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Connecting counterspaces and community cultural wealth in a professional development program

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ABSTRACT

This qualitative study analyzes the relationship between two concepts from critical race theory – counterspaces and community cultural wealth. Counterspaces are supportive, identity-affirming community spaces, while community cultural wealth highlights the importance of the knowledge, skills, and networks used by individuals belonging to marginalized groups to successfully navigate academia. This study investigates the hypothesis that the processes operating within counterspaces serve to strengthen an individual's access to their community cultural wealth. The study site is BRAINS, a U.S.-based professional development program for early-career academic neuroscientists from underrepresented groups. Findings revealed that two types of counterspace processes (narrative identity work and direct relational transactions) and three types of community cultural wealth (aspirational capital, social capital, and navigational capital) are most salient within BRAINS. After examining the complex interactions connecting counterspace processes and community cultural wealth, we offer recommendations for future professional development programs and research designed to broaden participation in academia.

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Community cultural wealth; counterspaces; critical race theory; diversity; early-career academics

Introduction

Diversity, or the lack thereof, in the biomedical sciences has been the subject of numerous recent articles and special editions of journals (Gibbs 2018; Gibbs and Marsteller 2017; Gibbs et al. 2014; Nikaj et al. 2018; Valantine and Collins 2015; Yen et al. 2017). The National Institutes of Health (NIH) has called for evidence-based approaches to the professional development of biomedical scientists and a strategy for eliminating barriers to career transitions (Valantine and Collins 2015). In particular, NIH seeks to understand what works in interventions that address career transition gaps by addressing socio-cultural factors that may impede the participation and progression of scientists belonging to underrepresented groups (URGs) (NIH 2018). Within the United States, the following groups have been shown to be underrepresented within academic science: Blacks or African Americans, Hispanics or Latinos, American Indians or Alaska Natives, Native

Hawaiians and other Pacific Islanders, individuals with disabilities, and/or individuals from economically disadvantaged backgrounds (NIH 2020).

A critical career transition occurs in the move from postdoctoral scientist to faculty and independent scientist (Meyers et al. 2018; Valentine 2018). Compared to their peers, far fewer scientists belonging to URGs make this transition into faculty positions (Gibbs et al. 2014; Meyers et al. 2018). To increase diversity and equity in the biomedical sciences, and in higher education more broadly, it is critical to investigate factors impacting the success of scientists from URGs as they navigate this important transition from postdoctoral to faculty and independent positions (Eisen and Eaton 2017; Margherio et al. 2016; Martinez et al. 2018; Williams, Thakore, and Richard 2017). Closing this career transition gap will increase diversity at the faculty level, impacting who trains the next generation of scientists and pushes the boundaries of scientific knowledge and inquiry.

Historically, researchers, educators, and practitioners concerned with broadening representation within STEM fields used a deficit model approach that blames the victims of institutionalized oppression for inequities and pays little, if any, attention to the strengths and agency of individuals belonging to systemically marginalized groups (Ladson-Billings 1998; Kim and Hargrove 2013; Smit 2012; Solórzano 1997; Valencia 2010). Building on critiques of the deficit model, this study utilizes Critical Race Theory (CRT) to examine how individuals exert agency as they navigate systemic and structural causes of underrepresentation. CRT is an interdisciplinary framework that recognizes the centrality of race, intersectionality, and experiential knowledge while challenging dominant ideologies (Ladson-Billings 1998; Ladson-Billings and Tate 1995; Solórzano and Yosso 2001). Rather than a deficit model approach that privileges majority experiences and values, the CRT concepts of counterspaces and community cultural wealth both explicitly address issues of agency and institutionalized oppression while offering an assets based approach to understanding the persistence of individuals belonging to systemically marginalized groups within academia (Smith-Maddox and Solórzano 2002).

This study weaves the two concepts of counterspaces and community cultural wealth together, to investigate the hypothesis that the processes operating within counterspaces serve to strengthen participants' access to community cultural wealth. Implicit in much of the literature on counterspaces is that they serve as sites for developing critical consciousness, forming community, and engaging in forms of resistance. In this paper, we make an explicit connection between counterspace processes and a community cultural wealth framework.

Theoretical framework

This study is grounded in CRT, a framework that highlights the centrality of race and racism in the production and reproduction of social inequalities (Ladson-Billings and Tate 1995; Ladson-Billings 1998). In particular, CRT recognizes racism as endemic and engrained in American society (Ladson-Billings and Tate 1995; Ladson-Billings 1998; Patton 2016). While CRT grew out of critical legal studies, it has been applied to issues of inequity in education since at least 1994 (Ladson-Billings and Tate 1995). Counterspaces and community cultural wealth are two theoretical concepts which have emerged from applications of CRT to higher education.

Counterspaces

Counterspaces are theorized as supportive, identity-affirming community spaces, in which individuals belonging to systemically marginalized groups have their experiences and skills validated, thus challenging deficit model narratives (Solórzano, Ceja, and Yosso 2000; Carter 2007; Case and Hunter 2012). This concept of counterspaces builds on both Foucault's notion of heterotopias as spaces that are linked to but separate from dominant society (Foucault and Miskowiec 1986) and Lefebvre's notion of counterspaces as sites of resistance, where identity and representation may be redefined (Lefebvre 1974). Solórzano, Ceja, and Yosso (2000) describe counterspaces as 'sites where deficit notions of people of color can be challenged and where a positive collegiate racial climate can be established and maintained' (70).

