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Opportunities in the Lived Experiences of Successful High-Ability International Doctoral Students at a Selective U.S. Higher Education Institution

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OPPORTUNITIES IN THE LIVED EXPERIENCES OF SUCCESSFUL HIGH-

ABILITY INTERNATIONAL DOCTORAL STUDENTS AT A SELECTIVE U.S.

HIGHER EDUCATION INSTITUTION

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Dissertation

Presented to

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In Partial Fulfillment

Of the Requirements for the Degree

Doctor of Education

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by

Nataliya Dudnytska

July, 2017

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ABSTRACT

Supporting the continuous successful talent development of high-ability individuals from various backgrounds has been one of the main goals and issues in gifted education. However, the lack of resources, enrichment supports, and opportunities for talent development often inhibit realization of potential of precocious students. Exploration of successful academic talent development experiences of high-ability international young adults from developing countries highlights universal supports necessary for continuous development of expertise.

Internationalization of education, brain circulation, and talent development have been studied in the fields of education, psychology, and sociology. However, no empirical study to date explored the successful talent development path and opportunities in the lives of high-ability doctoral students from developing countries.

The present phenomenological study focused on experiences and perceptions of successful high-ability international doctoral students. Analysis also provided a clearer conceptualization of the construct of opportunity as perceived by the participants. The results of this study will inform research, internationalization of higher education institutions, and academic talent development of high-ability students from various backgrounds.

NATALIYA DUDNYTSKA

EDUCATIONAL POLICY, PLANNING, AND LEADERSHIP

OPPORTUNITIES IN THE LIVED EXPERIENCES OF SUCCESSFUL HIGH-

ABILITY DOCTORAL INTERNATIONAL STUDENTS AT A SELECTIVE U.S.

HIGHER EDUCATION INSTITUTION

CHAPTER 1

INTRODUCTION

America remains the world's business and technology leader precisely because it attracts talent and capital from around the globe and maintains world-class technology education and research while encouraging intense competition, collaboration, transparency, and entrepreneurship. No other country could have spawned the new Argonauts; none has benefited more from their labors; and none would be hurt more by policy that undermined the openness of the entrepreneurial ecosystem in America's technology regions.

(Saxenian, 2006, p. 11)

Background of the study

Research on globalization and internationalization of education is rapidly developing. It often takes an interdisciplinary approach, touching upon such aspects as the knowledge economy and technology, lifelong learning, global migration, mobility, multiculturalism, and English as a global language – all the most pertinent topics discussed when we talk about international education (Spring, 2008). Due to globalization and as a result of global mobility, international education in the U.S. is expanding, attracting more students and scholars from overseas, creating international centers for support of international partnerships and programs, and transforming the environment and policies of higher education institutions (Bhandari & Blumenthal, 2011).

U.S. higher education institutions host 21% of all international students worldwide (Goodman & Gutierrez, 2011; Scott, 2015). According to the 2014 Brookings Institute report on international students in the U.S. (Ruiz, 2014), the number of international students in the U.S. increased from 110,000 in 2001 to 524,000 in 2012. Numbers are growing in 41 states across the U.S. (Open Doors, 2014). Because of international student population growth, more decisions in education and policy of education institutions are driven by economic, technological, and social changes resulting from globalization (Bhandari & Blumenthal, 2011). The growing presence of international students and internationalization of the system of education bring change to the higher education institutions in the U.S., provide financial benefits, have a strong positive effect on innovation, and increase diversity (Altbach & Knight, 2007; Saxenian, 2006; Spring, 2008). For example, in the National Foundation for American Policy (NFAP) brief, Anderson (2016) states that 44 out of 87 of U.S. startup companies valued at $1 billion dollars or more had a founder who came to the U.S. as an international student. It is a diverse group of people from 21 countries with 14 entrepreneurs from India, the leading home country on this list.

Doctoral students are one of the consistently growing groups of international students within the system of U.S. higher education in all fields. The number of international doctoral students obtaining their degrees in various disciplines in the U.S. increased by 36% from 9,458 international doctoral students in 1998 to 12,824 in 2005 (Evans et al., 2014), leaping up to 118,104 international doctoral students in

2015, constituting about 12% of all doctoral students in the U.S. universities (Institute of International Education, 2016a).

Students working on their doctorate degrees, especially in selective research universities, are considered high-ability students with rich creative potential, who have the capacity to undertake original research projects and produce significant new knowledge (Evans et al., 2014). The NFAP 2013 brief (Anderson, 2013) reports that 87% of programs in Electrical Engineering and 76% of programs in Computer Science in U.S. universities have the majority of their graduate students from abroad. The presence of full-time international graduate students in STEM programs ranges from 40 to 70% and constitutes over 50% in business and economics programs across the U.S., providing an invaluable source of talented young professionals, researchers, and innovators. This presence, in turn, helps maintain and enlarge the programs, and retain and attract top faculty for these programs, which also benefits U.S. students (Anderson, 2013).

Saxenian (2001) describes one of the most striking examples of immigrant doctoral students' influence in her article "The Silicon Valley-Hsinchu Connection: Technical Communities and Industrial Upgrading." The change of immigration law in 1965 allowed larger numbers of international students to come into the U.S. from Asian countries. As a result, thousands of students from top engineering universities in Taiwan arrived to obtain doctorate degrees in engineering in the U.S. In the 1980s more doctoral students in engineering came from Taiwan than from any other country. The breakthrough in technology industries in Silicon Valley in California coincided with their graduation and drew large numbers of these new graduates to the

region. By the year 2000, there were about 9,000 Taiwanese engineers and scientists working in Silicon Valley. Overall, about a third of engineers and scientists working in Silicon Valley, a place known as one of the miracles of industrialization in the information technology era, were immigrants (primarily from Asia) with U.S. doctorate degrees.

In order to increase academic potential and diversity of U.S. higher education institutions with the help of high-ability international students, it is imperative to understand what factors facilitate their talent development, professional decision making, and individual academic mobility. The field of gifted education can contribute to our understanding of critical talent development opportunities enhancing psychosocial components of achievement and motivation of high-ability doctoral students, inform this study, and help create strategies that could facilitate meeting the needs of international gifted and talented students. This study is rooted in the field of gifted education, specifically, in the mega-model of talent development created by Subotnik, Olszewski-Kubilius, and Worrell (2011) and described in their article *Rethinking Giftedness and Gifted Education: A Proposed Direction Forward based on Psychological Science.*

It is notable that some components, such as general and specific domain abilities, psychosocial factors, environmental support and environment, and chance or opportunity, are present across other models, such as Tannenbaum's (2003) talent development model, Piirto's (2004) pyramid model, Bloom's (1985) model, the scholarly productivity/artistry (SP/A) model (Subotnik & Jarvin, 2005). Subotnik et al.'s (2011) mega-model integrates the most pertinent components of the models

present in the empirical literature of gifted education and can be applied to various domains of special abilities, for example, academic. The model offers *academic trajectory of talent development* based on domains and not on the age of gifted students. It recognizes that the starting point in an academic domain, such as psychology, archeology, or marine biology, happens later in life, and the student is more likely to get exposure to the discipline of interest during college years. In this study, I focus on the trajectory of talent development in the academic domain.

Subotnik et al. (2011) state that opportunity and motivation are two central variables associated with talent development. The authors assert that the greatest likelihood of eminent outcome occurs when individuals are highly motivated and at the same time are presented with opportunities (supportive family and school environments, access to extra-curricular programs, etc.). Subotnik (2011) emphasizes that these opportunities need not only to be offered, but also taken by the motivated gifted individual, and, conversely, when the opportunities are not offered, they are actively sought out by the motivated gifted individual.

Unlike the construct of motivation, the construct of opportunity has not been widely researched or thoroughly described in the literature, and it sometimes does not appear in the talent development models. I focus on the construct of *opportunity* in the talent development of high-ability international doctoral students, especially because this construct may gain even more importance in certain contexts and for certain populations, such as students from disadvantaged backgrounds.

I narrow down the population of interest and focus on international students coming from *developing countries*. *Developing countries* are defined according to

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their Gross National Income (GNI) per capita per year. Countries with a GNI of USD 11,905 and less are considered developing (The International Statistical Institute, 2017). Understandably, not all international students from developing countries come from poor families consistent with the GNI criterion, but it is controlled in this study at the participant selection stage by including a question about their annual family income at the time when they were accepted to the doctoral program. The reason for focusing specifically on international students from developing countries is because for them the opportunity factor may play an even more important role in their academic talent development than for other students from wealthier nations. Organization for Economic Cooperation and Development (OECD) found that national wealth is a strong predictor of students' academic achievement, especially in the countries that spend less than USD 20,000 in per capita gross domestic product on education (OECD, 2012). OECD conducted multiple analyses on the basis of data collected through the Program for International Student Assessment (PISA) in the schools of the 72 participating countries and found average to high correlation between academic achievement in science and the gross national product of their home countries: students from low SES families are almost three times less likely to achieve baseline level of proficiency in science than advantaged students (OECD, 2015).

Similarly, gifted education scholars are concerned about the fact that the correlation is high between SES and representation of gifted students: poverty is the main problem causing underrepresentation, and discovering high potential is much harder in deprived populations (Ambrose, 2012, 2013; Borland, 2004; J. R. Cross &

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Cross, 2005; VanTassel-Baska, 2010). Multiple studies also state that there is a strong correlation between SES and academic achievement (American Psychological Association, 2017; Jensen, 2009; Sirin, 2005). While financially secure families can afford to create a necessary environment and pay for opportunities for their children that help further their talent development (for example, extra-curricular classes, out-of-school programs, private tutors, educational trips, better schools and colleges, etc.), students from families with lesser means have to find other ways to create these opportunities for themselves. Developing countries are behind in their economic and industrial development, and oftentimes lack sufficient education resources to support the needs of high-ability students. Discovering the opportunities that allowed international students from developing countries become doctoral students at a selective higher education institution in the U.S. helped to not only find internationalization strategies for the institutions to search for talent worldwide, but also suggest strategies for supporting gifted students from underrepresented populations in the U.S.

Study Focus

I have designed this study in two phases. In Phase 1 I explored the lived experiences of high-ability international doctoral students from developing countries at a selective public research university. I focused on the phenomenon of academic talent development as experienced by these young adults, the meaning they ascribed to this phenomenon, and their sense-making of it. I explored their lived experiences: what they experienced and how they experienced it, in order to develop a deeper understanding about the features of this phenomenon.

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The phenomenon of academic talent development of young adults comprises multiple experiences and opportunities from early childhood to adulthood. With the help of this study I explored the sense-making that the participants ascribed to their talent development experiences and opportunities that helped them in this process. The construct of *opportunity* is viewed as an enhancing factor in the talent development of students' academic experiences (Subotnik et al., 2011; Tannenbaum, 2003). In Phase 2 of this study, I used the data collected during Phase 1 to explore the opportunities inside and outside of the academic environment in the lived experiences of international doctoral students. I also explored the students' perceptions of the opportunities that helped them achieve academic success in their chosen disciplines and led them to pursue international graduate education at a selective U.S. higher education institution as another step of their talent development.

The focus of this research allowed exploring and connecting findings in two fields: gifted education and internationalization of education. Both fields are developing in the U.S. and contribute important findings to the field of education in general. Internationalization of education helps create diversity and increase creativity and innovativeness due to the heterogeneous composition of student and scholar populations. It can also have beneficial effects across borders, because it increases global mobility and brain circulation between the countries, helping to find solutions to complex problems and promoting cultural competence, tolerance, and acceptance (Altbach & Knight, 2007; Ambrose & Sternberg, 2012; Spring, 2008). However, most research and data gathering in this area of inquiry concerns undergraduate-level international students. Consequently, there is a paucity of research on international

doctoral students obtaining their degrees in U.S. universities, and little is known about the lived experiences that brought them to this level of expertise (Ackers & Gill, 2008; Altbach & Knight, 2007; Knight & Madden, 2010).

Based on Sternberg's (2009) definition of giftedness as the process of developing expertise, opportunity as a success factor of international high-ability graduate level students was examined from the gifted education scholarship perspective. The research was grounded in Subotnik et al.'s (2011) mega-model of talent development following the performance trajectory of the academic domain. According to this model, students who develop their talent in the academic domain may specialize later in life, as late as the end of the stage of adolescence and during their undergraduate years of college. I attempted to determine the enhancers that helped accelerate international doctoral students' progress in their chosen domain and determine which specific opportunities were most helpful for turning their potential into achievement so that these opportunities could be made available to a wider population of high-ability individuals. I also explored students' responses to opportunities, which helped understanding the role that the construct of opportunity played in their talent development, as well as other related psychosocial factors, such as risk-taking, adaptability, resilience, and persistence.

Research Questions

Phase 1

1. *Question:* What opportunities taken by high-ability international doctoral students throughout their lives (offered inside and outside of the academic environment) helped them develop expertise in their chosen domain?

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a. What opportunities were pertinent to their talent development?

b. What opportunities were offered but discarded by the students?

c. What opportunities were not offered but sought by the students?

Key features: focus on the common phenomenon of academic talent development as an experience.

2. *Question:* What opportunities helped/influenced international high-ability students to make the decision to become doctoral students in the selective U.S. higher education institution?

a. What were the enhancing factors?

b. What were the barriers/challenges?

c. What psychosocial factors were pertinent?

Key features: focus on the common phenomenon of academic talent development as an experience of an international student.

Phase 2

3. *Question:* How do high-ability international doctoral students perceive opportunity in their talent development process?

a. How do the students view opportunities in their lives: as lucky coincidences or as something they helped create?

b. How do the students perceive themselves in relation to their talent development?

Key features: focus on personal meaning and sense-making in a particular context (international doctoral program at a selective U.S. institution) for

people who share a particular experience (successful academic talent development).

Significance of the Study

In this study I focused on *opportunity* as an enhancing success factor of international high-ability doctoral level students, grounding my research on Subotnik et al.'s (2011) mega-model of talent development, following the performance trajectory of the academic domain. I looked to determine the enhancers, general and specific, that helped accelerate students' progress in their chosen domain and determine which specific opportunities were most helpful for turning their potential into achievement so that these opportunities are identified and are more likely to be made available to a wider population of high-ability individuals.

It was also pertinent to look for contributing psychosocial variables in international high-ability students such as: willingness to take strategic risks, adapt to change, ability to cope with challenges and handle criticism, competitiveness, motivation, and task commitment. It was necessary to take into account opportunities within the environmental and cultural conditions, because values and socially accepted or promoted choices could be perceived as either facilitating or prohibitive by the students in their decision to study abroad (Knight & Madden, 2010).

This study was focused on high-ability international doctoral students from developing countries at a selective public higher education institution and aimed to define opportunities that led them to academic achievements and furthered their talent development in their chosen academic domains. Having built my research on the basis of the talent development model and principles and constructs of gifted education, I

applied them to study the talent development trajectories of international students and support high-ability international students from various backgrounds.

This research can be useful to international students and families and students who want to become international students, because it provides the analysis of other international students' experiences and their perceptions of opportunities pertinent for the success and achievement in the context of international education. It provides useful insights allowing students, families, as well as sending and receiving institutions to build strategies to better support international education and students from various backgrounds. U.S. higher education institutions could use the results of this study when creating support programs, student searches, and other opportunities in an effort to make their institutions more internationalized and diversified.

On a larger scale, I hope that this research will be a background for future studies and will eventually promote global learning and internationalization of education. It will help provide support for high-ability students around the world regardless of their background, and increase brain circulation and global mobility.

Definition of Terms

Subotnik et al. (2011) offer the following definition of *giftedness*:

Giftedness is the manifestation of performance or production that is clearly at the upper end of the distribution in a talent domain even relative to that of other high-functioning individuals in that domain. Further, giftedness can be viewed as developmental, in that in the beginning stages, potential is the key variable; in later stages, achievement is the measure of giftedness; and in fully developed talents, eminence is the basis on which this label is granted.

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Psychosocial variables play an essential role in the manifestation of giftedness at every developmental stage. Both cognitive and psychosocial variables are malleable and need to be deliberately cultivated. (p. 7)

The operational definition of *giftedness* for this study will follow Subotnik et al.'s conceptualization and view it as a developmental process in which psychosocial variables play a vital role and should be deliberately cultivated. I will also view *giftedness* as developing expertise, or a process of continual development (Sternberg, 2006).

Eminence is operationalized in the study following Subotnik et al.'s (2011) definition as "contributing in a transcendent way to making societal life better and more beautiful" (p. 7).

Opportunity is operationalized in this study as an enhancing psychosocial and environmental factor. *Mismatched* or *not offered/unavailable* opportunities are viewed as delimiting factors. Opportunity needs to be both offered to and taken by the individual. It requires proactive behavior, resilient sense of self-efficacy, and ability to successfully adapt to, shape, and select environments by high-ability individuals in order to occur and become impactful (Bandura, 1998; Sternberg, 2006; Subotnik et al., 2011).

Internationalization is defined by Hirst, Thompson, and Bromley (2009) as intensified interaction across and between nations. The operational definition of *internationalization* for this study will focus on academic interaction and cooperation between education systems and institutions across the world with the goal of convergence of best practices and ideas, increasing diversity, and promoting and

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developing cultural competence of students, scholars, and future leaders in various fields.

Globalization is operationalized as increased and intensified international interactions that result in emergence of global forces, systems, and processes that contribute to expansion and innovation in various fields and industries requiring professionals to acquire global competencies (Hirst et al., 2009).

International students are non-US citizens studying in the U.S. education institutions on the F1 or J1 visa (non-immigrant visas issued to international students and scholars) and maintaining a student immigration status.

Brain drain is a loss of knowledge and human capital of the home country to the host country achieved by means of outbound mobility of individuals who possess expertise or high intellectual potential in a certain field and seek to fulfill it outside of their home country (Saxenian, 2005).

Brain circulation means a circulation of knowledge and human capital that is beneficial to both sending and receiving countries (Saxenian, 2002). Brain circulation in academia is a two-way flow of expertise and skill that enhances productivity and innovation in both home and host countries and is made possible by maintaining social, academic, and professional relationships of the internationally migrating individuals.

Knowledge economy is a contemporary economy in which success is achieved by creation and efficient utilization of intangible resources such as knowledge, expertise, innovative potential, and skills by a well-educated workforce applicable to all sectors (The Work Foundation, 2006).

Mobility is operationalized in this study as the process of *academic mobility* focused on graduate international students who move to the U.S. with the primary purpose of attending higher education institutions and completing a doctoral degree.

Developing countries are defined according to their Gross National Income (GNI) per capita per year. Countries with a GNI of USD 11,905 and less are defined as developing (The International Statistical Institute, 2017). See the current list of developing countries effective from January 1st to December 31st 2017 in Appendix A.

Limitations and Delimitations

This study has several delimitations and limitations. Firstly, this research was based on the subjective perspectives of the participants because I analyzed their lived experiences with the help of interviews according to phenomenological research design. Second of all, this specific design also limited the sample size to a relatively small group of participants (13), which is a usual occurrence for qualitative research studies. Also, only 3 of the 13 participants were female. Next, I conducted the study on the basis of a particular selective research university with specific demographics, academic culture, and academic fields that may not be representative of other selective research universities in the U.S. Finally, the researcher was also an international doctoral student at a selective research university in the U.S. and this may have result in personal bias and assumptions based on researcher's personal experiences. Care was taken to address this bias and a *Researcher as an Instrument* essay was added to the study (see Appendix B).

Assumptions

I assume that I received truthful and thoughtful responses from the participants. I also assume that doctoral international students at this particular selective research university are high-ability students, even if they have not been officially identified gifted. Finally, I assume that international doctoral students at the chosen university are representative of the population of international doctoral students at other selective U.S. liberal arts higher education institutions.

CHAPTER 2

REVIEW OF LITERATURE

I studied the experiences of international doctoral high-ability students from developing countries at a selective public research university. In this phenomenological study grounded in a social constructivist worldview (Creswell, 2013), I focused on the construct of *opportunity* as a success factor of high-ability international students' academic experiences. I explored those opportunities that helped international doctoral students achieve academic success in their chosen disciplines, and led them to pursue international doctoral education at a selective higher education institution in the U.S. as another step in their talent development.

The focus of this research allowed exploring and connecting findings in two fields: internationalization of education and gifted education. Both fields are developing in the U.S. and contribute important findings to the field of education in general. Internationalization of education helps create diversity and increase creativity and innovativeness due to the heterogeneous composition of student and scholar population (Ambrose, 2012). It can also have beneficial effects across the borders, because it increases global *mobility* and *brain circulation* between the countries, contributing to the *knowledge economy* and helping to find solutions to complex problems and promoting cultural competence, tolerance, and acceptance (Altbach & Knight, 2007; Oleksiyenko, 2013; Spring, 2008).

