling was founded as a means of preserving and reproducing the existing social order (Bowles & Gintis, 1976). Indeed, long before compulsory schooling was the norm in the United States, Thomas Jefferson proposed a two-track system of schooling, one for the “laborers” and one for the “learned.” Contemporary systems of ability grouping take varied forms, can be both formally and informally specified, and can have different structural characteristics (Ansalone, 2004). Regardless of the system, most high schools worldwide employ some form of ability grouping. In Germany, for example, students are tracked at fourth grade by teachers, and immigrant youth are routinely overrepresented in nonacademic tracks (Crul & Schneider, 2009).

In practice, ability grouping segregates ethnic minority and low-income youth from the rest of their peers (Bowles & Gintis, 1976). Youth from ethnic minority and low-income backgrounds are vastly overrepresented in remedial tracks (Mickelson & Heath, 1999; Oakes, 2005). Research suggests that this overrepresentation can have serious consequences for ethnic minority students’ academic performance (Mickelson & Heath, 1999) and psychological well-being (Jost, 1999). Furthermore, tracking systems are not limited to students. In critical analyses of the role of teachers, sociologists have documented that teachers themselves become tracked (Finley, 1984; Kelly, 2004; Mehan, 2007; Yonezawa, Stewart, & Serna, 2002). Finley’s (1984) school-based study showed that some teachers only taught high-track classes, whereas others taught primarily lower-track classes, even though classes were supposed to be divided evenly. To the teachers who taught the higher-track classes, class assignments were perceived as a meritocratic process, whereas teachers assigned to lower-track classes pointed to the other teachers’ political connections as the reason for their assignments. Meanwhile, those who primarily taught in the middle-level tracks felt they were more capable than teachers in the lower tracks but just as able as those teaching higher

tracks, who received their assignments via politicking. These ethnographic findings have been supported by quantitative analyses using a national database (Kelly, 2004). In sum, tracking is an institutional problem that requires institutional-level reforms.

Aspects of sociocultural theory (Rogoff, 2003; Vygotsky, 1978) have been particularly influential in guiding reforms aimed at detracking. In particular, the idea that learning is a social and interactional process among individuals of varying capacities is at direct odds with the segregationist model of tracking. Supporters of tracking often feel that students in college-prep tracks will suffer academically if they share a classroom with those of less perceived ability (Ansalone, 2004). This view, however, is at odds with the demonstrated value of teaching and interaction among students of different abilities for their learning (Rogoff, 2003). Thus, movement toward detracking involves a major shift in how we think about school. As Mehan (2007) explained, “detracking is not just a technical or structural change in the academic plan or school calendar. . . . It also involves a cultural change in teachers’ beliefs, attitudes, and values as well as changes in curriculum and the organization of instruction.” (p. 11; see also Oakes, Wells, Datnow, & Jones, 1997). The need for this change is evident in light of Yonezawa et al.’s (2002) analysis of six high schools that underwent voluntary detracking. The detracking mechanism used in the schools was one of “freedom of choice” in which students could choose whatever classes they wanted to take. Although this approach removed restrictions on course choice, it altered neither the structures that enabled and maintained tracks nor the environments students inhabited. For example, students from low and middle tracks felt high-track classes were not for students “like them,” opting for the familiar spaces and faces. All in all, the freedom of choice model preserved underlying tracking structures and was therefore not a successful reform.

In contrast to the choice-based reform described by Yonezawa et al. (2002), a major component of the cultural change needed in schools involves creating a “college-going culture” to support the development of college-going identities among all students (Mehan, 2007; Oakes, 2005; Oakes et al., 1997). Tracking sends a clear message to students in lower tracks that college is not for them. Although most formal tracking systems in the United States are not introduced until middle or high school, ability grouping starts in elementary school (Mehan, 2007). Thus, messages about whether or not college is likely to be in a student’s future is communicated at an early age, and these have implications for students’ identities. Indeed, some have documented academic disengagement among URM elementary students (Stambler & Weinstein, 2010). Accordingly, researchers have discussed and implemented a variety of reforms aimed at providing all students with opportunities to develop college-going identities.