Some of the early literature on counterspaces conflates the notion of counterspaces with that of safe spaces (e.g. Ballard and Cintron 2010; Patton 2006). In contrast to the less well-defined concept of safe spaces, the distinctiveness of counterspaces has become clear as it has been more precisely delineated in the literature. The theoretical concept of counterspaces identifies mechanisms of social interactions and provides language for understanding and investigating these social processes (McConnell et al. 2016). Case and Hunter (2012, 2014) expanded the concept of counterspaces by defining three processes occurring within this setting: narrative identity work, acts of resistance, and direct relational transaction. These challenging processes (i.e. processes and activities that serve to challenge negative representations and notions concerning one or more marginalized identities) are distinct and interrelated.

Narrative identity work refers to a process of meaning-making about one's experiences through accounts, stories, and other rhetorical strategies (Case and Hunter 2012; Ibarra and Barbulescu 2010). Case and Hunter (2012, 2014) identify four types of counternarratives utilized in this identity work: (1) oppression narratives, (2) resistance narratives, (3) reimagined personal narratives, and (4) reimagined collective narratives. Oppression narratives make the invisible visible, by articulating the participants' shared experiences of oppression, whereas resistance narratives articulate the strength and capability of counterspace members to overcome oppression, thereby fostering a sense of agency and awareness of systemic inequities. Oppression and resistance narratives are both setting-level constructs; that is, they exist within the interactions and shared understandings of counterspace members. Reimagined personal narratives are an individual-level construct held by each person about themselves. The reimagined personal narrative challenges internalized negative beliefs about oneself leading to a greater sense of self-awareness and personal empowerment. In more recent research, Case and Hunter (2014) have identified a fourth counternarrative at the setting-level, the reimagined collective narrative. This narrative refers to the creation of a shared collective identity, as defined by the group members.

Acts of resistance refer to the enactment or centering of cultural practices (e.g. dress, language, dance, etc.) which are marginalized within dominant culture and/or behaviors that explicitly critique oppressive conditions (Case and Hunter 2012). This process further aids in the development of agentic and critically conscious identities; it also provides opportunities for participants to enact their re-imagined and resistance narratives (Case and Hunter 2012). The third counterspace process, *direct relational*

transaction, refers to exchange of resources and social support, including communication of strategies to respond to oppression (McConnell et al. 2016) and information regarding one's rights (Case and Hunter 2012). This process builds a sense of community and reduces feelings of isolation among counterspace members.

Community cultural wealth

The concept of community cultural wealth has evolved out of a CRT framework, as a critique of deficit model approaches and their use of cultural capital. Bourdieu's concept of cultural capital refers to the knowledge, skills, and networks possessed by dominant groups within society; these groups maintain their power and privilege by restricting access to this cultural capital (Bourdieu and Passeron 1977; Bourdieu 1986; Bowles and Gintis 1976). Bourdieu's (1986) concept of cultural capital has been used uncritically by deficit models, which view white, male, middle-class culture as the standard; this approach does not allow room for valuing the cultural capital of people of color (Yosso and García 2007).

The different forms of community cultural wealth are interrelated, overlapping, and dynamically build off of one another (Yosso and García 2007; Huber 2009; Samuelson and Litzler 2016). Early work identified at least six forms of community cultural wealth: aspirational, familial, linguistic, navigational, resistance, and social (Yosso 2005). Table 1 highlights brief definitions of these forms of community cultural wealth. Later works have uncovered additional forms such as spiritual capital (Huber 2009; Espino 2014) and informational capital (Liou, Antrop-González, and Cooper 2009).

For this paper, we focus on the original six forms of community cultural wealth noted in Table 1, and, in what follows, we provide a brief description of each type and note some of the relationships among the forms of community cultural wealth. First, *Aspirational capital* refers to hopes and dreams for the future, regardless of barriers faced by individuals belonging to systemically marginalized groups (Yosso 2005; Yosso and García 2007). Aspirational capital serves as motivation for persistence along one's educational and career path (Huber 2009). Because it develops within familial and social contexts, through storytelling and exchange of information on navigating institutions and systems of oppression, it is connected to and overlaps with all of the other forms of community cultural wealth (Yosso and García 2007).

Second, *Familial capital* refers to a sense of history, memory, and collective consciousness nurtured among kin (Yosso 2005). This knowledge of one's family history and of one's culture includes the desire to improve the well-being of both community and family

Table 1. Brief Definitions of Community Cultural Wealth.

Type	Definition
Aspirational	Hopes and dreams for the future
Familial	A sense of community history, memory, and collective consciousness fostered among kin
Linguistic	Skills acquired from speaking multiple languages or styles; storytelling; and other forms of artistic expression
Navigational	Ability to make sense of and navigate institutions, particularly those not designed for individuals from marginalized groups
Resistance	Recognition of and motivation to transform systems of oppression
Social	Networks of people and resources, which serve as sources of instrumental and social support

(Yosso and García 2007; Huber 2009; Samuelson and Litzler 2016). Families serve to reduce feelings of isolation as individuals realize that they are not alone in dealing with their challenges (Yosso and García 2007). While Yosso and García (2007) include ‘friends whom we consider part of our familia’ (164), more often the definition of familial capital is limited to biological kin (see, e.g., Huber 2009; Jayakumar, Vue, and Allen 2013; Samuelson and Litzler 2016).

Third, *Linguistic capital* includes the intellectual and social skills acquired from speaking in more than one language or style; storytelling; and other forms of expression such as art, music, and poetry (Yosso 2005; Yosso and García 2007). Huber (2009) describes how multilingual individuals may provide translation services for family members, and, through this language brokering, develop increased self-confidence and even strengthen their awareness of and ability to challenge oppressive institutional structures. Fourth, *Resistance capital* encompasses the knowledge and skills fostered through behaviors that challenge inequality (Yosso 2005; Yosso and García 2007). It includes recognition of systems of oppression along with the motivation to challenge and transform these systems (Braun, Gormally, and Diane Clark 2017).