The field of giftedness also has a lot to offer: it can contribute to our understanding of academic talent development trajectories of young adults, in this case, international doctoral students from developing countries. Existing research

helped to highlight critical psychosocial components and contributing influence of the factor of opportunity on talent development and achievement of young adults. It also helped create strategies that would facilitate meeting the needs of gifted and talented students regardless of socio-economic status of their families or other constraints (Subotnik et al., 2011). Let us review these two fields in more detail.

Globalization and Internationalization of Education

Globalization encompasses changes in modern societal, political, and economic world trends. Critics of globalization (Stiglitz, 2002) claim that it expanded economic control and cultural dominance of the Western countries over developing countries, widening the economic gap between rich and poor, causing environmental problems, and making local economies of developing countries more vulnerable to changes in global economy. Proponents of globalization rely on the evidence of alleviation of absolute poverty (living on less than $1 a day), increased life expectancy, rapid industrialization, and economic growth of developing nations whose economies have become more globalized (Handelman, 2017). According to the World Bank statistics (The World Bank, 2017), the percentage of people in developing countries living in absolute poverty declined from 40 to 19% during the span of 1980-2002. This was achieved not only with the help of remittances, or money sent by immigrant workers to their families and communities at home, but also by opening up new economic opportunities in the countries of origin. Handelman (2017) states that such countries as China, India, and South Korea, which have been most deeply integrated into the global economy during the past two to three decades, have seen a sharp decline of poverty and rapid improvement in living standards.

Coincidentally, these are also the countries that, according to the recent Project Atlas Global Mobility Trends report, send the largest number of college students to such countries as Canada, the U.S., Germany, the Netherlands, the U.K., Australia, New Zealand, and Japan (Project Atlas, 2016).

Research on globalization and education is developing and often takes an interdisciplinary approach, involving the knowledge economy, technology, global migration, brain circulation, multiculturalism, and English as a global language (Postiglione, 2013; Spring, 2008). Globalization influences the sphere of education by increasing international involvement of academic institutions and contributes to the economic development of particular regions around these institutions, as well as to the *knowledge economy* worldwide (Dill & van Vught, 2010).

Knowledge Economy

Knowledge economy is a relatively new term. It can be defined as a contemporary economy in which success is achieved by creation and efficient utilization of intangible resources such as knowledge, expertise, innovative potential, and skills by a well-educated workforce applicable to all sectors (The Work Foundation, 2006). *Knowledge* is viewed as an economic asset that can be accumulated and distributed using low cost technology, such as the Internet, and transferred using English as a global language. Knowledge is renewable: its quantity is not depleted by use, moreover, its value is acquired by sharing with others.

Furthermore, creation of knowledge is dependent on collaboration, sharing, and drawing upon innovative potential worldwide. In order to function and develop further, knowledge economy and knowledge society need to pull on talent and

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innovative potential across the borders and cannot be restricted to a particular institution or country. Doing that would mean restricting knowledge sharing and not utilizing the available intangible resources. And it is at this point that globalization influences internationalization of education: trans-national education and commercial knowledge transfer is tied to and is dependent on advancing academic cooperation and academic knowledge transfer (Teichler, 2004). That is why internationalization of education becomes key to the development of our society: collaboration and exchange will allow advancement of sciences and technologies that require specialized expertise and may lead to finding solutions to complex problems such as global warming and cancer prevention. Internationalization is especially pertinent at the doctoral degree level, because it involves young high-ability professionals in the early stages of their careers. Internationalization provides them with an opportunity and means to realize their full innovative potential in a specific discipline and also enables them to establish instrumental social and professional relationships for future research and collaboration (Lee & Kim, 2010). Internationalization may also provide pass ways for *brain circulation* and thus contribute to the knowledge economy in both the Western world and developing countries.

Brain Circulation: Definition and Roadblocks

     Brain circulation is often juxtaposed with *brain drain,* or loss of knowledge and human capital of the home country to the host country (Saxenian, 2005). *Brain circulation* means a circulation of knowledge and human capital that is beneficial to both sending and receiving countries (Saxenian, 2002). Researchers of brain circulation usually focus on return rates of students to particular home countries as a

measure of exchange, consensus being that developing countries have a lower rate of return and thus experience brain drain (Chen & Barnett, 2000; Grossman, 2010; Lee & Kim, 2010; Schiff 2005; Tremblay, 2005). For example, return rates of international students to China and India are consistently low: data showed that only 15% of Chinese and 18% of Indian doctoral students who received their degree in 2006 returned to their home countries by 2011. On the other hand, return rates to South Korea (58%) and Taiwan (62%) are high (National Science Foundation, 2014).

Brain drain, as well as other concerns, such as undesirable cultural, religious, or ideological influences of either host or home country, may prevent the countries from actively engaging in internationalization of their education institutions. This may also result in aborting existing exchange programs and restricting student and scholar access to such opportunities through the use of policies and administrative power. For example, Russian government pulled out of a U.S. government-sponsored Future Leaders Exchange program that was successfully running for 21 years, and is still running in other countries of the former Soviet Union. It happened after one of the students sought asylum in the U.S. The boy claimed he was persecuted for his sexual orientation in Russia and remained in the U.S. in October 2014 (American Councils for International Education, 2014). As another example, the Chinese government suspended the Fulbright scholar exchange program in the spring of 1989 after student-led pro-democracy Tiananmen Square protests. This was done in an effort to prevent further American influence on college campuses (Mathews, 1989). In the US, following the terrorist attack in San Bernardino, CA, in 2015, an estimated number of 60-70 Indian students who were accepted to California-based accredited colleges and

held valid student visas and supporting I-20 forms from the schools, were denied entry to the U.S. upon arrival or stopped from boarding their US-bound flight (Hindustan Times, 2016). In the current tense political climate, these concerns are more pertinent than ever: they create roadblocks for establishing connections and successful brain circulation between countries with ideological and religious differences. They may also present additional challenges for potential international students and restrict necessary academic and research opportunities for their talent development.

Successful Brain Circulation

In recent years brain circulation has been redefined in literature and research has taken a broader approach. It is conceptualized as an ongoing process rather than a finite physical migration of an individual, and knowledge transfer is distinguished from physical return or presence of an individual (Ackers & Gill, 2008; Grossman, 2010;). For example, Saxenian (2002; 2006), Dean and Professor in the School of Information at the University of California, Berkeley, explored successful brain circulation by immigrant U.S.-educated engineers between Silicon Valley, CA, and their home countries of Taiwan, Israel, China, and India (Saxenian, 2006). In her book, "The New Argonauts: Regional Advantage in a Global Economy," these immigrants are the new Argonauts, the name given as tribute to their skills, entrepreneurship, and risk-taking. When thousands of Taiwanese engineering and science students moved to the U.S. to obtain their doctorate degrees and stayed on to work in the Silicon Valley, Taiwanese government recognized it as brain drain. However, through the networking efforts of Taiwanese graduates and with the help of

policymakers in Taiwan, they created a venture capital industry and found ways to diffuse technology in Taiwan. Through joint projects, cooperation, and sharing of expertise they built a technologically advanced area in the Hsinchu-Taipei area, known as Hsinchu Science-based Industrial Park. This brain circulation made Taiwan into one of the world's leading Internet technology and networking hardware manufacturers and boosted Taiwan's economy. On the other hand, it significantly reduced the cost of producer and consumer technologies for the U.S. companies by opening the foreign technology regions, as well as provided access to fast-growing foreign markets. A similar two-way flow happened in Israel, making it a leading country in network security innovations, telecommunications software, and electronic components. China and India are following suit, even though the process of technological development is so far concentrated only in certain urban centers. Saxenian (2006) comes to the conclusion that the main agents in this mutually beneficial brain circulation process were communities of U.S.-educated technologically skilled immigrants who came from the countries that heavily invested in higher education.

In academia, more and more studies focus on the less tangible, but no less valuable factors that create brain circulation. In the context of research universities, the factors that benefit institutions in both host and home countries include creation of knowledge networks, building communities of scholars and researchers, and using these networks and communities to recruit and retain international researchers in home institutions (Altbach & Salmi, 2011; Powell & Sandholtz, 2012; Saxenian, 2005). In fact, Postiglione (2013), in his study about evolution of research universities

in Hong Kong, attributes their development from undergraduate schools to the high-level research universities in the span of just 30 years (1980 to 2010) to the use of knowledge network agents, institutional arrangements, and brain circulation with scholars from international institutions. This was made possible with the help of open border policy, bilingualism (Mandarin and English), first class information technology, and recruitment of ethnic Chinese scholars with advanced degrees from foreign universities as a majority of faculty and researchers in Hong Kong institutions. According to Postiglione, 75% of university professors and higher level administration in Hong Kong earned their doctorate degree abroad, usually in the UK or the U.S., and this decision proved crucial to the success of higher education institutions in the country.

Japan is another example of using brain circulation through internationalization of education in order to create high-level research institutions. West (2015) described it in her article "Japan Looks to Take Flight." Japanese Ministry of Education has placed particular importance on internationalization of education with a goal of maintaining global competitiveness of Japanese education institutions and ability to solve global and domestic challenges, such as climate change and aging population. Between 2009 and 2013 the government launched funding initiatives, for example, Global30 and Go Global, to provide extra support for its institutions to attract foreign students, scholars, and researchers and for individual Japanese students who wanted to study abroad. Similar to Hong Kong, the following brain circulation strategies are used: existing programs facilitate international education for students, institutions adopt bilingualism (Japanese and English), use

first class information technology, and recruit faculty with doctorate degrees from top-ranked institutions of the world.

Several questions regarding brain circulation arose in the context of this study:

a) What opportunities, if any, are available for prospective graduate international students that evolve from brain circulation practices between the host institution and institutions and scholars in developing countries?

b) What are the students' experiences of finding these opportunities?

c) How could these opportunities be made more accessible using brain circulation strategies?

In this study brain circulation between receiving higher education institutions and doctoral students is viewed as a positive force that enables aspiring young adults to realize their potential and allows leading universities to discover and draw from the expansive talent pool worldwide. Brain circulation in academia is a two-way flow of expertise and skill that enhances productivity and innovation in both home and host countries and is made possible by maintaining social, academic, and professional relationships of the internationally migrating individuals. This migration is called *mobility*, and in the following section I am going to provide an overview of international mobility, offer classification of the types of mobility, and operationalize it for this study.

Mobility Overview

International mobility, even though it is not a new phenomenon, is a widely discussed topic among researchers in international education, globalization, and sociology. Overall, international mobility of students has been mainly caused by

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economic inequality, comparative labor market conditions, and migration opportunities in different countries (Altbach, 2004). That is why the prevalent direction of student mobility is either within the developed countries or from developing countries to the Western world: Western European countries, Canada, the U.S., and Australia (Project Atlas, 2016).

Teichler (2015) states that modern mobility movement in the context of international education began in Europe after World War II, specifically, in the 1950s, when the Council of Europe started taking action. However, main advancement started in Europe in the late 1980s with the help of Erasmus (European Region Action Scheme for the Mobility of University Students) program within 4,000 institutions in 37 countries (European Commission, 2017). It was followed by the Bologna Process in the 1990s that created the European Higher Education Area with the cooperation of 48 countries (Bologna Process, 2017). These initiatives helped establish internationalization policies and programs within the network of European countries and universities, as well as research opportunities throughout the institutions. This support for students and scholars was given in order to increase academic progress and create more world-class institutions among European universities. It also encouraged cooperation and cultural exchange between European institutions and facilitated job search for new graduates, thus, decreasing unemployment rates in the EU. Thanks to Erasmus and the Bologna Process, European mobility is the most organized and studied nowadays. Moreover, these initiatives mainstreamed internationalization of European institutions to a point when studying abroad is no

longer viewed as a unique choice. It became completely normalized, which is something American institutions are trying to achieve.

International academic mobility of doctoral students is not as widely researched as mobility of undergraduate level students. Studies found that doctoral student mobility provides support for robust talent development (Saxenian, 2006) and higher quality research (Knight & Madden, 2010), as well as creates a boost for development of higher education systems (Postiglione, 2013; West, 2015). Knowing trends and undercurrents of doctoral student mobility from developing countries to the U.S. helped inform this research and allowed for better understanding of the population under study and the trajectory of their academic talent development.

Types of mobility. Mobility in education ranges broadly from student mobility to the mobility of faculty, scholars, and researchers in various stages of their professional careers (Teichler, 2015). In the literature researchers also distinguish between types of mobility according to (Deardorff, 2013; Scott, 2015; Teichler & Cavalli, 2015):

- Duration or type of program: for example, full-degree program, one-year exchange, non-degree program, language learning program. Stronkhorst (2005) studied mobility in terms of advancement in specific competencies of college students, and found that short-term mobility of three or four months is insufficient for development of professional and academic competencies of the participants. Stronkhorst concludes that long-term full-degree mobility should be encouraged and receive more institutional support;

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- geographical direction: *inward/inbound,* meaning related to the country of origin; or *outward/outbound*, meaning related to the country of destination. Developed countries see a relatively equal flow of inbound and outbound mobility, whereas mobility in developing countries is primarily outbound if not supported by specific policies, either restrictive or those aimed at attracting the human capital back to the home country (as in the above-mentioned examples of Japan and Hong Kong);

- social direction: for example, *vertical upward*, or the mobility undertaken with an intent to improve one's position or status; *horizontal,* or mobility that does not result in the change of social status; or *vertical downward* mobility, often undertaken under strenuous circumstances and with intent of finding employment;

- location: *virtual,* or achieved with the help of technology and done remotely, without having to physically relocate (using MOOCs or completing online courses and programs); and *physical* mobility, when the individual actually moves to a different geographical location, usually a different country;

- and type of mobility agent: *individual,* or mobility as a result of individual effort, or *group* mobility that usually results from structural changes in society. Developing countries usually lack resources and education support structures and rely mostly on individual mobility.

In the study of mobility of higher education students from India, Gopinath (2015) also distinguishes between *controlled* and *emergent* mobility types. *Controlled*

mobility reflects perpetuating the social and economic advantage or disadvantage passed on to next generations: students from advantaged backgrounds have more pathways for mobility, whereas disadvantaged students lack economic and social capital, as well as vicarious experiences, preventing them from participating in mobility and maintaining the status quo. *Emergent* mobility has been considered impossible in the past. It is achieved through discovering new pathways, and relies on the actions undertaken by the individuals (Gopinath, 2015). This study focused on emergent mobility and the opportunities for talent development of doctoral students from developing countries.

Mobility as operationalized in this study. *Mobility* is operationalized here as academic, full-degree, individual, upward, outbound, and emergent. In this study it is the process of *academic* mobility focused on graduate international students from developing countries who move to the U.S. with the primary purpose of attending higher education institutions and completing a *full-degree* doctoral program without the support of education structures in their home countries. Academic *individual* mobility of young high-ability adults from developing countries who undertake full-degree graduate programs in the U.S. is *outbound*. They migrate not only for education, but also to gain cultural, economic, and social capital, so it is *upward* and *emergent*.

Mobility is most often directed towards the Western world countries with high-quality academic environments, thus creating a surge in *internationalization* of academic institutions in the receiving countries, such as the U.S., one of the primary destinations for international students. The result of this kind of mobility is often what

Scott (2015) calls *brain transformation*, or the actual impact on the mobile students themselves. This impact gains even more significance if these graduates stay in academia and can pass it on through teaching and research, because they possess expertise unachievable within a single environment, as well as carry scientific and cultural values of multiple environments.

Due to globalization and as a result of global mobility, international education in the U.S. is expanding, attracting more students and scholars from overseas, creating international centers for support of international partnerships and programs, and transforming the environment and policies of higher education institutions (Bhandari & Blumenthal, 2011). Let us review the current state of internationalization of U.S. higher education institutions, international student population, factors increasing academic mobility of foreign students to the U.S., and influences internationalization has on academic institutions.

Internationalization of U.S. Higher Education Institutions

Internationalization in academic institutions is the evolution of practices and policies of higher education institutions in response to the changing economic and academic trends (Altbach & Knight, 2007). The process of internationalization has been expanding and is becoming integral to the higher education environment, with more and more institutions including internationalization goals on their strategic plans (Eddy et al., 2013). These goals include collaborative research projects, student and faculty exchanges, launching and development of study abroad programs for domestic students, attracting more international students, language programs, and enhancing curricula with international context. Academic institutions engage in

internationalization for a variety of reasons: curriculum enhancement, financial

benefits, increasing competitiveness, ranking, and boosting strategic ties of the

institution (Altbach & Knight, 2007). An integral part of the internationalization

process of higher education institutions in the U.S. is enrollment of international

students from around the world.

      International student population in the U.S. U.S. higher education

institutions host 21% of all international students worldwide (Goodman & Gutierrez,

2011). According to the 2014 Brookings Institute report on international students in

the U.S. (Ruiz, 2014), the number of international students in the U.S. increased from

110,000 in 2001 to 524,000 in 2012. Numbers are growing in 41 states across the

U.S., and in the academic year of 2015-2016 there were 1,043,839 international

students in the country (Institute of International Education, 2016b).

      The largest group of international students is non-degree seeking language

training learners (they also comprise the fastest growing category, which grew from

2,000 to almost 165,000 students in 11 years), followed by students pursuing

Bachelors and Masters Degrees. From the 2008 to 2012 period 480,000 Master's and

135,000 doctoral degrees were issued F-1 student visas to study in the U.S. (Ruiz,

2014). As for the most popular fields of study with international students, two thirds

of all degree-seeking international students choose to pursue their degree in the STEM

or business fields.

      The largest growing group of international students consists of students

coming from the countries that are not members of Organization for Economic

Cooperation and Development, or OECD (Ruiz, 2014). The majority of international

students are coming to the U.S. from South and East Asian countries with emerging market economies, primarily from China, India, and South Korea, with an increasing number of students coming from Saudi Arabia, Vietnam, Brazil, Japan, Mexico, Iran, and Canada (Goodman & Gutierrez, 2011; Institute of International Education, 2016b). According to the Open Doors report (Institute of International Education, 2016b), two main sources of funding for graduate level students are family and personal funds (57.6%) and U.S. college or university support in the form of teaching or research assistantships, grants, or fellowships (34.6%).

International doctoral student population in the U.S. Unfortunately, data on the international student population, especially at the doctorate level, have not been gathered consistently. Most reports that provide statistics on doctoral degree students combine them with Master's level students into one category of graduate students. The most recent report issued by the Institute of International Education (2016a) provides only one statistic, the number of doctorate level students: in the academic year of 2015-2016 there were 122,655 international doctoral students, constituting 12% of all doctoral students in the U.S. All other data (countries of origin, field of study, sources of funding, etc.) are presented for international graduate students altogether.

The National Science Foundation (2014) provides more specific data on doctoral students that has been collected from 1995 to 2011, allowing a description of this population in terms of mobility and brain circulation based on the return rates to students' home countries:

- By country of origin, doctoral students from Thailand, New Zealand, Indonesia, South Africa, Jordan, and Brazil consistently show high return rates to their home countries, whereas students from China, India, Bulgaria, Romania, and Iran tend to stay in the U.S. after graduation;

- By discipline, the highest stay rate is recorded for graduates of computer science programs (79%) and in computer/electrical engineering programs (77%); the lowest stay rates are recorded for students graduating in social sciences, economics, and agricultural sciences;

- By gender, female doctoral students have a slightly higher stay rate than male.

The report concludes that brain circulation is decreasing, because greater numbers of international students choose to stay in the U.S. than return to their home country. However, this conclusion is based on the quantitative information without any qualitative investigation. The redefinition of brain circulation, easy access with the help of technology, and diversified pathways of expertise exchange justify employment of a qualitative approach to understand what is happening when doctoral graduates stay in the U.S. Do these graduates who stay in academia maintain ties with their home institutions? Do they influence their peers and provide them with vicarious experiences? As new postdoctoral researchers and assistant professors, do they initiate exchange and collaborative projects with their home institutions? Do they attract new doctoral students from their home countries and in that way create opportunities for

their talent development? These questions need to be answered in order to better understand the internationalization of doctoral programs, mobility of international doctoral student population, avenues for brain circulation between international students' home countries and the U.S., and the factors that attract doctoral students to the U.S. higher education institutions. However, these questions cannot be answered quantitatively at this point, and there is a need to conduct qualitative research to explore international doctoral students' experiences.