Oyserman and her colleagues have conducted studies with ethnically diverse youth aimed at facilitating the development of college-going identities

(Oyserman, Bybee, & Terry, 2006). Their work seeks to align both proximal and distal identities with children's current academic efforts. In one study, the researchers experimentally manipulated whether seventh-grade students were presented with either information that explicitly linked education with earnings or information that displayed the high earnings associated with successful athletes, actors, and musicians (Destin & Oyserman, 2010). Students in the education–earnings condition reported higher plans to invest time and effort into their schooling and were eight times more likely to turn in an extra credit assignment the next day than were students in the noneducation condition. The researchers argued that congruence between identities, in this case current academic identities and future career identities, are a key ingredient for academic success (Oyserman & Destin, 2010). Thus, interventions geared toward fostering identity congruence are especially needed.

College Eligibility

A direct outgrowth of ability grouping is the gap between URMs and Whites in college eligibility. In California, for example, to be eligible to attend the University of California (UC) or California State University (CSU) systems, students must complete a set of high school courses, including 3 years of specific math classes and 2 years of a foreign language (see Witkow & Fuligni, 2011). Notably, these requirements are generally not aligned with those for high school graduation, and represent a breadth of coursework not expected of students in lower tracks. Indeed, research indicates that students in lower tracks are not aware of this misalignment between graduation and eligibility requirements; those who do become aware of it tend to realize when it is too late, as they are contemplating college for the first time as a senior. Thus, the decision to attend 4-year colleges and universities or not is essentially made for these students at an early age. A clear indicator of eligibility for college and future success in college is whether and when the student took and passed Algebra I (Cooper et al., 2005). In a longitudinal study of Latino youth, the earlier the students took Algebra the more likely they were to receive a passing grade, and students who passed Algebra by ninth grade had higher math grades in the sixth grade and were more likely to attend a 4-year university.

In their longitudinal analysis, Witkow and Fuligni (2011) demonstrated that divergent paths toward college eligibility were apparent in the ninth grade. Students who went on to be UC/CSU eligible reported greater encouragement from parents and peers at the beginning of high school than those who were not ultimately eligible. Further, they clearly linked eligibility and enrollment: 2 years postgraduation 93% of students who were UC/CSU eligible had enrolled in a 4-year college, compared with only 40% of noneligible students. A notable finding is that, once again, math course completion was an important indicator of 4-year college enrollment; 75% of students who had completed Algebra I,

geometry, and Algebra II enrolled in a 4-year college, whereas only 19% of students who did not complete these courses were enrolled.

Although the requirements for college-going are frequently assumed to be common knowledge, an example of an attempt to be more explicit about the requirements for college is a school that promotes a “college-going culture,” in which a poster on the wall titled “How to Get to College” clearly indicates these requirements (Mehan, 2007). Greater communication to both students and families about requirements for college are clearly needed. One promising reform has been to align the requirements for graduation and college eligibility, as was done by the San Jose (CA) Unified School district in 2002. Although this policy change was controversial, critics’ fears that it would increase the dropout rates were not substantiated. Following the success of this policy change in San Jose, the San Francisco Unified School District and Los Angeles Unified School District recently made this change (Kane, 2010). In addition to extensive staff development, administrators made extra efforts to communicate with students and families about their detracking change with the intent of making college-going opportunities and identities available to all students. Taken together, these policy changes provide students and families of all backgrounds with important educational capital, thus contributing to efforts toward equity and altering institutional structures that promote the reproduction of social class to increase opportunities for social mobility.

But attending 4-year colleges is not the only marker of success, and success is defined in different ways by different people. Paraphrasing Ogbu (1997), whether schools succeed depends on where people locate schooling in their folk theories about what it means to be successful. For example, the staff and funders of a community college outreach program had broad ideas about what constitutes student success, be it 4-year college, 2-year college, trade school, military service, or graduating from high school (Cooper, 2011; Cooper et al., 2005). This broad definition of success must be reconciled with the realities of what these different pathways entail. A detailed discussion of each choice is beyond the scope of this article, but we will briefly discuss the implications of enrolling in 4-year versus 2-year colleges. Although the requirements for a 4-year university exclude many students who lack the opportunities to complete the necessary coursework or pay for college, community college is in principle open to all students. However, Fry’s influential (2002) report on Latinos documented the worrisome statistics that most Latinos who attend community college do not transfer to 4-year institutions. Similarly, Gándara and Orfield (2006) reported that only between 3% and 8% of Latinos and African Americans attending 2-year colleges in California transferred to 4-year universities. This shockingly low rate suggests that for many URM students, community college is not a realistic pathway to a 4-year college. Given the disproportionate number of URMs who attend 2-year colleges, these patterns

contribute to low representation of URM students in STEM fields and other high-status professions.