Fifth, *Navigational capital* refers to the ability to make sense of and navigate institutions, particularly those institutions that were not created with individuals from marginalized groups in mind, such as racially hostile academic environments (Yosso 2005; Yosso and García 2007). Navigational capital includes the social-psychological skills necessary to negotiate through structures of inequality (Yosso and Solórzano 2005; Yosso and García 2007) and is often linked to social capital (He, Bettez, and Levin 2017; Liou, Antrop-González, and Cooper 2009; Yosso and García 2007). Finally, *Social capital* refers to networks of people as sources of both instrumental and social support (Yosso 2005). In explaining how instrumental and social support may be intertwined, Yosso (2005) writes: ‘these networks may help a student in preparing the scholarship application itself, while also reassuring the student emotionally that she/he is not alone in the process of pursuing higher education’ (79). Thus, the support resulting from social capital may in turn help build navigational capital (Yosso and García 2007).

As noted above, community cultural wealth was originally conceived as a framework for understanding the experiences of students of color (Yosso 2005). While the majority of subsequent research has applied this framework to students of color, a few studies have expanded to additional systemically marginalized groups, including: deaf students (Braun, Gormally, and Diane Clark 2017; Listman, Rogers, and Hauser 2011), first generation college students (O’Shea 2016), immigrant and refugee students (He, Bettez, and Levin 2017), and linguistic minority students (Oropeza, Varghese, and Kanno 2010). Our work focuses on individuals from groups underrepresented in neuroscience, including racial and ethnic minorities (American Indian, Alaskan Native, Black, Hispanic, Latinx, Native Hawaiian, and Pacific Islander) and individuals with disabilities. While the majority of community cultural wealth studies have focused on either pathways to college (Liou, Antrop-González, and Cooper 2009; Jayakumar, Vue, and Allen 2013; Luna and Martinez 2013) or persistence within undergraduate (Huber 2009; Samuelson and Litzler 2016) and graduate education (Espino 2014), work in this area is beginning to examine the faculty experience (see, e.g. Martinez, Chang, and Welton 2016). With this study, we turn the focus squarely on the transition from graduate education to tenure-track faculty positions.

Further, much of the literature on community cultural wealth to date has focused on identifying and categorizing each type of capital and/or investigating how individuals draw upon the different forms of capital to persist and succeed within higher education. Less attention, if any, has been given to the processes through which individuals strengthen their access to and activate their community cultural wealth. In this study we address this gap through the application of the theoretical concept of counterspaces. Utilizing data from participants in the U.S.-based BRAINS professional development program (described below) the research questions guiding this study are:

- (1) What types of counterspace processes did participants describe occurring during the program?
- (2) What types of community cultural wealth did participants describe activating during the program?
- (3) How, if at all, did participants describe the counterspace processes as strengthening access to community cultural wealth?

Methods and data

Setting: the BRAINS program

BRAINS: Broadening the Representation of Academic Investigators in NeuroScience is a National Institutes of Health – National Institute of Neurological Disorders and Stroke (NIH -NINDS) funded professional development program designed to support and accelerate success for early career neuroscientists from URGs in the field, specifically racial and ethnic minorities and persons with disabilities (Margherio et al. 2016; Yen et al. 2017). The cohort-based BRAINS program is unique in its focus on ongoing, community-centric professional development and conversations specific to the experiences of people from URGs in neuroscience. The BRAINS program theory incorporates both Social Cognitive Career Theory (Lent and Brown 1996) and the Tripartite Integration Model of Social Influence (Estrada et al. 2011). Additional details about the BRAINS program theory can be found in prior publications (Margherio et al. 2016; Yen et al. 2017).

The BRAINS Program includes an intensive four-day symposium followed by virtual peer mentoring circles. Each national symposium engages approximately 30 early career neuroscientists through a series of highly interactive panel discussions, self-reflections and small group activities with approximately 20 senior scientists, topical experts, and BRAINS program team members. Session topics include a range of typical professional development topics such as time management, managing a lab and developing your research program. Throughout each discussion and activity are opportunities to focus on building community, sharing stories, discussing social identities, and making time for personal reflection.

Following the national symposium, participants meet in peer mentoring groups of six to eight participants. These biweekly mentoring circles meet by video or audio-conference and follow a structured meeting format based on the successful model described by Daniell (2006). The peer mentoring circles are launched with a professional facilitator and then continue on their own, run by and for peers in a self-

sustaining manner (Horner-Devine et al. 2017). During the mentoring circle meetings, participants engage in problem-solving and address issues such as how to incorporate skills, strategies, and practices introduced at the BRAINS symposium into everyday life. The mentoring circle meetings create an opportunity to deepen relationships and the sense of belonging initiated at the BRAINS symposium, and engage in ongoing career development.

Participants

Cohort 1 participants applied to the BRAINS program in 2012 and Cohort 2 participants applied in 2014. Applicants were considered eligible if they met the following criteria: (i) they had received their doctoral degrees and were not tenured at the time of application, with priority for individuals who earned their doctorate within the past two to twelve years; (ii) they self-identified as a racial or ethnic minority and/or person with a disability; (iii) they were US citizens or permanent residents; and (iv) they worked in neuroscience-related fields. All completed applications from eligible participants were reviewed by the selection committee and scored using a rubric designed to identify applicants who have the potential to receive the biggest impact from the program. The rubric identifies high potential impact if there was evidence for limited access to the mentoring, professional development, and networking needed to support their career. The selection rubric also focused on creating a diverse cohort by selecting applicants from a range of backgrounds, institution types, geographic locations, and social identities (race, ethnicity, gender, age, etc.). Table 2 provides demographic information of the population described in this study at the time of application.