Factors attracting international students to the U.S. Goodman and Gutierrez (2011) state that the increase in international student population was spurred by a combination of factors, such as limited capacity of higher education system in students' home countries, growing middle and upper middle class population, and increased recruitment by receiving U.S. education institutions. A major factor in the increase of international student population in the U.S. is the language: English has become a global economy language and a key mobility driver, with at least 750 million speakers worldwide. Studying English as a second language during secondary education years enables the students to consider higher education institutions in the English-speaking countries, ease the transition to the life and studies overseas, and helps cultural adjustment (Lasanowski, 2011).

Research shows that the main factors that attract international students to the U.S. higher education institutions are (Bhandari & Blumenthal, 2011; Goodman & Gutierrez, 2011; Spring, 2008):

- quality of higher education in the U.S.;
- high world rankings and prestige of the institutions;

- availability of versatile and specific disciplines, especially in the fields of science, technology, engineering, mathematics, business, marketing, and management;

- appeal of Western civilization;

- speaking English as a second language;

- welcoming immigration and visa policies in the U.S. up to 2017;

- financial capabilities of families to support students;

- opportunities to intern before and work in the field after graduation: almost half of the students choose to extend their visas under the Optional Practical Training (OPT) program and work in the U.S. after graduation, offering valuable skills to employers and taking the opportunity to gain practical experience (Open Doors, 2014; Ruiz, 2014).

Specifically for international doctoral-level students, studies also find such motivating factors as (Ackers & Gill, 2008; Jons, 2007; Knight & Madden, 2010; NORFACE, 2008):

- Pre-doctoral mobility, or previous international academic experience. This means that students moved to the U.S. to complete an exchange program, pursue their undergraduate studies and/or a Master's degree, and stayed on for their doctorate. It is considered to be a strong tendency among international researchers to stay in the same host country. There are two main reasons for staying on: 1) students discover further education opportunities within the host institution, and 2) students develop links with

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researchers in the field they are interested in and make strategic
connections.

- Access to unique resources such as specialized courses, experts in the field, fieldwork opportunities, data, and specialized equipment access.

- Enhancing career path by collaborative research and lucrative employment opportunities.

- Gaining life experiences. Knight and Madden (2010) state that the exposure to different cultures and education and political systems enriches students' worldviews, encourages cross-cultural understanding, and hones their analytical skills.

International mobility of doctoral students does not have a structural support network that exists, for example, within industrial and business recruitment companies (Peixoto, 2001). It mostly occurs through personal networks, individual motivation, and risk (Ackers & Gill, 2008). Doctoral students are motivated and willing to take this risk, because in order to excel in their professional careers they need access to the best opportunities to develop their skills. Some of the above-mentioned factors, for example, quality of education, prestige of the institutions, availability of versatile and specific disciplines, and opportunities to work in the field after graduation, point to the fact that higher education in the U.S. meets the needs of students that are not met by the education system in their home countries. But even though more and more students across the world are choosing to take this opportunity, many of them are cautious, hesitant, or unable to leave their home country and pursue their dream. Therefore, it is important to understand what helped international

students become international students to be able to create more opportunities to help them realize their potential. This will benefit both sending and receiving countries, support global mobility, and brain circulation.

Influences of internationalization. The growing presence of international students and internationalization of the system of education bring change to the higher education institutions in the U.S. As a result of international student population growth, more decisions in education and policy of education institutions are driven by economic, technological, and social changes resulting from globalization (Bhandari & Blumenthal, 2011). Internationalization of education has a strong positive effect on innovation and provides diversity, as well as economic benefits, to the institutions and the receiving country overall (Saxenian, 2006; Spring, 2008). According to the U.S. Department of Commerce, international students contributed almost $36 billion to the U.S. economy in 2015 (Institute of International Education, 2016b).

Major internationalization efforts of U.S. colleges and universities are the following (Tubbeh & Williams, 2010):

- actively forming partnerships with foreign universities;
- recruiting more international students and actively searching for high school graduates with high mobility abroad;
- creating support systems for international students and scholars (immigration support, cultural and language programs, etc.);
- expanding collaboration with industrial firms and corporations to receive research grants, recruit faculty, and provide internship opportunities for the students;

- attracting star professors and researches from across the country and abroad.

These efforts add to the brain circulation and brain exchange as outcomes of global mobility rather than brain drain trend from the developing world, benefiting all countries involved and the society at large (Bhandari & Blumenthal, 2009; Stromquist, 2007). Universities are expanding and strengthening ties with institutions in other countries by recruiting more international students and faculty and creating more study abroad programs for domestic students.

The focus of this study is on the high-ability international doctoral students who are currently enrolled in the doctoral program at the university under study (from now on referred to as the University). This University is a highly selective public institution, a cutting-edge research university that offers a world-class education to its students. It was ranked #5 on the America's Top Public Schools list and #20 on the America's Top Research Universities by Forbes in 2016.

The mission statement and goals of the University emphasize the importance of diversity, public and community service to national and international communities, as well as enabling its faculty and students to address the issues facing the nation and the world. The University's strategic focus is on innovation, diversification, and internationalization. The University was performing better than the national norm five years ago, and has made progress in internationalization efforts since.

To support internationalization and global engagement efforts of the University, the Center for International Studies was established in 1989 and hosts the Office of the Vice Provost for International Affairs, the Global Education Office, and

the Office of International Students, Scholars, and Programs. The Center for International Studies provides invaluable help and support to more than 1000 members of the College's international community: students, scholars, and faculty coming from over 60 different countries, and also administers over $20,000 annually in scholarships to international students.

The University provided an excellent base for the study of high-ability international graduate students for the following reasons:

- The University is actively pursuing the goal of internationalization of education and seeks to support qualified candidates from various countries, building and expanding a strong community of international students, scholars, and faculty.

- The institution is highly selective, ensuring that enrolled students are high-ability even without specific identification of giftedness in their home countries.

- The selectivity and high ranking of this research university ensures that it is a sought-after opportunity for young adults who want to pursue a doctoral degree and further develop their academic talent.

- The University provides international students, especially graduate students, with opportunities of financial aid in the form of scholarships, assistantships, grants, and awards, making it possible to attract international doctoral students from developing countries and varied backgrounds, a fact that is essential for the purpose of this study.

Theoretical Framework: Giftedness and Talent Development Models

I relied on empirical research in the field of gifted education to discern psychosocial characteristics of young adults from various backgrounds, highlight impactful events in their academic talent development, expand the understanding of the construct of opportunity, and find those crucial opportunities in the lives of international students from developing countries that lead to their academic talent development. With the help of the interviews in this phenomenological study rooted in the giftedness and talent development framework I aimed to find out:

- which opportunities were perceived as the most important and impactful for the students' academic talent development;

- how these opportunities appeared in the lives of the students;

- how international students from developing countries came to be doctoral students in the U.S.;

- and whether they perceive it led to realization of their potential.

In the next section, I explore the concept of giftedness as pertinent to this study, talent development models that will underline this study, the construct of opportunity in these models, academic domain talent development trajectory, and characteristics of the population of gifted young adults.

Giftedness and High-Ability Young Adults

Because I research the population of high-ability young adults and their academic talent development, my study is rooted in the field of gifted education, specifically, in the mega-model of talent development created by Subotnik et al. (2011) and described in their article *Rethinking Giftedness and Gifted Education: A*

Proposed Direction Forward based on Psychological Science. The authors define *giftedness* in the following way:

> Giftedness is the manifestation of performance or production that is clearly at the upper end of the distribution in a talent domain even relative to that of other high-functioning individuals in that domain. Further, giftedness can be viewed as developmental, in that in the beginning stages, potential is the key variable; in later stages, achievement is the measure of giftedness; and in fully developed talents, eminence is the basis on which this label is granted. Psychosocial variables play an essential role in the manifestation of giftedness at every developmental stage. Both cognitive and psychosocial variables are malleable and need to be deliberately cultivated. (p. 7).

The issue of considering the chosen population gifted may arise, because international doctoral students have not been identified for giftedness in their home countries. There are several reasons that factor into the decision to consider this population high-ability young adults. Firstly, in similar cases, researchers consider status as a doctoral student to be an indicator or result of adult giftedness, especially in the academic domain of talent development (Kitano & Perkins, 1996; Lewis, Kitano, & Lynch, 1992; Wai, Lubinski, & Benbow, 2005). Kitano and Perkins (1996) conducted their study specifically about international gifted women.

Secondly, Sternberg (2006) defines giftedness as the process of *developing expertise*, which is "the ongoing process of the acquisition and consolidation of a set of skills needed for a high level of mastery in one or more domains of life performance" (Sternberg, 2005, p. 15). Sternberg's (2006) definition of giftedness as

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the process of *developing expertise* allows including doctoral students in this group, because as young adults they are actively seeking to enhance their expertise in a chosen area. Sternberg's definition of giftedness proves to be especially viable when studying gifted adults rather than young children or adolescents. Studies find that being identified gifted in early childhood, even though it is predictive of higher academic achievement, is not a guarantee of eminence in adulthood, and some people who have been identified gifted in their childhood do not realize their potential in adolescence or adulthood (Rinn & Bishop, 2015; Simonton & Song, 2009).

Finally, considering doctoral students high-ability adults falls in line with Subotnik et al.'s (2011) perspectives on giftedness, namely: giftedness is domain-specific, includes a broad spectrum of ability and achievement, and is typically manifested in actual outcomes. International doctoral students from developing countries have chosen their specialization and domain niche by the start of the program. They have proven to be accomplished enough to have been accepted into the doctoral program at a selective research university within a superior education system in the language that is not their first language and received funding to do it. In order to be accepted to a doctoral program at the University and be granted funding, the candidates undergo a rigorous and highly competitive selection process that requires high scores on TOEFL and GRE tests, as well as other academic achievements and experiences listed on their applications. The proof of students' high academic abilities and achievements will be the fact of having been accepted into a full-degree doctoral program at the University and having been granted funding (e.g., graduate assistantships, grants, scholarships, etc.). International doctoral students at the

University, though unidentified, are usually young adults continuing to develop their expertise in challenging academic domains at a selective U.S. institution, and are considered in this study as high-ability adults in the academic domain.

Overview of Talent Development Models

Talent development models in the empirical literature of gifted education describe variables and factors, such as general and specific ability, personal characteristics, motivation, et cetera, pertinent to achievement of gifted individuals from childhood to adulthood (Davis, Rimm, & Siegle, 2011). Five popular models on which many of the gifted school and outside-of-school programs were built are: the differentiated model of giftedness and talent (Gagne, 2012); the enrichment-triad model (Renzulli, 2005); talent search model (Stanley, 1976); the wisdom, intelligence, creativity synthesized model (Sternberg, 2009); and school-based conception of giftedness (T. L. Cross & Coleman, 2005). However, these models focus on childhood, school, and early college years of students and do not encompass the whole age range of the students in this study.

To analyze talent development during a longer period of time going into adulthood, we need to consider other models, such as: Tannenbaum's (2003) talent-development model; Piirto's (2004) pyramid model; Bloom's (1985) model; the scholarly productivity/artistry (SP/A) model (Subotnik & Jarvin, 2005); and talent development mega-model (Subotnik et al., 2011).

Tannenbaum's talent development model. There are five main components in Tannenbaum's (2003) talent development model: general ability, special ability, psychosocial abilities (such as interpersonal skills and motivation), external support

(from parents, teachers, or a mentor) and chance. The chance component plays a versatile role in this model: it can mean any event or opportunity from pre-natal to adulthood stage, for example, inheriting particular genes, socioeconomic status of the family, or enrichment opportunities in school.

Piirto's pyramid model. Piirto's (2004) pyramid model represents the influence and support of talent development by various aspects, built in the form of a pyramid. From the bottom to the top, these aspects include: genetics, personality attributes, cognitive abilities or intelligence, specific talent in a domain, vocational aspect or calling/passion, and environmental aspect (including home and family, community and culture, school, gender, and chance).

Bloom's model. Bloom's (1985) model emphasizes the importance of teachers and mentors in child's talent development that is broken down into three stages: engagement with a domain of interest early in life with the help of the teacher; thorough exploration of the chosen domain with the help of teachers, mentors, and coaches; and committing to a certain domain for life with guidance from the teacher who helps the student learn and find a specific niche within this domain.

Subotnik and Jarvin's scholarly productivity/artistry model. Subotnik and Jarvin's (2005) scholarly productivity/artistry model also breaks talent development process into three stages: transformation of abilities into competences; transformation of competences into expertise; and transformation from expertise to scholarly productivity or artistry. It is important to note that these transformations are accompanied, supported, and mediated by psychosocial variables such as parental and teacher support, social skills, persistence and willingness to learn, work and achieve.

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Talent development mega-model. It is notable that some components, such as general and specific domain abilities, psychosocial factors, environmental support and environment, and chance or opportunity, are present across the models. Subotnik et al.'s (2011) mega-model integrates the most pertinent components of the models present in the empirical literature of gifted education, can be applied to various domains of special abilities, offers trajectories of talent development based on domains rather than on chronological age of individuals. For example, the starting point for talent development in sports will depend on child's muscle mass acquisition, and the starting point in an academic domain, such as sociology, will happen later in life, and could be as late as college years. The model also distinguishes between two categories of talented individuals: *performers* (talented individuals in artistic and sports domains) and *producers* (talented individuals in the academic domain). In this study, I will focus on the trajectory of talent development of producers in the academic domain.

This model is built on the following principles (Subotnik et al., 2011):

- all abilities are important and can be developed;

- different talent domains have varying developmental trajectories;

- young people need to have opportunities and take them;

- successful talent development depends on psychosocial factors;

- and the outcome of gifted education is eminence. The authors define *eminence* as "contributing in a transcendent way to making societal life better and more beautiful." (p. 7)

Mega-Model of Talent Development as Framework for the Study

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In this study I focus on Subotnik et al.'s (2011) mega-model of talent development, specifically on the talent development trajectory of the academic domains of *producers*, the category that includes scholars, scientists, and academics. The main characteristics of producers largely coincide with characteristics of successful and high achieving doctoral students:

- producers must master the content within their specific domain;

- they need guided and deliberate practice and study;

- they must have commitment and motivation;

- they need mentors to instill domain values;

- their tasks are long term and multi-component;

- objective tests are judgments for selection;

- there is more room for a greater number of producers, especially in the areas that target societal need;

- their outcomes of excellence are in the form of academic publications, grants, and awards;

- they tend to be most appreciated within the domain and by the member of the same field (Subotnik et al., 2011).

However, because the focus of the study is on international students, psychosocial skills training is still important for this group, even though it is named as generally of little importance for the category of producers by Subotnik et al. (2011). Coleman (2012) finds that social attractiveness and psychosocial factors (for example, resilience), the ability to remain oneself regardless of labels imposed on students by

society or school systems, greatly influence motivation and passion for learning, and therefore, achievement and talent development. By moving to another country, international students experience a shift in social demands and adjust to a new and foreign cultural environment, making psychosocial skills training as important as other success factors for a smooth transition and productive development. In order to understand the population of high ability international doctoral students better, it was important to find out whether the students in this study perceived psychosocial factors as contributing to their successful adjustment to a new system and which specific factors transpired during the analysis.

Academic talent development trajectory. Developmental and performance trajectory of the academic domain presented in the model supports the idea that high-ability individuals can reach their peak performance even in their late adulthood years and that talent development does not stop in high-school (Subotnik et al., 2011). The academic performance trajectory shows that for most academic fields, with either early or late specialization, development starts as early as childhood or as late as the years of late adolescence, and can peak from early adolescence to late adulthood. Academic performance is domain dependent and closely connected to the system of education, but does not limit an individual's productivity due to the age factor until late adulthood. That is why it is important to study not only precocious children, but also high-ability individuals at later stages in their lives, for example, doctoral students.

Academic talent development trajectory of gifted adults. High-ability doctoral students fall into the category of gifted adults, specifically, young adults at

the early stages of their professional careers with a chronological age range of 25-40 years old (Rinn & Bishop, 2015). In their extensive systematic review and analysis of literature, Rinn and Bishop outline the current state of research about gifted adults and present findings about their families of origin, effects of early educational experiences, characteristics of gifted adults, their career and life choices, and their life goals, satisfaction, and well-being. Even though many research findings about gifted adults, their characteristics, and factors influencing their talent development trajectories remain contradictory or inconclusive to date, the findings that are pertinent to this study include the following:

- Identification of giftedness in early childhood does not guarantee eminence in adulthood (Simonton & Song, 2009. In order to achieve eminence, gifted adults have to continue being actively professionally engaged and continue developing their expertise.

- Gender remains an impactful factor in successful talent development: women still have different experiences from men due to sex role stereotyping (and, as a result, restricted opportunities) and higher pressure when it comes to making choices between career and homemaking or childbearing, resulting in failure to achieve eminence in adulthood (Kerr, 1997; Kronborg, 2010; Lovecky, 1993).

- The main contributing factor to life satisfaction of gifted adults at the stage of early adulthood is their professional career (Wirthwein & Rost, 2011). Thus, they are more likely to be motivated to seek out professional opportunities that would promote and advance their careers.

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In the context of this study, it is pertinent to consider what influences gifted adults and their talent development at that stage. The factors that impact the population of gifted adults following different talent development trajectories is described in the work of Heckhausen (2005). Heckhausen defines three main factors that impact talent development and productivity of adults: biological maturation, societal environment (constraints and opportunities for talent development), and accumulation of experience and expertise. Domain of competence plays an important role in shaping these trajectories: increases, decreases, and peaks of performance are different for cognitive, athletic, or artistic domains. The influence of these three factors on the cognitive functioning trajectory need to be considered, because it is the development trajectory the participants in this study are following. Biologically, cognitive functioning remains stable, may only decline in terms of fluid intellectual skills, such as memorization of lists, and can be regained with minimal practice. Crystallized abilities, such as factual and procedural knowledge, remain at a high level up to very old age. Societal environment in the U.S. provides opportunities for growth, challenge, and upward mobility and allows for greater mobility in early and mid-adulthood. And accumulation of experience and expertise supports talent development, helping eliminate societal constraints and facilitating creation of impactful opportunities. However, Heckhausen also finds that even though intellectual competence in high-level professions does not substantially decline, motivational adaptation and availability of appropriate intellectual challenges are needed to sustain the productivity level. This requires substantial investment on the

part of the individual and strong intrinsic motivation coupled with extrinsic encouragement.

We can conclude that the population of gifted young adults following academic talent development trajectory needs to be researched more extensively, because it is one of the longest lasting trajectories with a substantial impact on our knowledge society. How do gifted adults come to follow a specific academic talent development trajectory? What facilitates this choice and makes it possible for students from diverse backgrounds? How do they persist and choose to obtain the highest level of education? What opportunities prove to be impactful in their talent development and how are they created? I'm hoping that this study will contribute to finding answers to these questions.

The construct of opportunity. I chose *opportunity* as the main construct in this study. However, this construct has not been extensively researched, and it is difficult to operationalize without clear conceptual guidance (Elliot & Dweck, 2005). This section offers a review and analysis of literature that describes the construct of opportunity in an effort to conceptualize and operationalize it for this study.

The factor of *opportunity* in gifted education discourse has been often viewed as a chance factor or luck, and referred to as something that happens to an individual and is largely beyond their control. The chance factor is included in some modern models, for example, in Piirto's (2004) pyramid model, as part of the environmental aspect that influences and supports talent development. It is also one of the main components in Tannenbaum's (2003) talent development model. Tannenbaum calls it *chance*, and includes a wide range of chance events in this factor, such as SES of the

family and enrichment opportunities offered at school. Chance factor was largely absent in discussions of giftedness and models of talent development before Tannenbaum (1983) introduced it into his talent development model. Tannenbaum recognized the powerful influence of the chance factor on achievement and presented it using James Austin's classification of four levels of chance factors (Austin, 2003).

James Austin, a prominent neurologist, explored the connection between actions of individual, varieties of chance, and creativity as contributing to scientific discoveries and innovations in his book *Chase, Chance, and Creativity: The Lucky Art of Novelty* that was first published in 1978 (Austin, 2003). According to Austin, the four varieties of chance are:

1. Chance I is unintentional, accidental luck that comes with no effort on the part of individual, for example, being born into a family with advantageous background.

2. Chance II happens through actions of the individual, but exploratory behavior itself is the primary goal, and not the foreseeable results. It requires persistent curiosity and energetic willingness to explore.

3. Chance III involves a special receptivity unique to a particular individual. It takes a "prepared mind", or sufficient background of sound knowledge and skills, to disclose and use this chance.

4. Chance IV, or *altamirage,* comes as a result of purposeful, focused, and highly individualized action, requiring a combination of interests and activities. It often requires open mindedness and an interdisciplinary approach.