The Myth of Free Choice: How Students Choose their College Major

Of course, getting to college does not signal that URM students have overcome all barriers to education. URM students are more likely than White and Asian students to leave college after (or during) their first year and take longer to graduate (Tierney, Colyar, & Corwin, 2005). Much of the research on leaving college draws on Tinto's (1993) model of college student retention. Central to Tinto's model is the concept of belongingness, or developing a sense of attachment and purpose to the college environment. Although Tinto's model includes both academic and social integration, empirical support is strongest for the role of social integration for retention (Kuh, Kinzie, Buckley, Bridges, & Hayek, 2006). Indeed, others have highlighted how the ability of URM students to develop feelings of belongingness is moderated by indicators of campus climate, including the diversity of the student body, perceptions of the prevalence of racism and discrimination by students, staff, and professors, and positive attitudes toward multiculturalism (e.g., Hurtado, Griffin, Arellano, & Cuellar, 2008; Hurtado et al., 2011).

Comprehensive reviews of research on college retention and campus climate are available elsewhere (see Gurin, Dey, Hurtado, & Gurin, 2002; Hurtado et al., 2008; Pascarella & Terenzini, 2005; Tinto, 1993). Here we would like to highlight an overlooked issue regarding URM college experiences: how they select a college major. There are two distinct factors to consider when investigating the process of arriving at a major: (1) the initial selection of a major and (2) how and why students change their major. We now consider each of these issues.

When students enter college, they have a seemingly infinite number of options for their academic major. Research on college major choice has been mostly conducted with White samples and examined how personal interests and personality characteristics influence the majors students choose (e.g., Leaper & Van, 2008; Sullivan & Hansen, 2004). However, the availability of options may not be the same for URM students as for White students. In a longitudinal analysis, Syed (2010a) found that only 16% of first-year students who were sampled did not have some idea about what they wanted to major in, and those who did have an idea were fairly committed to it. Thus, this study suggests that by the time they arrive to college, most students have already decided their major.

This conclusion is reinforced by the finding that students who came to college intending to major in STEM fields were quite clear about that from the beginning, with their aspirations having roots in earlier experiences. As a result, ethnic disparities in access to science education in high school directly translate to disparities at the college level. URM students, who are more likely to experience lower-quality

high school education, may not have been granted the opportunities to develop an interest in STEM that they could carry forward to college. Furthermore, they face barriers in their opportunities to acquire sufficient academic preparation and have less access to the knowledge of how to obtain academic advising (Eccles, 2005).

Entering college, however, is just the first step in the academic major selection process. A question that has received very little attention in the psychological literature is how and why students change their major. The study by Syed (2010a) provides some insights on this issue. In his sample, no student, either URM or majority, who came to college interested in a humanities or social sciences major switched to a STEM major. Moreover, most of the students who were undecided at the beginning of college ultimately majored in humanities or social sciences. Thus, as argued above, the decision to major in a STEM field is generally undertaken before college.

For those students in Syed's sample who had made the decision to major in STEM at the beginning of college there was a striking pattern: all of the White students stayed with STEM, whereas nearly all of the URM students eventually switched their major to the humanities or social sciences. Why would this be? These were students who held strong aspirations to go into STEM and had adequate support in high school to facilitate their interests. The answer, as described in Syed (2010a), was a matter of identity. URM students attending college are in the process of developing their ethnic identities as well as their career identities (Azmitia et al., 2008; Syed & Azmitia, 2008, 2009), and many see their college experiences as facilitating the attaining of these identities (Santos, Ortiz, Morales, & Rosales, 2007). Majors in the humanities and social sciences, which tend to address issues of culture, ethnicity, and diversity, are seen by many URM students as more attractive than STEM majors. Humanities and social science majors afford an opportunity for URM students to learn about themselves and their cultures while attaining their goal of a college degree. As most high schools do not offer substantial content outside of the White American and European context, for URM students, college courses can be the first time they see themselves in the course material. As a result, they tend to be attracted toward certain majors and away from STEM fields.