Table 2. Demographic Information of BRAINS Cohort 1 and Cohort 2 Participants (n = 56).

Gender		
	Woman	30
	Man	26
	Non-binary/gender non-conforming	0
Race		
	American Indian or Alaskan Native	4
	Asian	1
	Black or African American	29
	Hispanic, Latinx, or Spanish origin	26
	Native Hawaiian or Pacific Islander	0
	White or Caucasian	25
	Other	8
Disability status		
	Yes	2
	No	54
Position at the time of Application		
	Postdoctoral Researcher	30
	Research Scientist	2
	Lead Research Scientist	1
	Lecturer	3
	Assistant Research Professor	4
	Assistant Professor (tenure track)	14
	Other	2

Data collection

To explore participants' perceptions and experiences of the BRAINS program, we conducted annual follow-up surveys during each of the first three years after participants joined the program. The data utilized in this study were originally collected for evaluation purposes of the BRAINS NIH-grant. The University of Washington Institutional Review Board reviewed and approved our Human Subjects application (#51677) to utilize this retrospective data for research purposes.

Participants completed the application surveys online approximately four months prior to the symposium and were invited to complete the first annual follow-up survey online one year from their application (i.e. eight months after the symposium). All of the 56 participants (27 participants in Cohort 1 and 29 participants in Cohort 2) completed the application survey, and 40 completed the first annual follow-up survey, for a response rate of 71.4%. This study uses the open-ended survey responses from the first annual follow-up surveys for Cohort 1 and Cohort 2, completed in 2013 and 2015 respectively. By the time of their first annual follow-up survey, participants had attended the symposium and completed up to eight months of mentoring circle activity.

The follow-up survey covered a range of topics related to participants' career goals and career-related behaviors. In this paper, we focus on the data collected through 12 open-ended survey questions. Eight of these questions asked how participation in BRAINS was impacting the following: specific career-related behaviors (utilizing career skills, networking, mentoring); their sense of belonging in neuroscience; their level of satisfaction with their career progression; and their career overall. Two questions asked how respondents have utilized other participants, senior panelists, and the leadership team as networks and mentors. Two questions inquired about participants' career goals and intentions to stay in academia.

Data analysis

Survey data were analyzed using abduction, a qualitative approach to theory construction that relies on iterative moves between data and theory building, with particular attention given to unanticipated and surprising observations (Timmermans and Tavory 2012). Using NVivo software, the first author coded and organized the codes into sub-themes through an iterative process. Peer debriefing was employed to ensure trustworthiness of the data (Creswell and Miller 2000). Throughout the data analysis, the BRAINS leadership team met to discuss our individual understandings of the code structure, preliminary themes, and theoretical frameworks. After the team came to consensus around applying the frameworks of counterspaces and community cultural wealth, the first author returned to the data and completed a third and then fourth round of iterative coding based on these theoretical concepts. Memo-writing was utilized throughout the coding process to explicate and explore emergent patterns (Charmaz 2006). Through this iterative process, the analysis looked at the relationship between emergent themes and theoretical concepts with the goal of creating theoretically-informed insights without being constrained by formal theory-based predictions.

Results

Engaging in counterspace processes via BRAINS

Using open-ended responses to the follow-up survey, data revealed traces of two of the counterspace processes that occurred at earlier time points: narrative identity work and direct relational transaction. These processes occurred primarily at the symposium and through the mentoring circles; the analysis also revealed evidence of these two counterspace processes in ongoing interactions among participants, panelists, and the leadership team. The data rely on participants' recollections of their interactions, and descriptions of the different counterspace processes were often overlapping. No evidence was found of acts of resistance processes; while this counterspace processes may be occurring as part of the BRAINS experience, we did not find any evidence of it within this dataset.

The open-ended survey responses contained evidence of three forms of **narrative identity work**: oppression, resistance, and reimagined personal narratives. Of these, reimagined personal narratives was by far the most commonly mentioned, with 20 individual participants describing this type of narrative identity work. Participants noted that their participation in BRAINS allowed them to redefine themselves in a positive manner; for example, an individual from Cohort 1 wrote, 'I feel more aware of what I have to offer and what I can learn from others.' Another participant from Cohort 1 noted an increased sense of self-awareness within the fields, writing, 'BRAINS has helped me gain perspective on the neuroscience field and how I might fit within it.' Survey respondents discussed the reimagined personal narrative process as explicitly longitudinal, occurring at the symposium and recurring through their continued interactions with other participants and the leadership team. For example, one participant from Cohort 2 wrote, 'Above all participation in BRAINS has given me the confidence in my abilities and a support system for those times when I'm not feeling as confident. Tapping into the support system has often made me aware of my abilities and resources that has allowed me to utilize my career development skills.'

While outside of the counterspace of BRAINS, dominant narratives may deny or minimize the oppression experienced by members of systemically marginalized groups; oppression narrative work within the BRAINS community served to validate participants' experiences. Mentions of oppression narrative work focused on how the community formed through BRAINS allowed folks to see that their challenges were not unique. For example, one survey respondent from Cohort 1 wrote, 'I appreciate knowing that what I feel and experience is not uncommon nor an unconquerable obstacle.' Through seeing the commonality of their challenges, participants were able to see that these challenges were not due to personal failings. As exemplified in this quote, participants wrote about oppression narrative identity work in a manner that often blended into resistance narrative work; that is, they connected their shared oppression with an ability to overcome and succeed.