Austin concludes that it is often a combination of these varieties of chance, combined with a person's innovativeness, and creativity that are at play when we are talking about chance discoveries or breakthroughs. Austin also states that chance levels two, three, and four are subjective rather than accidental, more dependent on the person's actions to bring about fortuitous events.

Building on Austin's work, Bandura (1998) describes fortuitous events, specifically, positive fortuitous occurrences. Bandura agrees with Austin that chance encounters and accidents happen all the time, but it is people's interests, attributes, and skills that determine whether these chance encounters will have an important effect on people's lives. In other words, being prepared for the chance events matters. Bandura (1995) takes it a step further and connects his findings about the influence of the environment, or chance occurrences, to the impact that a person's sense of *resilient self-efficacy* has on personal development by enabling this person to choose and shape the environment itself.

Resilient self-efficacy is an individual's belief that they have control over the events that affect their life and ability to bounce back if they make mistakes, fail, or something unfortunate happens. Bandura (1995) states that people who have a resilient sense of efficacy are not just shaped by their environment, but are capable of shaping their lives by making choices about which environment to get into and what type of activities to participate in. By selecting environments that allow them to cultivate their potentialities and talents, they increase positive chance occurrences required for innovative achievements and talent development. People usually select environments and take on challenging activities that they believe they can manage,

and eschew environments and activities that they believe they cannot cope with. These choices continue to affect the cultivation of competencies, interests, values, and social networks with the help of social influences of the chosen environments even after the factor of self-efficacy to make decisions is no longer at play.

Bandura (1998) reaches several important conclusions about fortuitous occurrences and potential impact of chance on a person's development and innovative achievements:

- Fortuitous events have a significant influence on a person's development.

- Chance encounters are more likely to change a person's life trajectory when they are welcomed into a relatively closed social environment, such as a network of professionals with similar interests and aspirations.

- Chance encounters are more likely to have a lasting impact if the people involved hold similar values and standards, for example, when high-ability adults are looking for opportunities within the networks of like-minded professionals rather than within unrelated networks.

- From the proactive socio-cognitive view, inquisitiveness, venturous spirit, and persistence are important psychosocial characteristics for bringing about fortuitous events. People can increase the number of fortuitous experiences by being proactive and pursuing chances.

- People can increase the positive impact of chance occurrences by deliberately selecting advantageous activities and social environments. Even though people cannot control the occurrence of fortuitous events, they significantly

contribute to how much impact, positive or negative, these occurrences will have on their lives.

Sternberg's (2006) *successful intelligence theory* also speaks to increasing the positive impact of chance occurrences by deliberately selecting advantageous activities and social environments. According to Sternberg, successful intelligence consists of three parts: 1. Analytical intelligence, or cognitive ability of an individual; 2. Creative intelligence, or creative potential of an individual; and 3. Practical intelligence, or the ability to apply one's intelligence in practical situations to improve one's experiences. People possessing all three types of intelligence are more successful in life than those possessing only analytical intelligence (Grigorenko & Sternberg, 2001). People possessing practical intelligence are able to use it in order to adapt to, shape, or select environments they work and live within for their perceived benefit. Adaptation means that they change themselves in order to fit into the environment. Shaping means that they change the environment in order for it to suit them. And selection of the environment means that people decide to switch to a different environment that they perceive is more fitting for their aspirations, abilities, and needs. In other words, they consciously select the environment that can generate more and/or better opportunities for their successful development. For example, graduate students who cannot find necessary experiences for their talent development in the chosen field at an appropriate level within the education system in their home country, use mobility to select the environment that matches their interests and aspirations.

In Subotnik et al.'s (2011) mega-model of talent development, the concept of *chance* evolved into the concept of *opportunity*. Opportunity is an impactful factor that creates the context for the talent to be nurtured, sometimes even when a specific talent has not yet crystallized (Barnett & Durden, 1993; Syed, 2010). Opportunity can also be a delimiting factor, for example, when the opportunities offered do not match interests and potentialities of an individual or simply do not exist. These *mismatched opportunities* and a *lack of opportunities* block or slow down talent development and need to be recognized as such. Subotnik et al. also stress the importance of a proactive approach and motivation on behalf of gifted individual: opportunities need not only be offered within the gifted students' reach, but also sought and taken advantage of by gifted students in order to have an impact on their talent development.

Opportunity is operationalized in this study as an enhancing psychosocial and environmental factor that needs to be both offered to and taken by the individual. It requires proactive behavior, resilient sense of self-efficacy, and ability to successfully adapt to, shape, and select environments by high-ability individuals in order to occur and become impactful (Bandura, 1998; Sternberg, 2006; Subotnik et al., 2011). Bandura's (1995, 1998) findings about chance occurrences and resilient sense of self-efficacy in people who are willing to shape their environments and Sternberg's (2006) successful intelligence theory allow us to say that it is up to individuals to turn *chance occurrences* into what Subotnik et al. (2011) call *opportunities* for talent development, an impactful enhancing factor of talent development.

In this study I focus on *opportunity* as a success factor of international high-ability doctoral level students, grounding my research in Subotnik et al.'s (2011)

mega-model of talent development, following the performance trajectory of the academic domain. I identified what opportunities were the enhancers, general and specific, that helped accelerate students' progress in their chosen domain, determined which specific opportunities were most helpful for turning their potential into achievement so that these opportunities could be made available to a wider population of high-ability individuals, and explored how these opportunities appeared in the lives of the participants.

It was also pertinent to look for contributing opportunities in connection with other psychosocial variables in international high-ability students, such as: willingness to take strategic risks and adapt to change, resiliency, ability to cope with challenges and handle criticism, competitiveness, motivation, and persistence. Because the students under study were from various cultural backgrounds, it was necessary to take into account cultural factors, such as values and socially accepted or promoted choices, and see whether they affected students' decision to study abroad and to what extent.

Usefulness of Results

This study is focused on high-ability international doctoral students at a selective public higher education institution and defines opportunities as success factors of the students that led them to academic achievements and furthered their talent development in their chosen academic domains. The study promotes and popularizes international education as a source of upward academic mobility and successful brain circulation between the U.S. and developing countries. Building my research on the basis of talent development model and principles and constructs of

gifted education, I use strategies and solutions found efficient in the field of gifted education and apply them to support high-ability international students from various backgrounds.

This research is useful to international students and families and students who want to become international students, because it provides information on which opportunities were perceived the most pertinent for the success and achievement of current students in the context of international education and how they became available. It allows students, families, as well as sending and receiving institutions to build strategies to support international education and students from various backgrounds by creating supportive environments with appropriate opportunities for talent development. U.S. higher education institutions could use the results of this study to create support programs, student searches, and other opportunities to make their institutions more internationalized and diversified. I hope that this research will provide a solid background for future studies and, eventually, will promote global learning and internationalization of education, provide support for high-ability students around the world regardless of their background, and increase brain circulation and global mobility.

Conclusions

Subotnik et al.'s (2011) mega-model encompasses the transition from potential to achievement to eminence, from little-c creativity to big-C creativity, and emphasizes the role of teacher or mentor in guiding the process of development and specialization. It is interesting to note, that the authors define *eminence* as "contributing in a transcendent way to making societal life better and more beautiful"

(Subotnik et al., 2011, p. 7). This definition coincides with some of the main goals of internationalization and globalization of education, namely, to increase cognitive diversity, join forces and potential in order to solve world's complex problems which no one country can solve on its own and improve lives of the people around the world (Ambrose & Cross, 2009; Ambrose, Sternberg, & Sriraman, 2012). These efforts can be achieved by facilitating ways for academic emergent mobility and supporting brain circulation worldwide.

The authors of the model also pay attention to the importance of enhancers, or psychological and external and chance factors that could accelerate progress. These factors include: optimal motivation, opportunities taken, productive mindsets, developed psychological strength, developed social skills, opportunities offered inside and outside of school, financial resources and social and cultural capital. The authors state that opportunity and motivation are two central variables associated with talent development (Subotnik et al., 2011). They determined that the greatest likelihood of eminent outcome occurs when individuals are highly motivated and, at the same time, have access to opportunities for talent development. That is why this study is focused on researching impactful opportunities in the academic talent development of young adults. The population under study is international doctoral students from developing countries who have chosen international mobility as a tool of furthering their talent development, and were accepted to a selective U.S. public research university. These high-ability young adults are motivated to shape and select their environments in pursuit of professional careers in their chosen fields. This study offers insight on how they sought out or were offered the opportunities that spurred their talent development

regardless of their original environment, and how these opportunities became

impactful for their academic talent development trajectories.

CHAPTER 3

METHODS

In this chapter, I outline the research design of this study focusing on research framework, approach, strategy of inquiry, sampling procedures, data generation and collection, data analysis, and validation strategies for maximization of quality and rigor of the research. The study was based on a phenomenological design with in-depth semi-structured interviews for data collection and Interpretative Phenomenological Analysis (IPA) for data analysis (Creswell, 2013; Smith, Flowers, & Larkin, 2009). This design helped to explore the life world of high-ability doctoral international students in terms of opportunities that helped enhance their talent development and encouraged them to pursue their doctorate degree at a selective research university in the United States. The study was carried out in two phases: Phase 1 focused on the phenomenon of academic talent development of the participants, and Phase 2 focused on personal meaning and sense-making of the participants about the talent development opportunities they had on their academic path. The primary research questions and sub-questions that guided this study were the following:

Phase 1

1. *Question:* What opportunities taken by high-ability international doctoral students throughout their lives (offered inside and outside of the academic environment) helped them develop expertise in their chosen domain?

    a. What opportunities were pertinent to their talent development?

    b. What opportunities were offered but discarded by the students?

c. What opportunities were not offered but sought by the students?

Key features: focus on the common phenomenon of academic talent development as an experience.

2. *Question:* What opportunities helped/influenced international high-ability students to make the decision to become doctoral students in the selective U.S. higher education institution?

    a. What were the enhancing factors?

    b. What were the barriers/challenges?

    c. What psychosocial factors were pertinent?

Key features: focus on the common phenomenon of academic talent development as an experience of an international student.

Phase 2

3. *Question:* How do high-ability international doctoral students perceive opportunity in their talent development process?

    a. How do the students view opportunities in their lives: as lucky coincidences or as something they helped create?

    b. How do the students perceive themselves in relation to their talent development?

Key features: focus on personal meaning and sense-making in a particular context (international doctoral program at a selective U.S. institution) for people who share a particular experience (successful academic talent development).

Research Framework and Approach for the Study

Creswell (2014) states that the research approach and framework for the study depends on the research problem itself and on the philosophical assumptions the researcher brings to the study. I reviewed these components and defined the approach and framework that best fitted the study.

The research problem for this study focused on exploration of individual experiences of high-ability doctoral international students at a small selective public U. S. higher education institution. I explored the meaning the students ascribed to their academic and personal lived experiences as it pertained to their talent development, achievements, and opportunities that helped their talent development process. The purpose of the study was to describe the phenomenon of academic talent development of international doctoral students and through their perceptions describe opportunity as a success factor of the talent development process.

Philosophical assumptions for the study. Two main philosophical assumptions guiding this study were *ontological*, relating to the nature of reality, and *axiological*, relating to the role of values in research (Creswell, 2013). The *ontological* assumption means exploring the nature of reality and multiple perspectives of the participants in the study (Creswell, 2013). The idea of multiple realities forwarded in this assumption fell in place with the problem for the study, as each student came from a specific cultural, social, and educational environment, and had his/her own talent development path. Furthermore, the students' sense-making and perceptions of their talent development process were a common denominator and helped explore the essence of international students' experience and invariant structures underlying this experience. I, as a researcher, also brought my own reality

of being an international graduate student and my view of the experience to the study. The readers of the study, mostly American students, researchers, and educators, have their own perspective of interacting with international students. Representation of multiple realities will help them see the experiences of students in the study from the inside rather than outside and acquire deeper understanding of the processes of international education, global mobility, and talent development paths of people from different social, cultural, and educational systems.

The *axiological* assumption means discussing values that shape the study, as well as biases of the participants and the researcher (Creswell, 2013). It is an important assumption, because international students bring different perspectives on social, cultural and education issues, and data gathered from them is value-laden. I also positioned myself in the study (in the *Researcher as an Instrument* essay, see Appendix B) and discussed my values and biases before interpreting and presenting the data and findings.

Social constructivism worldview. The philosophical worldview proposed in the study is *social constructivism*, as it is focused on experiences that are socially formed and acquired with the help of interactions between individuals who seek understanding of the world and meaning of their experiences (Creswell, 2013, 2014). Social constructivist worldview is consistent with the ontological and axiological philosophical assumptions underlying the study, because I researched students' perspectives of their socially acquired experiences and interactions and explored students' sense-making of socially formed experiences. Students' experiences under study were created in specific educational and social contexts and cultural settings, as

they progressed from interactions with their family members, peers, teachers and mentors in their home country schools to a different cultural and academic setting as they started graduate school in the US. In the study, students were encouraged to share their varied and multiple perceptions and meanings they developed about their experiences. The complexity of views was studied by me as a researcher to interpret the results and develop a pattern of meaning (Creswell, 2013; Crotty, 1998).

One of the assumptions about constructivism posed by Crotty (1998) is that the meaning is generated socially as a result of interaction between people. The meaning of talent development trajectory of high-ability doctoral international students was constructed through sharing the participants' views of their experiences with the help of open-ended questions (Creswell, 2013). This allowed for eliciting in-depth responses and helped create more profound understanding of their own lived experiences on the part of the participants. On the part of the researcher, it allowed for forming common patterns of meaning when certain themes connected to their talent development experiences emerged and were named important by multiple participants.

Another important assumption of social constructivism underlying this study was that people interacted with and understood the world through their own social and cultural perspectives (Crotty, 1998). The interpretation of the experiences of international students required understanding of both contexts: their lives and talent development in their home countries and in the U.S., as well as the decision and transition period. This interpretation was also shaped by my own experiences and background, as I was, too, an international graduate student.

High-ability graduate students offered perceptions and understanding of their experiences of becoming international students in the U.S. These students developed subjective meanings of their experiences leading me as a researcher to acquire the complexity of their views and creating meaning from the data collected.

Research approach. The descriptive subjective nature of social constructivism together with the purpose of the study to understand and create meaning from the experiences of the international students called for taking a *qualitative* research approach to the study (Creswell, 2013, 2014). A qualitative approach allowed exploring and understanding doctoral international students' perceptions of opportunities for their talent development experience in different cultures and systems and creating meaning through making interpretations.

This study encompassed the characteristics of qualitative research as outlined by Creswell (2013, 2014):

- The study took place in the natural setting (on the University campus) with face-to-face interactions with the participants.

- I, as a researcher, acted as the key instrument of data collection.

- Multiple sources of data were used, including interviews and reflections of the participants collected after the interviews.

- Data analysis process occurred inductively (patterns, and themes and essential structures were be distilled from the data), recursively (using follow-up questions and reflections and a focus group interview), and interactively (participants were asked to reflect on the interview).

- The focus of the study was to understand the meaning that the participants adhere to their lived experiences related to opportunities in the context of their academic talent development experiences.

- The design of the study was emergent rather than fixed from the beginning: follow-up questions, focus group interview questions, and other parts of the design were not pre-set, but evolved in the process of the study.

- The study was viewed through the theoretical framework of talent development of gifted students and in the context of international education.

- The inquiry is interpretative by the researcher, participants, and readers, allowing for multiple views of the phenomenon.

- A complex account of the phenomenon under study was developed to create a holistic view and by presenting multiple perspectives and taking into account multiple factors, as well as identifying complex interactions of those factors in the particular context.

Strategy of inquiry: IPA. The chosen strategy of inquiry was *phenomenology*, because it allows description and interpretation of *Lebenswelt,* or the life world, of individuals who have shared a certain phenomenon, focusing on what they experienced and how they experienced it in their everyday life (Brinkmann & Kvale, 2015; Moustakas, 1994). However, because interpretation and mediation between meanings of the life world of the participants were essential to the study and it was beneficial to integrate rather than bracket personal understandings of the researcher, I used Interpretative Phenomenological Analysis (IPA) as the approach to inquiry in my study (Creswell, 2013; Smith et al., 2009).

The purpose of IPA is to discover a common meaning through putting together the steps or parts of the experience (Smith et al., 2009). Therefore, researching enhancing opportunities in talent development of international graduate students will require asking the participants to recall and reflect upon steps and parts of the process and its significance. These opportunities and parts of the process were, for example, receiving guidance from a mentor or teacher, motivation to start learning English, finding an academic niche to focus on, and others. Then participants and the researcher discover a common meaning that builds on these parts and links them together.

Influences of phenomenology, hermeneutics, and idiography on IPA. IPA is a qualitative *phenomenological* research approach aimed at exploring people's experience of a particular phenomenon, interpreting, and making sense of this experience (Smith et al., 2009). IPA usually focuses on important events of people's lives and experiences that became significant for the people, increasing their awareness of living or having lived through those experiences. Reflection on the significance of the experience is an important part of the process. The IPA approach helped clarify the significance of participants' experiences on their journey of becoming doctoral international students in the U. S. and helped interpret this experience, eliciting key opportunities participants encountered on this journey.

Philosophical assumptions of phenomenology provide salient strategies for examining and comprehending the life world of individuals. Phenomenology is pluralistic and based on the works of such philosophers as Husserl, Heidegger, Merleau-Ponty, and Sartre (Creswell, 2013; Smith et al., 2009).

Husserl's assumptions about phenomenology were especially relevant to this study, as he argued that phenomenology could lead to identification of essential qualities of participants' lived experiences and make a similar lived experience more explicit for others (as cited in Smith et al., 2009). Both participants and the researcher adopted a phenomenological attitude by reflecting on the lived experiences with certain intentionality and awareness, focusing on the experience as it was perceived, remembered, and valued. The researcher engaged in *eidetic reduction*, the process of eliciting the core of the subjective experience and getting to the essence of it, discarding subjective perception and identifying the invariant properties (Smith et al., 2009). The goal of this study aligned with Husserl's assumptions and the IPA approach, because it aimed at capturing particular experiences of high-ability doctoral students of becoming international students in the U.S., as well as finding the invariant properties of these experiences to make them more explicit for other students around the world.

The study also aligned with Sartre and Heidegger's philosophical assumptions about phenomenology: the importance of the process of becoming, taking responsibility for one's own choices, actions, and development, emphasis on the worldliness of the experience, that is, taking into account individual's life, social climate, and language; and consideration of interpersonal and affective aspects (Smith et al., 2009). I explored the talent development trajectory of high-ability students in the academic domain, how their talents developed as a result of choices they made and opportunities they either took or discarded. I also explored how the necessity to

become international students at the U.S. higher education institution emerged in the context of the world, or environment, in which they lived.

Apart from being phenomenological and focused on exploring lived experiences, IPA is also based on *hermeneutics*, or the theory of interpretation, attempting to derive meanings from actions of individuals (Smith et al., 2009). Hermeneutics allows the researcher, or the interpretative analyst, by looking at a larger data set and having a theory as a background to the interpretation, to add value and offer a more holistic perspective and more meaningful insights than the participants, especially if the researcher shares some ground with the participants (Smith et al., 2009).

This aligned with Heidegger's view on bracketing and viewing the researcher who, as an instrument, needs to use his/her prior understandings and conceptions, facilitate and make sense of the phenomenon lived through by the participants, rather than being a completely separate entity in the research process (Smith et al., 2009). Such perspectives on the researcher as an interpretative analyst were pertinent to this study, because I shared the experience of being a doctoral international student with the participants.

Together with phenomenology and hermeneutics, *idiography* also influenced the development of the IPA approach. *Idiography* is manifested in IPA's commitment to the particular, providing depth and thoroughness of analysis, as well as understanding the perceptions of participants and context before making more general claims (Smith et al., 2009). In this study I used idiographic approach for the review of literature, data collection, and data analysis.

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Sample and Participant Selection

In this study I explored how international doctoral students from developing countries viewed opportunity as a success factor in their talent development process, whether they perceived it as an external chance factor or believe they themselves helped bring about and determined the impact of the opportunities that spurred their talent development and led them to become doctoral international students in the U.S. It is important to note that many international students are not identified as gifted in their home countries. In this study I considered doctoral international students to be high-ability in agreement with the following perspectives on giftedness (e.g., Sternberg, 2009; Subotnik et al., 2011): giftedness is the process of developing expertise, it is typically manifested in actual outcomes, is domain-specific, and includes a broad spectrum of ability and achievement. As doctoral students at the University, a selective research university in the U.S., international students in the study were considered high-ability in the academic domain. The proof of their high academic abilities and achievement was the very fact of being accepted into a graduate program at the University and being granted merit-based funding, for example, receiving graduate assistantship, research grants, Fulbright scholarship, and the like.