The implications of this research on identity and college major choice are that STEM fields would do well to incorporate diversity into their curriculum. For example, making students aware of significant ethnic minority figures in the field, surfacing the historical and cultural context in which STEM research is situated, and highlighting different ways of knowing used around the world are a few of the possible topics that could be integrated into college STEM courses. Future research still needs to determine what form and content of STEM curriculum will meet URM students' identity-related needs, but as Yamauchi et al. (2006) have shown in their work with native Hawaiian youth, there is tremendous benefit in acknowledging, appreciating, and integrating cultural considerations into students' educations.

Conclusions

The lack of educational equity for URM students, both within STEM and more broadly, is a complex problem that requires interdisciplinary perspectives to generate feasible solutions. In this article, we highlighted key research across the social sciences that is both useful for understanding the role of identity development for URM educational experiences and a starting point for where and how reforms can occur. Taking an interdisciplinary approach fuels analyses that move beyond a focus on the individual to incorporate relational, contextual, historical, and societal factors that influence students' experiences.

We identified three points of convergence across disciplines that illustrate the different levels of analysis that should be considered when examining the relation between identities and educational achievement. Research on prejudice and stereotype threat raised the crucial issue of how identities interact with educational environments in which negative stereotypes may be held. From this work and other research on identity and school contexts, policies are especially needed that are aimed at altering school environments in ways that can facilitate identities that are resistant to such stereotypes. As argued by Whaley (2009), studies of ethnic identity and ethnic/racial socialization are good starting points, as they can serve as protective factors against the negative impact of discrimination and have been linked to academic achievement. We would also do well to change our thinking about how relationships with important figures can provide needed support. In particular, educators must rethink how they value different forms of families' contributions to their children's education, rather than holding all families to a White, middle-class standard. Finally, policies that attempt to create a college-going culture for all students would allow more students to have the opportunity to attend college. As part of this college-going culture, high schools need to align graduation requirements with college eligibility requirements and have more frank discussions with high school students about selecting their college major. Particularly if students are interested in STEM, research suggests that if they wait until college to make that decision, it is already too late because they lack the necessary foundational knowledge.

Rather than advise that more research is needed on these topics to make effective and well-targeted policy recommendations (it is), we suggest that different research is needed. In particular, theoretically based, interdisciplinary research that is policy-oriented in its conceptualization, design, analysis, and dissemination is needed most. There does seem to be movement, particularly in developmental science, toward such interdisciplinary policy-oriented collaborations. For example, the Human Capital Research Collaborative, a partnership between the University of Minnesota and the Federal Reserve Bank of Minneapolis, is concerned with the intersections of social policy, economic development, and educational policy and practice from birth through college (Reynolds, Rolnick, Englund, & Temple,

2010). The collaboration between developmental psychologists and economists led to a cost-benefit analysis of early childhood educational interventions, which indicated a net benefit to society associated with children participating in the program due to increased earnings and staying out of the criminal justice system (Reynolds, Temple, White, Ou, & Robertson, 2011).

Another example can be seen in work with the Bridging Multiple Worlds Theory (Cooper, 2011; Cooper et al., 2002). Building on Erikson's (1968) writings on identity development, the Bridging Multiple Worlds Theory is designed to integrate research, policy, and practice pertaining to the academic pipeline problem. The theory consists of five inter-related dimensions: (1) demographics along the pipeline; (2) developing college going identities; (3) math and language pathways; (4) resources and challenges across multiple worlds of families, peers, schools, and communities; and (5) cultural research partnerships. What is particularly useful about this theory in the context of the current article is that the research and policy are intricately connected; each informs the other through the progression of the work. This is evident in the fifth dimension, cultural research partnerships, which are collaborations among researchers, educators, policy makers, students, and others who have a stake in student success. Thus, partnership, collaboration, and a reciprocal relationship between research and policy are built directly into the model, as opposed to being an outgrowth of the model.

We return once more to the fable of the five men investigating the elephant in the dark. The motivating force in their investigations was to inspect the elephant to arrive at the truth about its nature. With respect to the questions of this article, we would like to suggest a modification to the story, where the motivation for the investigation is to understand the nature of this elephant so as to help it function better. Perhaps this is a more suitable metaphor for how to conduct research on the educational experiences of URM youth.

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