Resistance narratives work to build hope and vision of alternative futures by articulating the ability to overcome oppression (Case and Hunter 2012). This type of narrative identity work surfaced in our dataset through respondents describing the affirmative power of meeting other neuroscientists belonging to URGs during the symposium. For example, a participant from Cohort 1 wrote, 'I was introduced to other minorities in neuroscience, which in itself was a supportive experience.' Another participant from

Cohort 1 explained, ‘It’s very powerful to see other people that look like you/have similar cultural/background experiences as you and are neuroscientists.’ Through resistance narrative work, participants asserted their value in the face of internalized oppression. As one survey respondent from Cohort 2 explained, ‘The BRAINS workshops have increased my awareness on valuing my identity as a minority scientist. More importantly, I have connected with other peers who are navigating through the same issues by connecting with them during the BRAINS Mentoring Circles.’

We identified seven different resources that were the focus of the counterspace process of **direct relational transactions**, including navigational skills and knowledge, community, social support, tips on belonging to an URG in science, safe outlet, accountability, and access to mentors (See Table 3). While there were a total of 49 mentions of all three types of narrative identity work in the follow-up survey of both cohorts, there were 230 mentions of direct relational transactions.

By far the most common type of direct relational transaction references were navigational skills and knowledge. Survey respondents discussed learning concrete skills, such as time management. A participant from Cohort 1 wrote, ‘[BRAINS] has given me insight into directing my career, getting tenure, writing papers, and managing time.’ Many of the descriptions of navigational skills and knowledge pertained to networking, learning both how to network and the importance of networking to navigating a successful career. For example, a Cohort 1 participant wrote:

My participation in BRAINS basically informed me that networking was imperative. I used to think that it was only minimally needed. That was wrong and now I have been putting myself out there more. I’ve volunteered to help on committees and I’m more open to other things besides research.

Survey respondents noted that BRAINS had increased their knowledge of what skills are needed to navigate their careers (in addition to networking). A Cohort 2 participant wrote, ‘My participation in BRAINS made me aware of several issues in my career that need further work: need to find mentors, importance of time management, need to understand the department politics, importance of being purposeful and intentional.’ Another participant from Cohort 2 explained, ‘The workshops gave me a lot of factors to consider. I don’t have all the answers, but at least I have identified what needs to be accomplished.’

The second most common type of direct relation transaction references community. Survey respondents noted how BRAINS had increased the number of people they knew in neuroscience at similar career stages. For example, a Cohort 1 participant wrote, ‘I feel

Table 3. Seven Forms of Counterspace Direct Relational Transactions Identified in the Responses of BRAINS Cohort 1 and Cohort 2 Participants.

Transaction Foci	Example
Navigational skills and knowledge	Strategies for managing competing demands
Community	Connections to other neuroscientists at a similar career stage
Social support	People to call on when feeling less confident in one’s abilities
Tips on belonging to a URG in science	Strategies for discussing with a mentor the impact of belonging to a URG
Safe outlet	A place to discuss issues outside of their institution or department
Accountability	Regular check-ins with fellow participants
Access to mentoring	Advice on a grant submission

that it has expanded the network of people I know in neuroscience at the same career stage. Before BRAINS, all I knew were established investigators and students I mentor.’ Survey respondents also described building a network of individuals from groups underrepresented in neuroscience. A participant from Cohort 2 wrote that BRAINS ‘provided an opportunity to meet others who look like me and have similar interests.’

The third most common type of direct relational transactions, social support, refers to what individuals receive from the relationships they build through BRAINS. Survey respondents wrote that they felt supported in knowing assistance was available if and when they needed it; this sense of support in turn led to decreased feelings of isolation and increased sense of belonging. A participant from Cohort 1 explained, ‘Meeting the other BRAINS participants definitely made me feel like I belong in the field of neuroscience. Just meeting the others and getting their thoughts and perspectives made me feel less isolated.’ The ongoing nature of BRAINS, through the mentoring circles, allows for this social support transaction to become ongoing. As another Cohort 1 participant wrote, ‘The conference calls [peer mentoring circles] are great for asking for support and advice on all topics.’

Community and social support, two of the seven forms of direct relational transactions observed, frequently co-occurred in the analysis; that is, the same piece of text was likely to be coded with both community and social support. In these co-occurrences, survey respondents wrote of finding a supportive community, noting the similarities of academic field and social identity. A Cohort 1 participant explained:

I now have a strong network of minority scientists who I can both relate to and to whom I can give and from whom I can receive advice. The people I met at BRAINS are able to understand my experiences and relate to me, thus their advice is more pertinent.

As shown in the above quote, survey respondents saw these direct relational transactions as mutually beneficial – receiving *and* giving support, advice, and community. The above quote was also coded with the fourth category of direct relational transaction, tips on belonging to a URG in neuroscience. Survey respondents noted gaining practical advice at both the symposium and through the mentoring circles on thriving as a member of a group underrepresented in neuroscience.

Survey respondents also spoke to accountability and safe outlets, a fifth and sixth type of direct relationship transaction while discussing community and social support. Accountability was primarily mentioned as participants were describing how they benefited from the mentoring circles. For example, a participant from Cohort 2 wrote, ‘The simple act of making contracts and being held accountable by thoughtful and kind colleagues every two weeks has made me vastly more efficient in meeting deadlines and in pursuing additional projects.’ References to a safe outlet commonly referred to gaining professional peers outside of their institutions. A participant from Cohort 2 explained that BRAINS provides ‘an outlet, sounding board and a safe space to discuss issues (career and personal) and to identify solutions for those issues.’ Survey respondents also spoke to access to mentors as the seventh type of direct relational transaction occurring within BRAINS.