According to the assumptions of idiography underlying the IPA approach, a sample size of 10 to 15 participants was sought. The saturation point was reached at 13 participants upon coding the interviews, and no more participants were added. I used a *purposeful sampling* procedure to ensure that the select cases were information rich and allowed achieving the purpose of the study. I used the combination of three

purposeful sampling strategies: convenience, snowballing, and maximum variation

sampling (Creswell, 2013; Gall, Gall, & Borg, 2007). I started with a convenience

sampling strategy and called for participants through the graduate students' and

international students' list serves (i.e., an electronic mailing list software that allows

to send one email to the addresses of subscribers on the list) at the University. Then, I

used a snowballing strategy and ask the participants to refer other doctoral

international students they knew. Finally, I employed a maximum variation sampling

strategy to select cases that illustrated the range of variation in the phenomenon under

study: select participants from different countries and cultures, as well as participants

studying in different doctoral programs at the University. Maximum variation strategy

helped determine whether common themes, patterns, and outcomes cut across this

variation, which was an important finding in itself from the perspectives of gifted

education and internationalization of education.

The selection descriptors delimiting the sampling procedure were the

following:

- Participants were currently enrolled doctoral international students (F1 or
  J1 visa holders) at the University;

- Participants were full-time degree-seeking doctoral students in Arts and
  Sciences (natural and computational sciences or humanities and social
  sciences), School of Education, or School of Marine Science at the
  University;

- Participants were granted full or partial funding either by the University or
  other institution at the time of admission;

- Participants were international students from developing countries as defined by the International Statistical Institute (The International Statistical Institute, 2017). This selection criterion emerged from the reasoning that, similar to established high positive correlations between gifted student identification, availability of opportunities, and higher SES of their families, students from the Western first-world countries have a more readily available access to opportunities inside and outside of their academic environment (Subotnik et al., 2011). Students from developing countries, on the other hand, may not have this readily available access, may need more support, and thus, it is their talent development that needs to be researched (OECD, 2012).

According to the statistical data available on the University Center for International Students website, there were 115 full-time doctoral students holding F1 or J1 visa status as of fall 2016. These data also showed that there was variability in the country of origin among the international student population at the University. On the basis of this information, obtained a maximum variation sample with equitable distribution of participants by discipline and region of origin representative of the international student population characteristics of the University. The majority of international students studying at the University come from Asian countries, some from North, Central, and South America, and a few from Africa, Eastern Europe and the Middle East. Predictions for sampling specifications are described in the sampling specifications matrix by graduate programs and students' region of origin and help ensure representativeness of subjects in the total sample.

Table 1

Illustrative sampling specifications matrix by program and region of origin

	Arts & Sciences		School of Education	School of Marine Science
	Natural & Computational Sciences	Humanities & Social Sciences		
Asia (China, India, Nepal, Thailand, Indonesia, Pakistan)	2	2	2	2
North, Central, and South America (Mexico, Columbia, Dominican Republic, Peru)	1	1	1	1
Middle East (Iran, Jordan, Yemen)	-	-	1	-
Eastern Europe (Azerbaijan, Russia, Ukraine)	-	-	1	-
Africa (Nigeria, Zambia, Zimbabwe)	-	1	-	-

The goal of this study was to explore perceptions of opportunity as a success factor of talent development of international students regardless of their specific cultural background, SES, native language, race, ethnicity, gender, or academic domain. This was done intentionally with the goal of focusing primarily on academic talent development process and avoiding restrictions. It was also done with the intent of exploring commonalities and differences of perceptions that emerged in the course of the study and, in their turn, provided background and direction for future research.

Data Sources and Collection

The focus of inquiry of this study was perceptions of international students about opportunity as their talent development success factor. Thus, interviewing was the primary method of data generation that aligned with the focus of inquiry and with the research approach chosen for this study. According to Gall et al. (2007), the main advantage of interviews as a data-collection method is their adaptability: the interviewer can obtain richer, more detailed information, is able to restate questions to clarify the meaning for the participants, as well as clarify vague statements of the participants on the spot, and use open probes to get a more detailed description.

I used a constructivist approach (Brinkmann & Kvale, 2015) in designing the interview, according to which the interviewer is viewed as a "traveler," or someone participating together with the participant in the production of knowledge. It is consistent with the hermeneutical approach I took in designing the study in general and the interview process in particular. This approach allowed for interpretation of reality and sense making, rather than simply making statements about it.

The interview protocol was conceptualized on the basis of research questions and literature review (Appendix C). In order to ensure validity of the protocol and consistency with research questions, the protocol was reviewed with a panel of experts and pilot-tested. The protocol included an optional member-checking section after each main question that allowed the researcher to rephrase ambiguous questions, avoid misinterpretations, or other threats to acquiring verisimilitude of collected data (Gall et al., 2007). Approval from the Institutional Review Board (IRB) was obtained prior to the interview process. Prior to the interview process, every participant filled

out an online demographic survey created and distributed using Qualtrics research software. The survey was designed to ensure eligibility of the participants and collect demographic information for the purposes of describing the population in terms of gender, age, country of origin, academic program, financial standing of the family, and other descriptors, as is customary in research studies (see Appendix D).

Next, I conducted and recorded individual, semi-structured in-depth interviews with the participants, or conversations with a purpose, using 6-10 expansive, open-ended or semi-structured questions. This is the preferred means for collecting data in an IPA approach, because it calls for detailed engagement with the participants and elicits thorough, rich stories from them (Smith et al., 2009). I conducted the interviews on campus of the University during spring 2017. Next, I transcribed the interviews and sent them to the participants for member-checking via e-mail, together with any emergent follow-up questions, so that they could review the data and reflect on, confirm, or clarify their statements.

Finally, I conducted one focus group interview with three participants from the pool interviewed, building the interview protocol on the basis of emergent themes from the individual interviews (Brinkmann & Kvale, 2015). This strategy of data triangulation helped obtain richer data and explore the lived experiences of the participants from a different angle. The focus group allowed the participants to relate to similar experiences and inferences about those experiences of other doctoral students and generated different ideas, triggered memories and observations that did not emerge during individual interviews. Focus group interview also helped address the maximum variability of the sample with respect to the country of origin and

chosen academic discipline. I kept a field journal during the research study where I wrote my reflections and memos during the interview, memoing, and coding processes. Data collection for the study also included participants' demographic information, which was collected with the help of a survey prior to the interview.

Data Analysis Plan

For this study my most important data source was interviews of the participants. I prepared and organized these data for analysis by transcribing the audio of the interviews and putting them into NVivo software for qualitative research analysis. NVivo allows a qualitative researcher to collect and import audio, text files, and emails; code data and analyze connections between items; and explore and visualize data throughout the process of analysis. I used NVivo as a data analysis tool to help identify nodes and assign code labels, find significant statements, and reduce the data into themes through coding and condensing the codes.

The IPA data analysis process, as outlined by Smith et al. (2009), was as follows:

- Reading and re-reading the data and listening to the audio-recordings to immerse myself into the participants' worlds and engage with the data.
- Taking initial notes and memoing to explore the data and gain familiarity with the data, noting interesting and captivating moments, looking at the language, and starting to identify abstract concepts, similarities, differences, and contradictions.

- Writing descriptive comments to identify the participants' views, feelings, and their take on the experiences as a step prior to developing richer accounts of the meaning.

- Writing linguistic comments to focus on the language use of the participants, as well as functional aspects of language, metaphors, etc.

- Writing conceptual comments to focus on each participant's overarching understanding of their experiences and my personal reflections (go back to bracketing and check for personal biases and assumptions).

- Deconstructing the interviews to better see the interrelationships between experiences.

- Developing emergent themes, mapping the interrelationships, connections, and patterns of the previous steps of analysis.

- Finding connections across emergent themes, transferring from the chronological appearance of themes to arranging them into patterns and related concepts or establishing differences and opposing concepts (I employed subsumption, polarization, contextualization, numeration, and function strategies).

- Looking for patterns across cases to find connections and themes that emerge in the interviews and reflections of different participants.

- Interpreting to increase the depth of analysis, connecting it to the theoretical framework of the study.

Finally, I added participant's reflections to the interview data and continued with the coding process. After identifying the themes and essential structures, I interpreted them to the larger meaning of the data and related the categories that emerged to analytic framework in gifted education and internationalization of education literature. Appropriate illustrative quotes and other findings were included to support the identification of any claimed themes and findings.

Maximization of Quality and Rigor

Validation of a qualitative study is an important process that helps the researcher, the participants, and the readers determine whether the accurate account of the phenomenon under study has been given and whether the study meets quality standards of qualitative research (Creswell, 2013). Creswell offers several validation strategies that can be used to increase the quality and trustworthiness of research and document the accuracy of the study.

The following validation strategies, as identified by Creswell (2013), were used in this study:

1. *Triangulation*, or use of different sources of data, to provide corroborating evidence for themes that emerged throughout the study in these different sources. In this study, data sources included demographic information from the demographic survey, interviews with the participants, their reflections on these interviews, focus group interview, and trajectories of academic talent development of the participants. I also tried to obtain relevant documentation, such as students' application essays to the

doctoral program and their personal blogs or journals, but these data were
not accessible.

2. *Peer examination,* or requesting a colleague/colleagues with a background
in gifted and international education to comment on the themes, essential
structures, and findings as they emerge and to review a draft of the report
(Gall et al., 2007). A colleague with a newly awarded PhD degree in gifted
education conducted peer examination and commented on the themes,
essential structures, and findings as they emerged, helping the researcher
increase the quality of the study.

3. *Negative case analysis*, or evolution and rewriting of working hypothesis
with negative or disconfirming evidence taken into account. In this study
evidence that did not fit the codes or themes was reported as negative
analysis (for example, challenges as well as enhancing factors of
internationalization experience of the participants were presented),
providing a realistic evidence of the phenomenon.

4. *Clarifying researcher bias*, or in other words, statement of researcher's
position, biases and assumptions in relation to the study. This was done in
the *Researcher as an Instrument* essay, where due attention was given to
my past and current experiences, biases, background, and orientation that
could potentially influence the interpretation and approach to the study
(see Appendix B).

5. *Member checking*, or requesting participants' views of the truthfulness and
trustworthiness of researcher's findings and interpretations. To increase

credibility of the study, I employed a member checking strategy and requested feedback from the participants once I completed the preliminary analysis of the interviews.

Limitations

This study had several limitations. Firstly, I conducted my study on the basis of a particular small-sized selective research university with a specific demographics, academic culture, and academic fields that may not be representative of other selective research universities in the U.S. Secondly, I explored the experiences of students coming from various developing countries and developing their talents in different fields. This could be a limitation because certain opportunities and decisions could be bound by students' field of choice, education system structures particular to their home country, as well as cultural, social, and religious influences. However, I purposefully did not focus on a particular field or cultural group for the sake of transferability of the findings. Instead, I sought to discover universal opportunities that could be offered to and taken by high potential students across developing countries. This goal was facilitated by using a follow-up focus group interview with the participants from different backgrounds.

Another limitation of the study was that the researcher was also an international doctoral student at a selective research university in the U.S. This may have resulted in personal bias and assumptions based on researcher's personal experiences. Care was taken to address this bias and *Researcher as an Instrument* essay was added to the study. Finally, the limitation of my potential bias as researcher-recorder could have reduce subjectivity of this research. Several strategies

were employed to minimize this bias, such as member checking, a follow-up focus group interview, and peer examination of themes, essential structures, and findings.

Delimitations

Delimitations of this study include several points. Firstly, this research was based on the subjective perspectives of the participants, because I analyzed the participants' Lebenswelt with the help of interviews according to phenomenological research design. Secondly, this specific design also limited the sample size to a relatively small group of participants (13), which is a usual occurrence for qualitative phenomenological research studies. Finally, I used a convenience sampling strategy, which resulted in obtaining participants who readily volunteered for the study and could have different characteristics from those of other international doctoral students. I aimed to reduce this effect with the help of snowballing and maximum variation sampling strategies. As a result, the participant sample included doctoral students coming from seven different developing countries, regardless of cultural, religious, or social backgrounds. The participant sample included doctoral students from various academic disciplines and programs offered at the University.

Assumptions

I assumed that I received truthful and thoughtful responses from the participants. I also assumed that doctoral international students at this particular selective research university were high-ability students even if they were not officially identified gifted in their home countries. Finally, I assumed that international doctoral students at the chosen university were representative of the population of international doctoral students at other selective U. S. liberal arts higher education institutions.

Concluding Notes on Study Design

I found a qualitative approach and specifically IPA to be very fitting for answering the research questions posed for this study. It centered on the phenomenon of becoming international graduate students and aimed at exploring crucial experiences for successful talent development of these individuals. It was grounded in Subotnik et al.'s (2011) mega-model for talent development that emerged in the field of gifted education and had a goal of understanding the supports needed for successful internationalization and globalization efforts. The sampling procedure was intentionally designed in such a way as not to be restrictive but as inclusive as possible, so that the researcher could identify themes and patterns and consider which direction it was best to take in future research. Study design and validation strategies also provided for trustworthiness and credibility of this research.

CHAPTER 4

FINDINGS

Opportunity is missed by most people because it is dressed in overalls and looks like work. Thomas A. Edison

This study explored the phenomenon of successful academic talent development with the help of interpretative phenomenological analysis of experiences of international high-ability doctoral students at a selective U.S. higher education institution. As indicated in Chapter 3, data were collected or generated through triangulated data sources: semi-structured interviews, a focus group interview, trajectories of academic talent development, and a demographic survey. However, the application letters of the participants to the PhD program could not be obtained. Fifteen international doctoral students from developing countries were identified for participation in the study through a purposeful sampling procedure using the combination of convenience, snowballing, and maximum variation sampling strategies. Two of the identified students proved to be ineligible for the study. One student did not meet the eligibility requirements because of the immigration status: she held a Green card, not an F1 or J1 visa, which became known during the demographic survey stage. The other participant did not meet merit-based funding requirements: she was not granted funding at the time of acceptance to the doctoral program, which became known during the interview. The eligible participants were diverse in their countries of origin, academic programs, and the level of progress in their doctoral programs.

Data collection and generation occurred in five stages:

1. Prior to the interview stage, the participants completed a demographic survey designed in and distributed by Qualtrics. Qualtrics is a research software that provides a comprehensive survey design solution: lets researchers design and distribute surveys, and export reports and analyze data after data collection process. The demographic survey allowed to collect necessary information to confirm eligibility and create demographic profiles of the participants. The survey answers were always read and memoed before the interviews took place. This helped to create an initial connection between the researcher and the participants and provided reference points during the interview in case the participants turned out to be reticent.

2. After the survey, the individual phenomenological interviews were conducted with the participants. The interviews were semi-structured and contained open-ended questions designed to address the research questions of the study. Each interview was audio recorded. The researcher kept notes and memos of every interview about the conversation that occurred before and after the actual interview, the peculiarities of English language used by the participants, their sense of humor, irony, as well as their non-verbal expressions.

3. After all the individual interviews were collected, they were transcribed verbatim and sent to the participants for member checking along with any follow-up or clarifying questions that emerged. All participants provided

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member-checking responses and eight participants provided answers to the follow-up questions, all of which were added to the data.

4. Following the strategy of data triangulation to obtain richer data and explore the lived experiences of the participants from a different angle, one focus group semi-structured interview was conducted with three participants from the pool. Interview protocol included three open-ended questions that emerged after the individual interview data was collected. The focus group interview was transcribed verbatim and added to the data.

The data were analyzed using an interpretative phenomenological approach which allowed to explore the participants' experience of the phenomenon of their academic talent development, interpret, and make sense of this experience. The process was recurrent and circular. The following data analysis steps were taken:

1. Initial notes and memoing techniques were used to explore the data and gain familiarity with the data, noting interesting and captivating moments, looking at the language, and starting to identify abstract concepts, similarities, differences, and contradictions. This step was revisited throughout the analysis.

2. The interviews were deconstructed to better see the interrelationships between experiences. Significant statements were pulled from the interviews and coded using NVivo software.

3. The researcher constructed trajectories of academic talent development based on the information obtained in the interviews. This helped to trace

and visualize the specific interest and niche development process of every participant starting with early childhood until the present.

4. Initial codes were organized in a table format and used to develop emergent themes, map the interrelationships, connections, and patterns. Patterns and related concepts and differences and opposing concepts were established.

5. Four super-ordinate themes with essential structures emerged as a result of the analysis.

6. The super-ordinate themes and their essential structures are described in detail below. They are interpreted to increase the depth of analysis and connected to the theoretical framework of the study.

The researcher used specific strategies for data analysis within the IPA methodology suggested by Brinkmann and Kvale (2015) and Smith et al. (2009). During IPA analytic process the following strategies were employed to look for patterns and connections between emergent themes:

1. *Subsumption* was used to identify a super-ordinate theme in a group of related themes (or essential structures) and bring together a series of related themes under this super-ordinate theme (see Example Five, Appendix E).

2. *Polarization* was used to look for the oppositional relationships between emergent themes by focusing on differences instead of similarities, for example, negative versus positive aspects of related themes (see Example Five, Appendix E).

3. *Contextualization* was used to look at the connections between emergent themes through identifying the contextual elements within the analysis, such as temporal, cultural, and narrative themes. Contextualization was helpful in constructing the trajectories of talent development of the participants (temporal element) and when exploring perceptions of the construct of opportunity by the participants.

4. *Numeration* was used in some instances to account for the frequency with which a theme was supported, indicating a relative importance of some emergent themes. Because the interviews were open-ended and semi-structured, frequency of the appearance of emergent themes could pose as one indication of their relative importance and relevance to the participants.

5. *Function* was used during Phase 2 to examine the emergent themes for their specific function within the transcripts. For example, the function of language use and manner of presentation enabled a deeper interpretation of data, especially when analyzing perceptions of the participants about their own role in talent development process (see Example Five, Appendix E).

The study was designed in two phases. Phase 1 explored lived experiences of the participants: what they experienced and how they experienced it, in order to develop a deeper understanding about the features of their academic talent development phenomenon. The results of the analysis were used to answer the following research questions:

1. *Question:* What opportunities taken by high-ability international doctoral students throughout their lives (offered inside and outside of the academic environment) helped them develop expertise in their chosen domain?

   a. What opportunities were pertinent to their talent development?

   b. What opportunities were offered but discarded by the students?

   c. What opportunities were not offered but sought by the students?

   Key features: focus on the common phenomenon of academic talent development as an experience.

2. *Question:* What opportunities helped/influenced international high-ability students to make the decision to become doctoral students in the selective U.S. higher education institution?

   a. What were the enhancing factors?

   b. What were the barriers/challenges?

   c. What psychosocial factors were pertinent?

   d. *Key features:* focus on the common phenomenon of academic talent development as an experience of an international student.

   In Phase 2 of this study, the researcher used the data collected during Phase 1 to explore the participants' perceptions of the opportunities that helped them achieve academic success in their chosen disciplines and led them to pursue international graduate education at a selective U.S. higher education institution as another step of their talent development. The results of analysis answered the following research questions:

3. *Question:* How do high-ability international doctoral students perceive

opportunity in their talent development process?

    a. How do the students view opportunities in their lives: as lucky

    coincidences or as something they helped create?

    b. How do the students perceive themselves in relation to their talent

    development?

Key features: focus on personal meaning and sense-making in a particular context

(international doctoral program at a selective U.S. institution) for people who

share a particular experience (successful academic talent development).

Delimitations of the Study

Delimitations of this study included the following: a) the participant sample

included doctoral students coming from various developing countries, regardless of

cultural, religious, ethnic, or social backgrounds; b) the participant sample included

doctoral students from various academic disciplines and programs; c) the study was

carried out on the basis of one selective small liberal arts research university in the

U.S.; d) this phenomenological study had a relatively small sample size of 13

participants. Data were analyzed considering these delimitations.

Demographic Profile of the Participants

The demographic survey was created with the purpose of better understanding

the population under study and added to the interview data to ensure rich and

thorough descriptions. The data obtained from the survey, such as parent education or

SES of the participants' families, also helped the researcher to establish connections

with the trends that exist in the empirical literature.