Activating community cultural wealth via BRAINS

Survey data showed evidence of participants strengthening access to three forms of community culture wealth – social, navigational, and aspirational capital. Responses

discussing overlapping types of capital highlight the interactive nature of the different forms of community cultural wealth. To advance our understanding of how professional development programs can support individuals belonging to systemically marginalized groups, we examine each type of community cultural wealth our participants discussed with attention to where these forms interact.

Social capital was the form of community cultural wealth most commonly mentioned by participants; survey respondents described strengthening their access to both instrumental and emotional support via the relationships developed through the BRAINS program. In describing instrumental support in the form of supplemental professional skills, a Cohort 2 participant wrote, ‘I have contacted several speakers about grant issues and have utilized their advice to successfully submit a K grant. I also regularly lean on a fellow participant to help proofread my grant and paper submissions.’ Similarly, a Cohort 2 participant described the emotional support:

Above all participation in BRAINS has given me the confidence in my abilities and a support system for those times when I’m not feeling as confident. Tapping into the support system has often made me aware of my abilities and resources that has allowed me to utilize my career development skills.

The social capital accessed through BRAINS goes beyond local proximity, addressing individual feelings of isolation at their respective institutions. For example, one Cohort 2 participant noted, ‘Being a little isolated by my small liberal arts college from other neuroscientists, it’s nice to have BRAINS peers.’

The most common form of community cultural wealth to overlap with social capital was that of **navigational capital**, signifying the importance of community networks to make sense of and negotiate academic institutions. Participants spoke about navigational capital in terms mentoring, networking, time management, accessing resources, and professional socialization. In each of these areas, participants often noted that through BRAINS, they are less likely to second guess taking the steps they need to move forward as they navigate their academic careers. For example, a participant from Cohort 1 wrote:

I feel less guilty about talking to mentors about my personal life. I realize that personal life is intertwined with work success and a proper balance is required. I am also more likely to seek out mentors who are also minorities and not feel guilty or inadequate for doing so.

As in the above quote, participants often mentioned their social identity in discussing navigational capital, highlighting the ways their identities impact how they navigate and succeed within academic institutions.

In discussing both mentoring and networking, survey respondents often noted that through BRAINS they activated their navigational capital by highlighting the importance of these activities for their career development. A Cohort 2 participant explained:

The BRAINS program has increased my awareness and my abilities to network at research conferences, present my ideas, elevate my identity as a neuroscientist and minority scientist and connect with other leaders in my field. BRAINS has given me the appropriate notes and literature to consult in case that I need to consult on specifics of how to deal with different life and work-related issues.

Survey respondents described the development of broader understandings of the role of mentoring and networking. A Cohort 1 participant wrote, ‘I got practical advice on how

to approach mentors. It also clarified for me the concept of a “traditional” mentor vs a mentorship team, including peers, which I found very useful.’

Respondents described how they continue to access the navigational capital of the BRAINS community through the peer mentoring circles. For example, one Cohort 2 participant wrote, ‘In negotiating a job application . . . I used BRAINS participants, speakers, and project team members to help me prepare for the interview and negotiate my contract/start-up package.’ The longitudinal nature of the BRAINS program allows participants ongoing access to the navigational capital of the entire BRAINS community as their career needs change.

When discussing the outcomes of participating in BRAINS, survey respondents described increased confidence and motivation, along with redefined definitions of success. Through these impacts, participants strengthened their access to **aspirational capital** and reconnected with their career goals. One Cohort 1 participant wrote, ‘Even though I still need to land a job offer, which would be the ultimate objective of this transitional period, BRAINS helped me to commit to this process.’ The most common way survey respondents discussed accessing their aspirational capital was through the increased confidence they gained through BRAINS. One participant from Cohort 1 wrote, ‘I find that conference calls boost my confidence. I find that my issues seem less intimidating after I discuss them in a conference call.’ Another participant from Cohort 1 noted, ‘The support I received from BRAINS made me more ready, confident and fit to utilize my career development skill.’ Thus the increased emotional support, through social capital accessed through BRAINS, activated this participant’s connection to their aspirational capital. In addition to co-occurring with social capital, navigational capital was often tied to aspirational capital. In particular, activating their connection to aspirational capital through increased confidence strengthened their connection to navigational capital. That is, their aspirational capital would serve to motivate individuals to make forward momentum within their careers.

Exposure to alternative definitions of success through BRAINS led some participants to renew their connection to their aspirational capital, by realizing there were multiple career paths available to reach their goals. One participants from Cohort 1 explained, ‘I had very little idea of what tenure involved and the amount of politics that can play into career progression in [neuroscience] . . . The panelists at BRAINS also allowed me to know that it is not necessary to stay on some “traditional” pathway to have success in science.’ For other participants, the exposure to alternative definitions of success and the range of possible outcomes strengthened their commitment to their aspirations. Another Cohort 1 participant noted, ‘I was exposed to other career paths, and it reinforced my decision to stay on the path I’m on.’

Connecting counterspaces and community cultural wealth

In this section of the analysis, we look to our third research question: How, if at all, did participants describe the counterspace processes as strengthening their access to community cultural wealth? Rather than a linear process of counterspace processes activating community cultural wealth, we found a series of complex relationships and interactions among counterspace processes and community cultural wealth. At times, it is through activation of community cultural wealth that participants describe being able to enact

counterspaces processes. In other moments, it was through the counterspaces processes that participants strengthened access to their community cultural wealth. In still other places, the processes were so entwined within our dataset that it was not possible to determine a temporal or causal order.

When describing the counterspace process of narrative identity work, participants were equally likely to connect this process to all three forms of community cultural wealth evidenced in the data (i.e. social, navigational, and aspirational). Within narrative identity work, reimagined personal narrative work most commonly co-occurred with community cultural wealth. The process of redefining themselves and their careers in a positive manner both resulted from and strengthened access to community cultural wealth. For example, in a quote used earlier in this paper, a Cohort 1 participant wrote that, 'BRAINS has helped me gain perspective on the neuroscience field and how I might fit within it.' Here, the community built through BRAINS (i.e. social capital) led the participant to reimagine themselves within the neuroscience field, which in turn strengthened their connection to their aspirational capital. In other places, it was not possible to untangle reimagined personal narrative work from the activation of community cultural wealth. For example, a participant from Cohort 1 wrote, 'BRAINS provided me [with] the self-confidence that I needed to feel that I can establish an independent research program, lead a lab and [be] a good mentor for my students.' While their reference to increased self-confidence suggests narrative identity work and their looking to what they will achieve in the future suggests aspirational capital, from this statement it is not possible to ascertain the relationship between the narrative identity work and aspirational capital as experienced by this participant.

Both oppression and resistance narrative identity work showed limited connections to community cultural wealth. Where connections did occur, it appears that the community built through BRAINS created space for these processes to occur; that is, the access to social capital frequently preceded oppression and resistance narrative identity work. A participant from Cohort 1 explains:

I learned a lot from participants and speakers. The discussions that we had not only made me feel better because we share the same problems or frustrations, they helped to change my points of view, and try different strategies to resolve old and new problems.

Here, accessing social capital allowed this participant to realize their challenges are not unique (i.e. oppression narrative identity work) and motivated them to try new strategies (i.e. navigational capital). Resistance narrative identity work was also described as being predicated on social capital. As noted earlier, respondents described their resistance narrative identity work as occurring through increased visibility – meeting other neuroscientists from URGs built hope and vision of an alternative future. As quoted earlier, a Cohort 1 participant explained that, 'I was introduced to other minorities in neuroscience, which in itself was a supportive experience.' Thus, the resistance narrative work was intertwined with the community building of individuals of shared identities (i.e. social capital).

Like narrative identity work, the counterspace process of direct relational transactions co-occurred with all three forms of community cultural wealth in the data. Of the seven types of direct relational transactions identified within the data, navigational skills and knowledge co-occurred with the community cultural wealth references most often. Unsurprisingly, there was a very high co-occurrence of navigational capital with the direct

transaction of navigational skills and knowledge. Similarly, the direct relational transactions of both social support and community building highly overlapped with social capital.

Social capital also frequently co-occurred with the direct relational transaction of tips on belonging to a URG in neuroscience. For example, one participant from Cohort 2 wrote, ‘I feel as though I have specific strategies and contacts (particularly program staff and BRAINS participants) to bounce ideas off that are specific to being an under-represented individual in neuroscience.’ Here, the social capital accessed through BRAINS led to the transaction of tips on belonging to a URG in neuroscience. Elsewhere in the data, the temporal direction between this transaction and social capital was less clear. In explaining how BRAINS supported them, a Cohort 1 participant wrote, ‘Mostly with providing practical advice on navigating a career in neuroscience as a minority, and also by fostering connections with other minority neuroscientists.’ As exemplified by this quote, in these data it is unclear if the exchange of tips facilitated community building, if the community built facilitated the exchange of tips, or if the two processes occurred simultaneously.

In many of the co-occurrences of social capital and direct relational transactions of tips on belonging to a URG in neuroscience, participants also discussed the direct relational transactions of community and social support. In describing the social capital that was accessed through BRAINS, participants frequently discussed direct relational transactions of community, social support, and tips on belonging to a URG. The role of shared identities was also embedded in these data. For example, in the quote noted in the earlier section on direct relational transactions, a Cohort 1 participant wrote:

I now have a strong network of minority scientists who I can both relate to and to whom I can give and from whom I can receive advice. The people I met at BRAINS are able to understand my experiences and relate to me, thus their advice is more pertinent.

As shown in this quote, the shared social identities of participants (both in terms of race and ability status) played a role in how participants valued the instrumental and emotional support received. Further, through these shared identities, participants were able to exchange support in the form of an increased sense of belonging. As one Cohort 1 participant wrote, ‘BRAINS helped with a sense of community. I now personally know and can call, individuals that are like me. Background and career wise.’

The direct relational transaction of accountability co-occurred with all three types of community cultural wealth found in the data in a variety of ways. Often the exchange of accountability strengthened access to navigational and aspirational capital. In other occurrences, accessing community cultural wealth occurred both prior to and as a result of accountability transactions. For example, a Cohort 2 participant explained that, ‘The simple act of making contracts and being held accountable by thoughtful and kind colleagues every two weeks has made me vastly more efficient in meeting deadlines and in pursuing additional projects.’ Here, the social capital accessed through BRAINS facilitates and co-occurs with the exchange of accountability, which then strengthens their access to navigational capital.

Discussion

Because our analyses used secondary data collected to assess the impact of the BRAINS program, there were limits to the types of counterspaces and community cultural wealth

that were evidenced in the dataset. Throughout the open-ended survey responses, participants described some aspects of the counterspaces processes (learning behavioral strategies, building community, advice sharing) but if they did not explicitly describe these as linked to their identity, then they were not coded as counterspace processes. Similarly, we can say that evidence of at least three forms of community cultural wealth emerged within the open-ended survey data, but we do not have data to determine if participation in the program did or did not impact access to other forms of community cultural wealth.