The participants were 13 international doctoral students from seven developing countries completing their doctoral degree in a small public highly ranked research university on the East Coast. The participants differed by the stage they were at in their doctoral programs: 2 participants were completing their first year, 3 were in the middle of the program, 6 were to graduate within a year, and 2 were in their last semester of the program. There were 10 male and 3 female participants. Table 2 presents demographic information of the participants by program and place of origin with the indication of gender. The age range of the participants varied from 25 to 42 years of age (mean=30, median=29.5, and mode=30). Eleven participants grew up in urban areas, usually capital cities or capitals of the provinces, counties, or regions, and 2 participants (1 male and 1 female) grew up in rural areas. English was a second language for 11 participants and a third language for 2 participants. The residence period of all participants was the longest in their home countries. However, nine participants visited the U.S. for research and/or academic purposes before starting their PhD program, and six of these participants obtained their Master's degrees from the U.S. universities.

Table 2

Participant specifications matrix by program and place of origin

	Arts & Sciences		School of Education	School of Marine Science
	Natural & Computational Sciences	Humanities & Social Sciences		
Asia (China, Thailand, Indonesia)	2 (male)	1 (male)	1 (female)	3 (2 male, 1 female)

North, Central, and South America (Brazil, Venezuela)	-	1 (male)	-	3 (2 male, 1 female)
Middle East (Iran)	-	-	1 (male)	-
Africa (Nigeria)	-	1 (male)	-	-

The participants grew up in the families that varied by size, ranging from zero to four siblings. The majority of the households were two-parent; one participant lost his father at the age of 9. Most of the participants considered their families to be middle class in their home countries; two participants lived in poverty. Annual household income of the families at the time when the participants started their doctoral program fell into three categories: a) under $16,000 per year (7 participants); b) from $16,000 to 30,000 per year (4 participants); and c) from $30,000 to 75,000 per year (2 participants). There were no first-generation college students in the sample, but education level of the participants' parents varied. All of the participants' fathers received some form of higher education: 2 fathers had technical college degrees, 5 had Bachelor's degrees, 2 had Specialist/Professional degrees, 2 had Master's degrees, and 2 had PhD degrees. But only 7 of the participants' mothers did: 1 mother had a technical college degree, 4 had Bachelor's degrees, 1 had a Specialist/Professional degree, and 1 had a PhD degree. Six mothers did not receive higher education: 4 mothers were high school graduates and 2 had less than 9th grade

education (see Appendix F). At the time of the start of the doctoral program, 5 participants were married, and 1 female participant had a child.

Overall, the demographic data showed that the intended range of the variation in terms of selecting participants from different countries, cultures, and different academic fields was achieved with the help of purposeful maximum variation sampling strategy. Consistent with demographic characteristics of the graduate international student population studying in the U.S., the majority of the participants were Asian and completing their doctoral degree in the STEM fields (Institute of International Education, 2016b). The data also revealed several issues that manifested themselves in the patterns and themes during the analysis phase. For example, the fact that 9 out of 13 students visited the U.S. for research or academic purposes before the start of their doctoral program. It is consistent with empirical literature on international doctoral students (Knight & Madden, 2010), stating that academic mobility at the doctoral level is spurred by prior international academic experiences, especially by discovering future academic opportunities and by a network of connections created during these prior experiences. The interviews allowed me to explore this finding in depth, and it is presented below.

Notably, gender proved to be a finding in terms of female representation in the doctoral programs. Because the nature of the sampling procedure allowed for it, the researcher tried to specifically seek out female international doctoral students from developing countries once it became clear that most of the volunteers for the study were male. Nevertheless, in the study there were about three times as many male participants as there were female. Lack of specific data on international doctoral

students coming from developing countries does not allow for comparison of the sample ratio to the population ratio. However, the National Center for Education Statistics (2017) reported that 12,957 doctoral degrees were conferred to male international students, whereas only 8,395 doctoral degrees were conferred to female international students in the academic year of 2014-2015. These data include Ph.D., Ed.D., M.D., D.D.S., as well as law degrees, and do not distinguish between the students' countries of origin. Notwithstanding, the number of female international students is much lower than the number of male students.

Differences in gender factor also manifested themselves in participants' mothers' education level. Only seven mothers received some form of higher education, and only 2 of those 7 received graduate education. The influence of gender also came up in the interviews, and raised the following questions: how is the role of women changing in developing countries? How do girls perceive the influence of their professional careers on motherhood and family-making and how do they adjust their academic interests as a result? Do precocious girls and/or their families make this choice early in the girls' lives, therefore, choosing and encouraging a family-friendly career rather than pursuing a path consistent with the girls' interests and abilities? How does the lack of mothers' higher education experiences influence their children, especially daughters?

Finally, another finding from the demographic data was that the majority of students were born and raised in an urban setting. In many developing countries the urban setting, especially in capital cities, allows for easier access to higher quality of education, for example, better schools and more qualified teachers, as well as better

access to educational and technological resources, such as libraries, museums, language schools, extracurricular options, computer and high-speed Internet availability (Handelman, 2017). These advantages create a favorable environment for talent development and higher education opportunities, and possibly, exposure to international education opportunities. All of the above-mentioned issues present implications for future research.

Trajectories of Academic Talent Development

Data from the demographic survey and from the interviews were used to construct the trajectories of academic talent development of the participants (see Appendix G). The trajectories were constructed for every participant to help trace and visualize the development of the participants' general interest in the field of endeavor and development of their specific niche interests. They also helped explore the continuity and stages of the participants' academic talent development. The stages of *early interest development*, *finding niche interest*, and *taking time off* of the academic path are described in detail below.

Consistent with Subotnik et al.'s (2011) developmental and performance trajectory of the academic domain presented in the mega-model, participants' trajectories were domain dependent and closely connected to the system of education. Interest development varied from as early as childhood to high school or college years, and niche interest formed later on, usually during a graduate program. It was typical for the participants to be generally interested in a field and explore several possible directions during high school and an undergraduate program, and then narrow it down to the niche interest during graduate school. For example, Marcos had

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a general interest in nature and coastal environment growing up, enjoyed sciences in high school, started an undergraduate program in biology, and after having a class in ecology changed his major to environmental science. He decided to go into the master's program in ecology and after teaching and doing research at the university in his home country for one year, he entered a doctoral program in aquatic health science in the U.S. university. He, along with the majority participants in the study, intends to stay in the academia, teach at the higher education level, and do research in his niche area of interest upon graduation.

Early Interest Development

Early interest development at the childhood, primary, and middle school stage was usually evoked by meaningful exposure to stimulating environment brought about by family and/or teachers at school. For example, Jay remembered books his father brought home when he was little. They were encyclopedia-like books for children, and reading them sparked Jay's interest in history and different cultures of the world. Now he is doing his doctorate in anthropology and historical archeology.

For Konrad, who was preparing for his dissertation defense in archeology at the time of the interview, it was active practical involvement in his parents' professional interest. Konrad's parents, both archeologists, took him and his brother to archeological digs, engaged their children in lab work, went through their doctoral program when their children were in middle school, and talked about research and archeology at home.

Id's interest started as a result of her interaction with the environment when her father took her on a snorkeling trip to an island. Id, now in her final year of the PhD program in marine science, remembers the following:

Actually, I was born in a province that does not have access to the ocean, it's inland. But there was one trip, my dad took me on vacation to an island, and when I saw it, it was very beautiful, and I loved it. I remember I was only 14 years old when that happened, and I enjoyed snorkeling, saw the coral reef, everything. It was not my first time to the beach, but it was the first time that I had a chance to see coral reef and go snorkeling. It's very different from just walking on the beach, when you are in the water and can see it, it's something different, it impressed me. And I remember I was very impressed by that trip, and I loved it.

Several participants said that their interest was enhanced by concern for human beings or environment, desire to help people, and determination to find a meaningful way to contribute to the society. Fei, who is now working on hydrodynamics and water quality control, shared the following memory:

In [my home country] environmental issue is always a big issue, because in many cities the air quality and the water quality is not so good, we are still a developing country. There are many factories, and in those early years the regulations were fairly poor, so we have a lot of issues. I still remember when I was a child, for a lengthy period of time we had to rely on the well, so pump the water from the well rather than draw water from our nearby river, because the river was heavily polluted at the time. And I think that's why I got

concerned about the environmental issues in [my home country]. And as a

teenager I always had these fancy ideals, like, oh, our country has a sickness

and I want to treat it.

James Lee reflected that his interest in science was enhanced by a combination of

reading books, teacher involvement at school, inspiring role models, and a desire to

contribute to the society:

Well, as a child I had this dream. One day in middle school our [language]

teacher said we had to write an essay about what you want to be in the future.

So I started thinking about what I want to do. I really wanted to contribute to

the human beings. So I thought, scientist may be a good job, you can discover

some rules of the universe, plus I was inspired by famous scientists like

Einstein. And I read the book about Stephen Hawking that described his life

and what he was doing, and I thought, yeah, someday I want to be a person

like him.

Finding Niche Interest

Most participants found their *niche interest* during their higher education

experience, either attending a certain course or participating in a research project. It is

important to note, that at this stage the interest itself was the main driving factor for

most of the participants, regardless of more lucrative opportunities, career paths, or

other incentives to choose something else. Lucia describes her experience of finding a

niche interest during an undergraduate program:

So when I started having zoology, and those were the core classes, the first

class in zoology was on vertebrates, and I remember having a class in

protistology, and that was it, I remember thinking, this is so awesome! I remember counting the hours to go to that class. And I always wanted to work with carnivores, because you know, they are big and beautiful, and it's so easy. It's like, you know, you go get a glass of water in the sink, and instead of water there's money. When you work with charismatic mega-fauna, money just flows. And I like them, too, so it would be like adding insult to injury, but before I ever got to carnivores, I go to eucariotas and the deed was done.

Only one participant, Abe, completely changed his career path. He already received both Bachelor's and Master's degrees in architecture and was successfully working as an architect for three years when he discovered counseling and became a student again to pursue his interest.

Some participants were able to recall and single out a specific experience that turned out to be transformative for their talent development path. Konrad shared the story of finding his niche of interest in the field of archeology that later on resulted in his doctoral dissertation. During his undergraduate program, he and his brother went on one of the archeological digs on La Tortuga Island and found a rusted sword. He vividly describes the event that impacted his future talent development:

[The sword] was stuck diagonally in the sand in the middle of really nowhere, there was nothing around… We were just ecstatic, I mean we felt… we felt… it was such a surreal feeling finding something so complete and so evocative in the middle of nowhere on this desert island, in the middle of this sand, white sand, it really just gave this direct connection to the past that I've rarely felt. It just felt like somebody had stabbed it in the ground and hidden it, if it wasn't

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for the rust, you know, minutes ago. You felt the presence of people there and

you immediately imagined what could have been happening, for what reason

they would have hidden the sword, so yeah, I… I actually decided to take a

semester off from college and stay in the lab, and work in the lab to prepare

for my [undergraduate] honors thesis. During that time we went twice actually

to La Tortuga and stayed there for a few weeks, we excavated, and I think that

really sedimented [*sic*] my interest in historical archeology especially, and in

the archeology of the post-contact, post Christopher Columbus, and the

Americas.

Taking Time Off

Konrad mentioned that he chose to take a semester off to further explore and

complete his research of interest. It transpired during the construction of talent

development trajectories of the participants that only two participants, both in STEM

areas, went directly from high school to do their Bachelor's program, and on to their

Master's, and on to their PhD program. Eleven participants made a detour off of their

academic paths. The detour varied in length and served different purposes: for some it

was to gain professional experience, for others the time was needed to apply for

schools, and for the participants coming from lower SES families the time was needed

to work and support their families and themselves. However, six participants used this

time to think about their interests and their professional career choices. This finding is

elaborated on in Phase 2 of the analysis when exploring participants' perceptions of

themselves in relation to their talent development.

In conclusion, the construction of the trajectories of academic development of the participants allowed better understanding of the population under study by tracing the academic pathways and stages of their interest development. The constructed trajectories point at the universality of academic talent development and to the fact that both K-12 and college years constitute important stages for academic talent development.

Findings for Phase 1

Individual and focus group interviews provided the main data source for the analysis. Memos, field notes, and participants' answers to the follow-up questions were included in the data. Only one participant proved to be reticent, the others provided detailed descriptions of their experiences. The participants' responses proved to be very thoughtful and cohesive, and most of the participants engaged in metacognitive thinking when answering the interview questions. Some participants lacked the fluency to express themselves at a desired level of linguistic sophistication, which they acknowledged. The participants enjoyed talking about their interests and what they did and became emotional when rendering experiences of their lives they perceived to be their most formative.

The two main research questions answered during the first phase of analysis were: 1. What opportunities taken by high-ability international doctoral students throughout their lives (offered inside and outside of the academic environment) helped them develop expertise in their chosen domain? 2. What opportunities helped/influenced international high-ability students to make the decision to become doctoral students in the selective U.S. higher education institution?

Findings for Phase 1 of the analysis yielded four super-ordinate themes: 1. Education as family value; 2. Fulfilling academic environment; 3. Three pillars of mobility; and 4. Non-zero-sum game: brain circulation and knowledge sharing. Each super-ordinate theme contains a cluster of essential structures, and is described in detail below. To answer the research questions and sub-questions in full, the Phase 1 section also includes findings that address non-academic enhancing factors of international education, challenges of international education as perceived by the participants, and the psychosocial characteristics of the participants.

Theme One: Education as Family Value

Education as personal and family value was the theme that was common for all of the participants. This super-ordinate theme includes the following essential structures: investing in education, father's influence, gender, and mismatched career paths. The theme came up in every interview, and most of the time was expressed as something completely natural, like breathing air. Most of the participants mentioned that they were raised with the intention to go to college in the environment where higher education was the norm. For example, Lucia said:

> I come from a family that always studies, from both sides, so the only way for me to envision my future was through college, I couldn't see any other way. I don't even think I have any friends who didn't go to school.

It transpired that education was engrained in the value system of the participants' families, regardless of their SES, parents' level of education, country of origin, or other factors. Id shared:

Education is very important for your future, in my family and in the country. It's important in my culture, they expect that their children go to college, at least get a degree from college. At least that. If they can afford it. And poor families, they work hard, they borrow money to get their children to college.

Investing in education. All of the families and participants themselves invested a lot of resources in their education and did not hesitate to do so. For poor families it was a continuous struggle, because even small school fees took away from food expenses and other necessities. The parents persevered, believing that this was the future they wanted for their children. Lasisi, growing up in a household with two sisters and supported only by his mother, remembered: "Because going on from a humble beginning, it was really hard on me and on my mom. So my mom, […] she sold her jewelry so that I and my sister could go to [primary] school." For participants' families secondary education was not enough, the goal was to ensure that their children received higher education, preferably going on to graduate school. R was willing to start working to help support his family after graduating from high school, but his parents wanted him to pursue his education:

It's hard for me to admit, but even when I graduated from high school, I could not imagine that I could go to the university. I think at the time my parents were forcing me to apply to schools, even if we were not sure for how long we could survive this.

Middle class families did not face the same hardships, but they invested as much as was needed to provide the best education available for their children. They sought out the best schools in the area and sent their children to private or

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international schools if they perceived that it provided some advantage, such as better teachers or a more rigorous English language curriculum. For example, Lucia's parents decided to pay for both her and her sister to go to a private school, because it offered a better English language program: "I went to a private school, and again, private schools are expensive, but not nearly so as in the U.S., like, a middle class family can afford it. It's tight, but you can afford it." The participants who had this advantage readily acknowledged it, and in most cases, connected it to having better chances of not only getting admitted into college, but also getting admitted into a better, higher ranked institution. James Lee explained:

> I went there [best secondary school in the city] because in [my home country] you want to go to college, and you want to pass the college entrance exam for the whole country, right, and if you go to this kind of school, you have more chances, to have the well-educated teachers, to get the training, and to get to better colleges. And that's the main reason.

Education as family value provided a very strong support system for participants' academic talent development. It encouraged not just studying, but learning, and created a growth mindset, instilling in the participants a sense of value of the academic pursuits. When it came time for the participants to choose what next step to take in their lives, they did not hesitate to invest their own resources in furthering their education. For example, they worked to be able to afford college fees and support themselves through college, decided to postpone entering the job market in favor of a graduate program, and worked to be able to afford opportunities they saw

necessary for their talent development, such as international research visits and conferences, paying TOEFL and GRE fees, or covering application costs.

Father's influence. Apart from recognizing their families' collective influence on their talent development path, seven participants mentioned that they relied on and consulted with their fathers about their academic choices, especially about choosing their undergraduate field of study. James Lee remembered his father's involvement in the development of his interest:

> I was probably affected by my father, because he graduated with a major in mathematics, and he gave me some direction to the science. He would ask me some interesting problems and he asked me if I could find the solutions for that, so that's why I want to be a scientist. And I have found that I have some intelligence for doing science, and doing science will make me happy.

It must be said, that in all of the home countries of the participants the system of education requires students to choose their field of study or major at the time of application to college. Moreover, this choice has to be made as early as the sophomore year of high school in order to be able to successfully prepare for the college entrance tests. These entrance tests are comprised of a series of tests that usually have the same components for all students (e.g., language and history subjects), but also contain components testing different subjects (e.g., physics, math, political science, etc.) for students entering different departments. And college-bound students begin preparing for these specific disciplines early on. In some countries, for example, in China, high school students have to choose the track they want to follow,

either the arts or the sciences, and they start taking different classes in their sophomore year.

Thus, it is not surprising that the participants turned to their families for advice and support when making this important decision. It is telling, however, that only one female participant relied on advice from her mother, and seven other participants mentioned receiving guidance from their fathers. As was mentioned earlier, unlike mothers, all fathers received some form of higher education. So, apart from the gender role influence the fathers may have had on the decision-making process, they possessed more experience and held more authority in education-related issues. Even when the father's advice relied more on myth or personal preferences, rather than the child's interests, the child obeyed. Kelly shared: "I was intending to choose…literacy, but my father doesn't like that major, because he thought there're many poets and writers, and some of them have psychological problems. So he thought that this major isn't good for me."

Gender. Gender appeared to be a decisive factor in one female participant's academic choice. Kelly had to make this choice early in high school, even though she was undecided about what she wanted to do: she was interested in chemistry and biology, as well as languages, and was thinking about studying psychology or counseling. She explained the reasoning that decided her academic choice:

> If you're a girl, you'll have to work harder at the sciences, and also if you'll be
> an engineer, your working hours will be too long, and that's not good for girls.
> So if you're a teacher, sitting and teaching, then maybe you don't have to work
> so hard, so that will be easier for a girl, especially if they have a family in the

future. So at the time I chose the arts subjects.…And right now, I kind of

regret it, especially now, the science is developed and developing very fast,

and I wanted to choose a science major.

Kelly was the only participant that expressed regret for not choosing a

different academic path. She was also the only one who stated several times

throughout the interview that even though she liked what she was doing, she didn't

feel passionate about her field of expertise.

Mismatched career paths. Even though all families were closely involved in

the participants' talent development, only two of the participants followed the

interests and career paths of their parents, and two others followed the career paths of

their extended family (aunts and uncles). Marcos, who chose to be a biologist like his

aunt and uncle, knew what this profession could offer:

It's quite stressful and you don't get paid a lot, but it's still fun. I like it. I think

it's challenging, and you actually can think, it's not a job where you just need

to type or do something mechanical like that. It's something that you need to

think about. That's what I like about it.

Sometimes, the parents tried to guide their children to a career path that offered better

job opportunities, but if this path did not fall in line with the participants' areas of

interest, all participants but one ignored their parents' preferences. For example, Jay

changed majors when he was already in college and away from the direct influence of

his parents:

I wanted to study archeology. And the reason I went to [this] university is the

history and archeology, but my family kind of disapproved then. Because at

that time they thought that this kind of major as anthropology or history is not hot in the career market. So eventually, I chose English translation and interpretation as my major in the first year, but I think it's kind of boring to like… I can learn this kind of skill online, I don't have to go to a university to learn this kind of thing. So I transferred to the anthropology department.

Diego's father, an accountant, wanted his son to follow the same career path. Diego started working with his father right out of high school and acquired a unique set of skills that made him indispensable at the job. He kept working with his father for ten years to earn a living. However, he also learned that accounting was not what he was interested in or wanted to do for the rest of his life: "It was there that I learned that I didn't want to do anything related to business. I was thinking, okay, I don't like that. I used to hate that work. I feel shivers when I think about that work." Notably, the career choice differences were reconciled when the parents realized that their children continued studying and stayed on the academic path. The importance of receiving education and learning a profession was more important for the families than a specific career choice. Diego continued his story:

> They [parents] got pretty scared initially, but then they realized they lost me years ago for choosing that [marine science], they could not change my mind about some stuff. So they just supported that because at least I was studying. That was the initial goal, okay, he needs to study, he needs to get a profession. And they know that I'm really focused, and so they said, okay, we know that you're just going to do it, and you're going to do it really hard, so just go ahead and do it. They supported me.