Nevertheless, these findings suggest that programmatic interventions to advance diversity in academia can counter the deficit model and serve as a catalyst for participants to access and expand their community cultural wealth. A critical element of this community cultural wealth activation was experiencing a counterspace in which to connect with other individuals from systemically marginalized groups. This counterspace offered an opportunity to engage with and alter narratives about one's career as a scientist while building a supportive community and exchanging resources.

As shown in [Figure 1](#), two types of counterspace processes (direct relational transactions, narrative identity work) and three types of community cultural wealth (aspirational, navigational, social) were observed within our data. These concepts interacted in complex ways, and often the temporal relationship was impossible to discern.

This work extends prior counterspace research because unlike most prior research on counterspaces (except, see Listman, Rogers, and Hauser 2011; Ong, Smith, and Ko 2017), BRAINS is an example of a heterogeneous counterspace, composed of men, women, and non-binary individuals from multiple racial and ethnic groups (including White individuals with disabilities). While we look at the emergent collective themes of how individuals belonging to systemically marginalized groups within neuroscience persist in the field, we simultaneously acknowledge the likely existence of differences across different

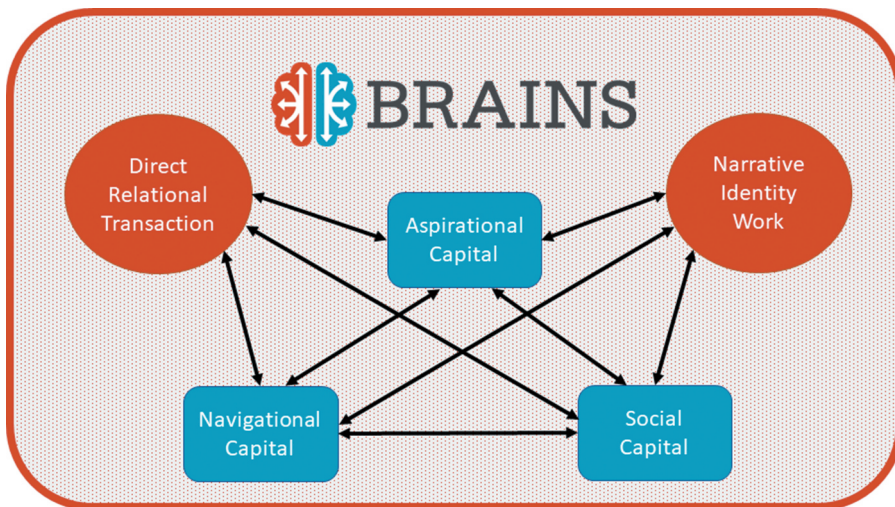


Figure 1. Dynamic Interactions Between Counterspace Processes and Community Cultural Wealth as Found Within the BRAINS Program

intersectional identities. Counterspaces may be dominated by one identity, and intersectional identities may lead to the development of counterspaces within counterspaces (McConnell et al. 2016). Further research is needed to understand how and when different aspects of identity become more or less salient within counterspaces, and how these relational identity structures impact counterspace processes.

Another contribution of this work relates to the concept of familial capital. Yosso (2005) describes familial capital as utilizing an expansive definition of family to include a broad understanding of kin; however, they go on to describe this broad understanding as including extended family in addition to immediate family members, thus still limiting the definition of family to biological kin. While we did not find traces of familial capital within our data, BRAINS participants often refer to the BRAINS community as a family. Further research is needed to investigate what makes a community feel kin-like, how these characteristics may deepen our understanding of familial capital, and how familial and social capital differ.

One aspect of a kin-like community may be shared identity; in this case, the shared identity as an individual belonging to a group underrepresented within neuroscience. Participants discussed the role of this shared identity in forming a community and the resulting exchange of support; thus, these references were categorized as social capital. However, it may be that the sense of shared identity goes beyond the exchange of emotional and instrumental support. With this secondary data analysis, it is not possible to tease apart if the role of shared identity is a newly identified form of community cultural wealth, a deeper understanding of social capital, or an expansion of the definition of familial capital beyond biological community. Thus, further research is needed to understand the role of shared identity within the community cultural wealth framework.

For individuals designing professional development programs to broaden participation in higher education, these findings offer some important lessons. First, designing the program based on creating counterspaces rather than an outdated deficit model encourages participants to access untapped community cultural wealth that can bolster their persistence and success. Because career narratives often shape perceptions of who can be successful in academia and what that success looks like, it is important to provide a diversity of narratives. While senior mentors have been the traditional sources of career narratives, this research suggests that engaging in efforts that celebrate community cultural wealth and foster counterspace processes among peers as well as among individuals at different career stages can expand and bolster the narratives individuals tell about their academic careers.

Second, investigating the relationships between counterspace processes and community cultural wealth draws attention to the value of community and social networks. The overlap between social capital and direct relational transactions highlights the need for community building, as it is through social networks that folks receive the direct relational transactions that they need to be successful in their careers. If interventions invest in creating deep connections among participants, the resulting relationships and conversations can catalyze ongoing professional growth and development.

Finally, authentically connecting to a professional community that actively engages in identity issues as they relate to professional experiences can be an important element to professional development interventions, as evidenced by the BRAINS program. As shown in the connections made in this paper between counterspaces processes and

community cultural wealth, being with other academics belonging to URGs and actively discussing their experiences bolsters belonging and improves participants' ability to proactively pursue their careers. Participants are able to build on experiences grounded in their identities, rather than try to evoke a majority identity experience, to catalyze career advancement.

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