Most of the participants' parents supported their children's academic choices, including the decision to study abroad, whether they perceived these choices as more or less desirable. The participants voiced appreciation for their parents' support of their interests and for the freedom to make their own choices. Id summed it up:

> And my parents, they are good, they never influenced my brothers or me, they were open: you can study what you want to study. Compared to the other families, sometimes they force their children, you have to study this, like engineering was popular then, but not my family. And my big brother is an architect. And my younger brother studies agriculture. We went for different things.

> In conclusion, the participants perceived that education and learning was important in their lives. Obtaining higher education was considered essential in the participants' families. This goal was supported by efforts and investment of the family resources even when the participants came from low-SES backgrounds. Education as value was accepted into the value systems of the participants, and they did not hesitate to invest resources, time, and efforts to further their academic talent development.

Enhancing Factors for International Education

Research Question Two sought to explore the experiences that addressed the following: a) enhancing factors for international education, b) challenges or barriers of international education, and c) pertinent psychosocial characteristics of the participants. This section will describe the findings on non-academic enhancers of international education. Then, three super-ordinate themes with supporting essential structures addressing academic enhancers will be presented in rich detail. And finally,

the findings on challenges of international education and psychosocial characteristics of the participants will conclude the section.

International education for the participants served several *non-academic purposes*. Many of the participants have been learning English and through that were familiar with the culture of English-speaking countries and the U.S. in particular. They were interested in exploring and learning more about the culture, and found the idea of full immersion, or living abroad, very appealing. Most participants were curious to learn about a different lifestyle through their own experience. Abe explained:

> Best universities are located in the U.S. And also, living in the U.S. is an experience. People from different countries are coming to the U.S. for work and for education. So studying something in any U.S. institution is not only about the academic gain, but also about being exposed to different races, ethnicities, nationalities.

Furthermore, studying abroad offered independence, and the participants saw it as an opportunity for personal growth and maturity. For some, the idea of going abroad to study was on their minds early on: since secondary school or undergraduate program, often supported by their parents. However, they mentioned that they didn't want to "live abroad too early," but wanted to be mature enough to be able to handle and make the most of their experience. Jay shared:

> I didn't want to go too early. My father also thought it's not a good idea to go to a foreign country when you are too young, when you are not that mature, and somehow you don't have that really strong personal will and worldview,

so you can easily learn something not good and totally forget what you are

here for. So we both agreed that it's better to do the graduate study overseas,

but when I was young to stay in [my home country].

Finally, peer influence turned out to be one of the non-academic enhancing

factors for international education. The popularity of the Western culture, perpetrated

by mass media (movies, music, books, magazines, etc.) made the idea of studying

abroad in one of these Western-world countries, and especially in the U.S., very

attractive among high school and undergraduate students. Having vicarious

experiences of their peers and the general approval and appeal of the idea of study

abroad in the participants' environments, created a mindset that was open to exploring

and pursuing such experiences.

Theme two: fulfilling academic environment. First international higher

education experiences happened at different times for the participants, but most of

them started with or during their graduate programs, around the time of crystallization

of their niche interest. Only one participant, Konrad, started his international

education in the U.S. as an undergraduate student. Three participants went to the U.S.

for their Master's programs before going on to the PhD programs, and two

participants started a joint Master's with a sequential PhD program in the U.S. having

already received a graduate degree in their home countries. For seven participants the

current PhD program was their first full-time degree-seeking international academic

experience.

Once the participants began developing expertise in their field of interest, they

started looking for the academic environment that would best fit their needs and

provide optimal opportunities for their talent development. The participants were in excellent academic standing; some of them were top students at some of the best higher education institutions in their home countries. They were looking to pursue an academic path and found it through doing meaningful research projects and reading books and research journals in the field.

Research. Most participants started doing research and publishing their work while still in the undergraduate program. Lasisi described his experience:

> I was the first undergraduate to do excavation project for the thesis. Normally, undergraduates just do some kind of writing, stenographic work, ask questions, just detect. And I went beyond detecting to digging on the site, analyzing it, and writing the paper, and publishing the paper as an undergrad. I really enjoyed archeology, I knew that this is what I'm after.

Some participants, for example, Lucia, started doing research on the topic they were interested in as a side project, and not as part of the program requirements. Through this practical experience, the participants were not only able to reinforce their interest in the chosen area, but also to realize that they wanted to continue following the academic path. The participants perceived that it was fulfilling, motivating, and at the same time challenging; it offered a taste of future work and discoveries. Konrad contemplated about his research experience during the undergraduate program: "I think that fueled my interest even more so, because I had found this pristine subject that nobody had ever looked into, which again fueled my desire for adventure and finding new answers and rediscovering all this."

Continuing on to graduate programs offered the participants an opportunity to do more rigorous research and consolidate their niche interest. At the same time, it presented a chance to realize that a doctoral program could help them develop their talent even further and provide a deeper, richer understanding of their area of expertise. Abe explained how he came to make this decision: "It [my Master's program] was very good, but I felt like I needed something else, it wasn't enough. I wanted to know more, I wanted to learn more. So I decided to do a PhD program."

Finally, research was an important enhancing factor for the participants to pursue further education internationally, specifically, in the U.S. The participants talked about reading up-to-date research publications, books and journals in English. Most of the projects they were interested in were carried out in the U.S. universities and published in the U.S. journals. These journals were the primary sources for finding rigorous, innovative research which the participants lacked in their home institutions. Most of the participants came to the conclusion Diego offered: "America still has the main [research] hotspots at least for our biology area. The main research, the newest research is happening here." The participants were guided by empirical research in their pursuit of the necessary expertise for their talent development. All participants were in agreement that they went into a doctoral program in the U.S. because they perceived that it offered the best environment to develop their academic talent in the chosen area of expertise.

Experts in the field. In their pursuit of expertise, the participants were not only following research they were interested in, they also identified experts in the field who published that research. And when they were applying for a PhD program,

most of the participants applied to institutions where the experts were working. For example, Fei was interested in numerical models and physics while he was completing his Master's degree in environmental science:

And during that time I got in touch with the work of my current advisor…, and he developed a numerical model which is widely used, and it is open source, which is widely used. That's why I could use it even when I was in [my home country] a few years ago, before I came here to this program. And after that I contacted [the institution] to see if there's any chance I can work as a PhD student here under [my current advisor] and that's how it worked out.

Advisors and research opportunities that came with those advisors were paramount to most of the participants. Marcos said: "I was looking for people that I wanted to work with that was similar with my research, and had similar ideas from what I have. And I found my advisor, and that's how I found [the institution]." Two participants were so focused on area of expertise and specific experts that they applied to only one program: the one that they were in at the time of this study.

It is telling that 10 participants were in contact with their current advisors before they applied or even before they considered applying to the PhD program. Some participants contacted their future advisors via email to ask questions or advice about their research projects at the time, which evolved in joint publications. Some participants were introduced to their future advisors during conferences or research visits. These contacts continued and evolved into invitations to apply for a doctoral program.

In some cases, however, the contact was more extensive. Two participants had a chance to participate in a research project with their future advisor before the program. For example, Lasisi contacted experts in archeology who were interested in excavations in Africa. His current advisor responded and came to do a month-long fieldwork research project with Lasisi. After that, he invited Lasisi to apply for a program, and Lasisi agreed, because: "The main reason for it is the field of research and people to work with."

Unique resources. For some participants, especially students in the sciences, the resources that the U.S. institutions and research centers could provide proved to be an important factor. The infrastructure, labs, and extensive research collections were an attractive bonus to the research projects of interest. Diego elaborated:

When I got here to do my research, visiting the museums, I got fascinated by the American museums. They are just the best in the world or where I've been. I got fascinated by the museums and places that I visited for work. I got fascinated by the amount of information there is in the collections.

Academic culture. The academic culture of higher education and particular institutions in their home countries was another important factor in the participants' decision to change their environment, especially for those participants who had prior academic international experiences. The participants shared their perceptions about academic and research climate in their home institutions, resolution of administrative issues, student-professor relationships, and power dynamics between students and faculty and staff. Hao said:

Here I actually feel [this institution] has more connection with me than my

first university. At my first university students didn't connect with professors

that much.…Here administration people are very nice. Here if we have any

problem, anything,…they will help us to solve the problem. But at my

university in [my home country], the people there, I felt more like you need to

beg them.

Besides the search for pertinent research opportunities and experts in the

chosen niche interest, the participants were looking for more flexibility and freedom

of choice in their academic environment. Kelly compared:

I think that in the U.S. educational experience you have the opportunity to

choose what you are really interested in, and it seems that you can become

what you want to become. Because in [my home country], at first you don't

have so many choices, I think. And there are so many boundaries and

limitations.

The participants especially appreciated academic freedom when it came to choosing

their dissertation topic. Lucia shared:

And it wasn't like somebody gave me a topic, or forced it on me, but my

committee helped me develop a line of thinking that came to that conclusion.

So that was definitely a major difference between doing a PhD here and back

in [my home country].

For some participants this academic freedom was unusual, and came with realization

of responsibility for the learning process. But it also helped the participants to

perceive themselves as researchers rather than students, and gain more confidence in

their academic pursuits. Konrad described this learning experience:

> The first year I was apprehensive about this kind of liberty, but then during my
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> second year I realized that this liberty is actually good. And that helped me in
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> publishing my first article. And the liberty that the professors gave me and the
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> confidence they had in me was something that helped me a lot, and being
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> confident in my publishing, and in my research, and in my writing.

Finally, the relationships between students and professors were different from

what most participants experienced at the higher education institutions in their home

countries. The participants mentioned informality of professional relationships,

friendliness, helpfulness, and ease of communication with their advisors and other

professors. For example, Abe said: "I, personally, felt very comfortable with this

informality. And at the same time it's professional. So while being professional,

there's some level of informality, and I like it, I enjoyed it. For me it provided a better

connection." The participants appreciated the ability to contact their professors via

email and receive a quick response, and the ability to approach professors with

questions, concerns, or ideas without reservations. Some professors offered more help

than could be expected; they went above and beyond to support their international

students. One professor not only encouraged the student to apply to the program, but

also paid the application fees, because he knew that it was a substantial sum for the

student. Another professor paid close attention and identified a learning disability in

his international student based on the discrepancy between this student's oral and

written responses, something that went unidentified and unsupported throughout the

whole education journey of the student. The participants perceived that these supportive student-professor relationships and effective communication largely contributed to the participants' academic experience in their doctoral program and to their academic talent development.

In conclusion, this theme outlined a fulfilling academic environment that the participants perceived to be the most important enhancing factor for choosing international education. The theme centered on the sought-after environment where the participants could develop their expertise at a desired level of challenge and rigor and included such essential structures as conducting rigorous empirical research projects, connecting and working with experts in their field of interest, having access to unique resources, and academic culture that U.S. universities could provide.

Theme three: three pillars of mobility: English language, technology, and funding. However strong the participants' interest in the field and their drive to find necessary expertise might have been, they would not be able to find a fitting environment and move to be in it without certain supports. English language, access to technology, and availability of merit-based funding were essential factors across participants' experiences.

English language. English language was an important factor in various ways: it turned out to be an enabling factor, a challenge, and a driver for international education and mobility of the participants. For the participants, English was their second or third language, and all of them had a certain level of English language competency before they decided to study abroad. In the education systems in developing countries students are required to take a foreign language class, which is

usually English, starting from elementary or middle school and continuing onto the higher education programs. However, the participants commented on the poor quality of their English language instruction at school. Most of the time it was focused on grammar and test-taking, taught by non-native speakers, and there was little exposure to actual communication. Abe shared a common sentiment: "I learned English, in a way, quote unquote English, not real English, back home in [my home country]."

As a result, most of the participants said they continued learning English by themselves, more intensively at the time of application to the U.S. universities. International students are required to be proficient in English at the time of application to the graduate program, and have to pass TOEFL and GRE tests to prove it. Many participants commented that they applied a lot of efforts to improve their English language skills before taking these tests. Nevertheless, some participants found it challenging to study in English. Particularly, students in the non-STEM disciplines had to devote a lot of time to learn the language during their first year of the program, because courses in these disciplines usually require a larger volume of reading, more writing, and fluent verbal communication during seminars. Jay went to study abroad as a Master's student in anthropology. He described the challenging experience of being immersed in the English-speaking academic environment:

> At first I wasn't so happy because of my linguistic ability, and also it kind of hampered my progress towards my expectations, my goals. I didn't receive good grades my first semester, and it didn't match my expectations. Sometimes I could not participate in seminars or discussions, which is usual

for graduate school, I could only passively listen to what other people were

saying. And I didn't feel comfortable with that.

Abe, who started his international education with a Master's program in counseling,

also emphasized the language as the most difficult aspect of being an international

student:

I was doing everything in my second language. Language barrier was the

hardest…the hardest, hardest, hardest part for me. Because we had to write, it

was not an engineering program, so we had to write, and we had to talk, and

we had to have very high verbal skills. And I didn't have that at the time, and I

was struggling a lot to connect to people, to communicate, to write, and to get

connected.

Nine participants said they had a good grasp of the English language even

before they decided to apply for a program in the U.S. Apart from the school system

requirements, their English language learning was spurred by:

1. Parent involvement. Participants' parents saw value in being fluent in English,

   because they believed that this could offer their children an advantage

   regardless of their future professional paths. That's why parents supported and

   invested in their children's English language learning in various ways, for

   example, sending their children to a private school with a rigorous English

   language program. Konrad appreciated the advantage: "Having a pretty solid

   basis in English throughout my education definitely was a big plus."

2. Cultural influence. Some participants were inspired to learn English on their

   own because of the western world cultural influence. For example, they

mentioned that they improved their language skills by listening to English songs and translating lyrics, watching movies with subtitles, and making friends and communicating with native speakers.

3. Research. Some participants used English language to read up-to-date research publications and literature in the field, because primary sources that interested them were published in English. They saw English as a necessary tool for professional advancement: English was needed not only to stay current and read research, but also to publish their own. For Id, English language was a factor in her choice of where to go abroad for her PhD program. She explained: "I thought: I'd like to go to the country that uses English, because English will be the medium language and as you get higher professionally, you need to write publications in English."

Technology. Technology, specifically, Internet, proved to be one of the main enhancing factors for international education and mobility. It provided an easily accessible, virtually free tool for the participants for finding necessary information, networking and making connections via email, as well as sharing experiences and know-how. It must be noted that all participants had access to computers and high speed Internet and possessed necessary computer literacy skills and English language skills to use the technology for learning, research, and knowledge sharing.

Firstly, the Internet offers an infinite amount of information on virtually any subject. Moreover, a lot of this information is shared for free, it just needs to be searched for. Some participants mentioned making a habit of searching for research articles online and reading available up-to-date information in their field of interest.

For example, Konrad said: "I find searching the internet for articles and publications a fun pastime, and with time that also helped me increase my knowledge of what has been written in my subject and field and other ancillary fields."

Finding relevant publications led to another opportunity: connecting with authors of those publications, experts in the field, via email. It was an easy and quick avenue for the participants to ask experts for advice and more information, and also to send their own research to these experts and receive feedback. Marcos described his experience:

It's just an email, so I said, why not? And when I saw that people are actually responding, whenever I wanted to ask or know something, I would just email people. So the first guy I wrote to, he wrote a paper, and I wrote a response to it with my ideas, and it happens that he was an editor of the journal, so he said, why don't you write it, and we'll publish. So I did this, and then I just kept doing this I guess. I still do it today.

Second of all, the participants searched online for information about graduate programs abroad, specific schools, faculty members, and application requirements. Once they decided to apply, they used email to connect with the schools, professors, and potential advisors. Internet websites also offered information about immigration procedures and visa application process.

Next, most participants mentioned that the Internet was a helpful and free resource for TOEFL and GRE test preparation and reinforcing their language skills. Test preparation and language learning resources were easily accessible, there was a

multitude of free resources, and the participants could schedule study sessions at their convenience. Lasisi said:

> I downloaded materials, I had this Magoosh stuff [online GRE prep and practice tests] where people post, talk about how to pass GRE. You know, I was really reading all the how to, how to, how to stuff. How to compare passages and such. I just used Internet, nothing more. I didn't have money to buy materials, so I just used Internet. I did the same with TOFL English language test.

Finally, as Lasisi mentioned, most participants used know-how websites with practical advice and suggestions created and updated by predecessors who wished to share their successful experience and help other students. Test-preparation websites were not the only knowledge-sharing websites the participants used. Study abroad pages and websites for alumni networks who disseminated information about international education and mobility were also very popular. So here, both technology and peer influence factors supported and facilitated international education for the participants. Jay explained how he found a lot of helpful information during his application process:

> They are friends of friends, we have that kind of like mutual help thing among overseas students [from my home country]. There is a website, and there are also personal connections. For instance, when I was in my third year in college, some students who already graduated from college [in my home country], they had classmates who had already been accepted by the U.S. institutions, and I could talk to them and they would put us in touch. And now

it's kind of my obligation to answer questions from students who are younger

than me, now they have that kind of social connection.

Such knowledge sharing was especially popular among Chinese participants. The

participants who mentioned using these resources also mentioned that they were

keeping up the tradition of knowledge sharing and paying forward by helping next

generations of students who were considering to study abroad.

Funding. Merit-based funding was a necessary prerequisite for study abroad

for all participants. Their families, ranging from low-income to middle-class in the

participants' home countries, could not afford to pay tuition fees and costly living

expenses in the U.S. (Handelman, 2017). Availability of merit-based funding could be

another reason why most of the participants came to study in the U.S. for graduate

school and not for an undergraduate program. Konrad was the only participant who

moved to the U.S. for an undergraduate program, and he was able to receive a partial

scholarship from his undergraduate school. Scholarship opportunities at the

undergraduate level are very limited in the U.S., especially for international students.

Moreover, undergraduate international students are usually charged a much higher

tuition fee than domestic students (Bhandari & Blumenthal, 2011). Kelly was

interested in studying abroad since high school, but the idea became realistic only

when she found out that students could apply for funding at the graduate program

level: "if you apply for college, you can also apply for the scholarships, and you can

go study abroad."

Three participants were able to obtain merit-based funding for doing a

doctoral program in the U.S. from the government in their home countries.

Governments in some developing countries establish such programs in an effort to provide young professionals with expertise and research experience their home institutions cannot offer. They select young professionals with the help of a rigorous application process and offer funding that covers a PhD program tuition, as well as travel and living expenses, in the country and institution of an applicant's choice (usually, a research university in a Western world country). In turn, the applicant signs a contract to return and work in their home country for a number of years after graduation. This way developing countries are trying to improve research and academic standing of their higher education institutions and groom professionals with internationally competitive expertise in the fields these countries prioritize (Saxenian, 2006; Stromquist, 2007). Id was one of these participants:

> People who are in science or technology and they study abroad, they usually get a scholarship from [the government], and then they have to go back and work for [my home country]. So after I finish I have to go back and work there. I already have a position; it's going to be the same university.

Availability of funding for a PhD program was also a decisive factor in choosing a specific university for most participants. However, if participants had a choice of two or more funded programs, the primary consideration was their future advisor and line of research. For example, Lasisi remembered:

> I chose [this university] because the faculty members are…the best combination of faculty that I can work with on my research. And again, they offered me good funding. And New York, they also offered me that. But if [my advisors] were in New York, and New York gave me less money, I would

have gone for it. Because they are the people who can direct me in this research work of mine. So it's not because of the money, but it is part of it. The main reason for it is the field of research and people to work with.

In conclusion, this theme outlined the main international academic mobility supports perceived indispensable by the participants. The essential structures of this theme included English language, technology, and funding supports. English language became an enhancing factor for international education due to its status as a global language and a most commonly used medium for sharing research (Bhandari & Blumenthal, 2011). It is taught as a second language in the schools worldwide and is popularized by mass media and western world cultural appeal. It is a driver and, at the same time, a challenge for international students who need to be proficient enough to not only live in an English-speaking country, but to successfully function in a rigorous academic environment of a graduate program. English language was also a prerequisite skill for the other mobility support tool: technology, which, in its turn, enabled the participants to access the information they needed for international academic mobility. This included finding up-to-date research online, communicating with experts via email, sharing knowledge about international schools and programs, and enhancing test-taking skills. And lastly, availability of merit-based funding either from the receiving institution or their home governments, allowed the participants to engage in international academic mobility.

Theme four: non-zero-sum game: brain circulation and knowledge sharing. The participants' experiences in finding relevant academic talent development opportunities were closely connected to international academic mobility

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around them. Just as in the non-zero-sum game, where all parties could win as a result of successful communication and exchange, academic environments in both sending and receiving countries benefited from the exchange, resulting in brain circulation. All participants relied on international flow of expertise in various forms to find ways to realize their own potential. They used social, academic, and professional relationships with the internationally mobile individuals (e.g., faculty members, peers and alumni, family, etc.) to share knowledge and create their own networks. Brain circulation and knowledge sharing manifested themselves in the following ways: international experiences of peers and alumni, international experiences of faculty in their home countries, international experiences of U.S. professors and scholars, prior international experiences of the participants, and support for brain circulation from home governments and higher education institutions.

International experiences of peers and alumni. The influence of internationally mobile peers and alumni created an excellent support tool in the form of sharing know-how. Using technology, such as Internet, email, Skype, and other applications, peers and alumni shared helpful information about application process to the U.S. universities, test-taking skills, and nuances of academic environment in the U.S. In many participants, it evoked the idea of paying forward by offering support and sharing knowledge with younger students who needed similar help. Jay explained:

Some students had classmates who had already been accepted by the U.S. institutions, and I could talk to them and they would put us in touch. And now

it's kind of my obligation to answer questions from students who are younger than me, now they have that kind of social connection.

International experiences of domestic faculty. Faculty members in the participants' home institutions proved to be a large influence on the participants' mindset to continue their education abroad. Many participants mentioned that a lot of faculty members in their home institutions were returnees: they received their PhD degrees from the universities abroad, which set an example of a pathway to a successful career in academia. Secondly, the participants mentioned that the professors they worked with during undergraduate and/or Master's programs had connections with international institutions and experts. These faculty members built their international network through collaborative projects, visiting scholar programs, or personal connections, and were willing to offer their students advice about going to study abroad, as well as put the students in touch with the international faculty members and experts. Finally, three of the participants mentioned that their professors in the home institutions had direct connections to the university under study and recommended the participants to do a PhD program here. For example, James Lee said: "My undergraduate advisor came to [this university], he was a visiting scholar here. And he knows that this professor is a good one, and he recommended me to study under him."

International experiences of U.S. professors and scholars. Another strong influence came from the U.S. professors and scholars who participated in various international projects. Some professors engaged with international students face to face during their trips to international institutions: training sessions, research

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presentations, lectures, or research projects. Kelly talked about how she met her

doctoral advisor during one of his visits to her home university:

> [He] came to our university, and did a training. That's how we met. I also
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> asked him about the program here, and he told me all about it. So I thought
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> this is a very good option, and I applied.

Other professors engaged with international students online: gave feedback on

research projects, shared articles, co-authored papers, and gave advice on applying for

a doctoral program. These interactions supported the participants' need for expertise,

established professional connections with future advisors, and uncovered the

appealing academic environment in which such student-professor relationships were

possible.

Prior international experiences of the participants. Twelve out of the 13

participants had some form or a combination of international experiences prior to

entering a doctoral program. Five participants obtained their previous degrees in the

U.S. institutions, one was a visiting scholar in the U.S. university, three went to

international conferences and did research visits, and five collaborated with

international experts from different countries, including the U.S., on various research

projects. Konrad described his experience that provided a pathway to the doctoral

program in the U.S.:

> I presented at the Congress of the International Association for Caribbean
>
> Archeologists in Martinique, and there I met a professor at the Anthropology
>
> Department here, a historical archeologist. He was really interested in my

work, so he told me to apply here, that he would be very interested in having me as an MA/PhD student, and I did.

Support for brain circulation from home governments and higher education institutions. Participants from China, Thailand, and Brazil talked about international exchange and support for international programs from the governments and higher education institutions in their home countries. Three participants were granted merit funding for their doctoral program in the U.S. from their home governments and were supported by their home institutions. One of the conditions of this program was that they were to return and work in their home countries for at least two years after obtaining their doctoral degree. The intention of this exchange is brain circulation: the student becomes an expert in the field learning from the professionals the home country does not have, returns home and disseminates knowledge and expertise to students and colleagues, and maintains ties with the degree-granting institution and their own professional network to further enhance expertise and conduct new empirical research. In line with these expectations, one of the participants talked about the future prospects:

> I can apply what I learned here to my research in Thailand. I have so many ideas, because here you don't learn only about the project that you do, you see different research around here. So when I go back I can extend that and work in collaboration with my colleagues here and do different kinds of projects.

Participants from Brazil also supported the idea of government funded international programs, but they mentioned that current political issues in the country could result

in decreased funding of the universities and fewer job and research opportunities in academia.

On the other hand, participants from China mentioned various experiences, which point to the government and higher education institutions' support of brain circulation to and from the Western world countries. Universities create and support visiting scholar programs, build relationships with highly ranked international institutions, open experimental programs that are designed similar to the programs in Western universities, increase funding, and try to attract graduates with degrees from the Western world universities. One participant talked specifically about his perception of brain circulation in China and the influence of graduates from the U.S. universities who permanently immigrated to the U.S., but still maintain academic ties with their home country:

> They go back to China regularly, they still educate people, they teach classes, and bring the connection between the two countries. Probably that's the reason the scientific research also boosts a lot in China. I mean, you need to have some connection with people who are going to do the top research, so if they go visit, they teach people there, they bring some people there. …If you look at long-term, the country surely benefits a lot.

In conclusion, the theme that centered on brain circulation and knowledge sharing had the following essential structures: international experiences of peers and alumni, international experiences of faculty in their home countries, international experiences of U.S. professors and scholars, prior international experiences of the participants, and support for brain circulation from home governments and higher

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education institutions. Involvement of experts and faculty members in internationalization in both host and home countries proved to be paramount in supporting international academic mobility of the participants.

Challenges of International Education

To fully answer Research Question Two, the researcher explored the challenges and barriers in the international experiences of the participants. Most participants viewed the opportunity of international education as a welcome and exciting experience. They talked about how living abroad required them to "step out of their comfort zone" and "think out of the box," and attributed their maturity and personal growth to these experiences. However, it did present certain challenges that were common for the participants. As described earlier, the language was one of these challenges. Even though English language was most often viewed as an enabling tool, enhancing factor, and a satisfying personal growth opportunity and cultural experience, it was also seen as a challenge, especially for participants majoring in the humanities and programs with more intensive writing requirements. It also took its toll on the participants when they just moved and needed to organize their daily life: sign a lease for housing, obtain a social security number, open a bank account, and other activities that involved specific terminology and particular language use. The other challenges named by the participants were the following: geographical distance from their home countries and families, feeling of isolation the participants experienced in a different cultural environment, and, sometimes, racism and xenophobia.

Distance. Geographical distance proved to be a challenge for most of the participants. Apart from long travel times, it entailed high travel expenses which were not included in funding packages and which most of the participants could not afford. As a result, most of the participants were only able to visit their families once a year or fewer times. For example, Id was only able to go home once during the whole duration of her PhD program. In most cases, specifically for the participants from Asian, African, and Middle Eastern countries, geographical distance resulted in a significant time change, which restricted communication opportunities of the participants with their families and friends on the phone or via Skype. In some cases, especially at the early stages of the program, being far away from home led to the feelings of loneliness and isolation. However, such restricted access to the usual supports from family, friends, and familiar environment made the participants become self-sufficient and assume complete responsibility for every decision and action, no matter how big or small.

Distance also restricted the ability of the participants to be there for their families or offer their support to the loved ones. It was especially challenging for the participants who experienced a loss in the family or an unstable or dangerous situation in their home country. Konrad shared:

Then things in [my home country], sadly, went in a very, very sharp

downward spiral, and what has been challenging recently in the past years, is

being not constantly worried about family there, their physical safety, because

you know, it is a very dangerous country, and I think kind of keeping

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emotionally stable and just not worrying too much has been challenging for me and also for my wife.

Isolation. Making new friends and adjusting to the new environment proved to be more difficult for some participants than others. The feelings of isolation and loneliness intensified at stressful times, especially if there were fewer people around who the participants could relate to. The participants perceived such people to be other international students who were going through similar experiences, community of people from their home country living in the area, or domestic faculty and students who had international experiences themselves and could relate to similar challenges. Lucia shared:

> I feel like I live in a very accepting community, but it's very hard…because many of these folks, professors and other students, they've never been abroad. It's not even the fact that they are being different from you, it's just that it doesn't go through their brain that certain things are harder for you.…They don't understand why some things are such a struggle.

Racism and xenophobia. Three non-White participants mentioned incidents of racism and xenophobia while living in the U.S. These instances did not happen in the academic environment, but created an unwelcome climate for the students. The participants said that it caused disappointment and disillusionment in what they earlier perceived to be a society of freedom and equality. One participant shared: "There's xenophobia, and some folks were not so friendly towards Asian students, because they think we're coming here to take their opportunities." The other participant commented that even though the American society is trying to support minorities and

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engages in diversity efforts, there are certain "undesirable minority groups" which he perceived himself a part of when he started to look for employment opportunities in the U.S. He said that on the job market "some of minorities are favored, and some of them are not really attractive. If I was a Black lesbian, probably, I would be very favored. But male, from the [Middle East], Muslim, it was not really promising."

Overall, these challenges indicate that international students need additional support from the receiving institution, especially when they just arrive on campus and during the early stages of the program. People who understand and can relate to the experience of living abroad can play a major facilitating role in the adjustment of international students to the new academic life and social environment. Most participants viewed the above-mentioned challenges as part of the learning and growth experience and were optimistic in their ability to deal with these challenges or overcome them. However, racism and xenophobia may present a challenge that would be more difficult to overcome individually. It could become a threat to the development of international education if supported by immigration policies and laws in the U.S. allowing for academic, funding, and employment opportunities to become restricted based on race, religious affiliation, or a country of origin of international students.

Psychosocial Characteristics

The last sub-question of Research Question Two called for the exploration of pertinent psychosocial characteristics of the participants. From the stories the participants shared during the study, the researcher was able to derive some of the personality traits of the participants that helped them enhance their talent development process and change environments when it was necessary for further academic growth. The main psychosocial characteristics of the participants that transpired in the process of analysis were the following: inquisitiveness, openness to new experiences, hard work, persistence, and optimism and faith.

Inquisitiveness. Inquisitiveness, or curiosity, as many participants referred to it, proved to be a very important trait, especially in the participants' talent development process. The sense of discovery, learning new things, and exploring the field they were interested in in depth served as a motivating factor to keep pursuing the field of interest. The participants' sense of intellectual curiosity and the need to discover new areas for exploration were supported by internal rewards, such as intellectual satisfaction, competence building, and a sense of progress. This inquisitiveness resulted in a strong sense of intrinsic motivation, which ultimately helped actualize their potential. Konrad described his perception of it in the following way:

> I think one of the things is that curiosity that I have for finding out more and never being satisfied with just a simple answer, that passion for new things as well, for adventure not only in the field of archeology when we, you know, go out and dig in new places and visit different areas, but also kind of a sense of

adventure intellectually, of pushing the boundaries of the things we still don't

know of or of things we don't know of any more.

Openness to new experiences. Most of the participants mentioned being open

to and welcoming new experiences: academic, life-style, and travel. These new

experiences, for example, a study abroad program overseas, living in a more diverse

social and cultural environment, or taking a gap year, required the participants to take

calculated risks and step out of their comfort zone. The participants were willing to do

this; moreover, they attributed their personal growth and maturity to such experiences.

For example, R commented about his experience of being an international student:

> It's more like a life experience, it's not just about physics exactly. I learned
>
> about how to be independent. How to be independent not just financially, but
>
> emotionally, independent in life, more mature, and what to do if I failed. I
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> learned how to face failure, how to be independent, how to live by yourself,
>
> far away from your family, how to do everything by yourself. And it's scary,
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> but at some point you realize that instead of being scared, I just need to solve
>
> it, just do it.

Hard work. The participants proved to be hard working throughout their

talent development journey: some worked long hours to be able to support themselves

and their families, some had to work hard to develop sufficient English language

skills, and all participants worked a lot on developing their expertise in their areas of

interest. Being hardworking was often emphasized in the participants' families. It was

often perceived by the participants as a necessity, as part of their character and life,

and not as something extraordinary that they had to do. Diego shared:

And I don't mind spending hours and hours working. I grew up with this idea
that you need to work really hard. I was told that and I learned that from my
own experience. But I also did my part, and I don't mind working 12 hours a
day, because I really like what I do.

The participants proved to be hardworking even when there were no extrinsic
motivating factors, such as course requirements or grades, when it involved their area
of interest. This interest provided sufficient intrinsic motivation for work and
exploration. Fei described his perception: "You know, sometimes, on a perfect sunny
weekend, I spend all my time in the library or reading some physics book that is not
directly related to my research. There are a lot of topics I like in physics."

Many participants worked on developing their interest through seeking out and
reading up-to-date books and journal articles, volunteered for research projects, and
found experts that could provide them with opportunities of working in the field of
interest. For example, Lucia approached a professor in her undergraduate program
who was conducting a research project in the area Lucia was interested in. Lucia
worked with her on this research project, even though she knew she would not receive
grades or funding for doing it.

Persistence. The participants also showed a high level of persistence when it
came to pursuing their interests and goals: they persevered even when the path was
unclear or when they were offered others, sometimes more lucrative opportunities.
Lasisi was denied admission to the undergraduate program in archeology at the
university in his home country for two years, even though his examination scores
were high enough for admission. He persisted for three years until he finally got

accepted. James Lee had trouble with the TOEFL test, so he practiced and took it four times until his score was high enough for admission to the U.S. university. R postponed his graduation from the Master's program by one semester to be able to finish a challenging research project that he undertook. All participants persisted and continued developing their talent and doing research in their fields of interest, even when they faced failure, had to extend time commitment, or their working hours in order to do so.

Optimism and faith. The participants perceived their lives and challenges that they faced throughout their experiences in an optimistic manner. They were hopeful that they would be able to overcome difficulties and find the opportunities they were looking for to be able to pursue their talent development. Optimism and belief in achieving the desired outcome helped the participants to persevere and keep working in difficult times.

For three participants their faith in God served as a source of hopefulness and self-efficacy. Their faith supported them and helped them remain a pro-active: it made them optimistic and provided hope that if they kept working and trying, they would be able to achieve what they wanted. R shared:

> So when you are in a situation that can be stressful, you want to get out of it, and sometimes you become hopeless. Maybe most of the people, they become hopeless. But for me, believing in Jesus and believing in what the Bible says, it gives me hope that I can change my life. So like I said, I was working, I went to the university from morning to afternoon, and then from afternoon to night, like twelve or eleven p.m., I stayed working, teaching. And it was every

day for four and a half years, so what made me strong was what I believed. My

faith.

For Lasisi faith also provided hope and support to work hard towards his goal of

receiving higher education. He kept trying to get admitted and worked to be able to

pay tuition fees: "I wasn't sitting and waiting, I was working, and you have to work, if

you don't work, your faith is dead. Faith is to act, actually. The definition of faith is

action. So I had faith and I was acting."

Findings for Phase 2

Phase 2 involved another round of analysis and distilling the data and findings

from Phase 1. Phase 2 of the analysis focused on personal meaning, sense-making,

and understanding the perceptions of the participants about their role in their own

academic talent development and their perceptions of opportunities on their talent

development path. The research questions answered during the second phase of

analysis are: How do high-ability international doctoral students perceive themselves

in relation to their talent development? How do the students perceive opportunity in

their talent development process?

Role of Self in Academic Talent Development

The participants in the study proved to be thoughtful when they talked about

their formative experiences. They took their time to answer the researcher's questions

and thought back to the experiences that happened a long time ago. When the

participants talked about the experiences that described their talent development in the

chosen area of interest (especially at the later stages, for example, during

undergraduate or graduate school) they expressed a strong sense of agency,

awareness, control, and purposefulness of their actions and choices. They commonly used the following verbs when describing their experiences: think, plan, decide, choose, do, want, work, can, know, change, be interested in, like, and so on. On the one hand, the participants talked about support systems that helped them develop their talent, such as support from family members and professors. And on the other hand, they possessed a lot of self-efficacy, or belief in their own ability to achieve their goals once they set these goals. For example, Kelly talked about how she felt when she entered the doctoral program: "I felt like as long as I tried hard, I could achieve it."

Interest and sense of agency. When analyzing the perceptions of the participants about their own talent development, it became clear that with growing interest in their chosen field the participants expressed increased sense of agency, or subjective awareness of starting, fulfilling, and being able to influence their actions and course of their lives (Mudrak & Zabrodska, 2015). Finding their interest encouraged the participants to become more proactive and develop a stronger sense of agency. For example, the participants talked about their childhood and secondary school years as about something that happened to them and over which they had little or no control. Having been born in a certain area, into a family of a certain social status and financial means, or going to a better school did not elicit much description and was rendered as a string of facts. The exception to that were experiences of early interest development by some participants who discovered their interest early on. These stories were more emotionally colored and more thoroughly described with

more elaborate word choice. For example, Jay remembered how his interest in anthropology started:

> Childhood is a vague memory, maybe subconscious now. But I think the point that ignited my interest, inspired my interest, is the books my father brought home. They were Japanese books for children, they gave you kind of an outlook of the world and how the universe works, it's kind of like scientific educational books, something like an encyclopedia, but delicate. All these Japanese books are well designed with a lot of pictures, and it made me think that the other part of the world is really interesting, the world we are living in is not that simple.

Finding the niche interest and passion provided purpose and was an important motivator for the participants: they felt the need to do meaningful work and they wanted to enjoy doing it. For example, Id regarded herself and her interest as main agents in her talent development and expressed gratitude to her family for allowing her to make her own choices on the academic path: "I am who I am now because of myself, my passion in marine science. I had freedom to choose what I'd like to do or study since I was a kid."

The participants who found their niche interest at later stages proved to be proactive about searching for it. For example, James described his experience of taking a job in a business that did not offer any challenges or talent development opportunities and quitting it after two months to apply for a PhD program in the U.S.:

> I could not find the passion in it; I wasn't excited about it. And I felt it was boring, and I had to work morning till night there every day, and it wasn't

anything creative, and a waste of time, waste of life. And I decided, no. No more business.…Now I study water quality, it's an interdisciplinary area. And I'm happy with my choice.

The ability to pursue the field of interest in a meaningful and challenging way was one of the strongest motivating factors for the participants. It led them to making life choices that demanded involvement, persistence, and dedication. The participants perceived that they played an active role in their talent development process by choosing to follow their interest, reaching out to experts, discarding mismatched opportunities, taking the salient opportunities they were offered, and searching for unoffered opportunities outside of their familiar environment. They also exhibited resilient self-efficacy at challenging times or times of failure.

Resilient self-efficacy. The participants believed that they could make choices and take actions that would affect their lives and possessed resilience to bounce back if they made mistakes, failed, or something unfortunate happened. The data showed that the participants' paths to talent development were often challenging and indirect. Notably, many participants experienced various setbacks or failures before achieving their goals of choice. For example, R could not start a doctoral program for three years because he needed to work to support his family; Lasisi was denied admission to the undergraduate program for two years in a row; Kelly had a difficult time during her Master's program in the U.S. due to the intimidating living environment; and Abe had to overhaul his whole career path in order to be able to follow his interest.

However, these challenges were not the focus of the participants' stories. The focus was on what they learned or gained from these trying experiences. R talked

about how during those three years he ended up working for an alumnus who advised him to apply to the PhD program in the U.S. and wrote R a letter of recommendation; Lasisi said that during the three years that he sought admission, his interest in archeology solidified, and he no longer had doubts of what to choose for his major; Kelly said that the experience of doing a Master's program in the U.S. made her more confident about applying for a doctoral program here; and Abe referred to his radical career change as a "developmental experience." The participants perceived the difficulties they faced as learning experiences, something that helped them grow as a person, become stronger and more mature.

The participants agreed that being an international doctoral student proved to be one of the most formative, but also challenging experiences on their path of talent development. When talking about his experience as an international doctoral student, R described his personal growth and resilient self-efficacy in times of failure:

Well, what I learned here, actually, it's more like a life experience, it's not just about physics exactly. I learned about how to be independent. How to be independent not just financially, but emotionally, independent in life, more mature, and what to do if I failed. So that's very important to me, how to face the failure, how I see it, and do I have to blame myself or not. So it changed my perspective: instead of blaming, I shift my mindset to asking, what did I learn from this process?

Perception of Opportunities

The participants' perception of opportunities became evident when the participants started describing formative experiences at later stages of their talent

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development and identifying mismatched and unoffered opportunities. The participants expressed the sense of agency and having more control over their decisions: they talked about working hard, finding pertinent opportunities, and being proactive about obtaining these experiences. Even in the circumstances of restricted resources the participants were hopeful that their efforts would result in obtaining a desirable opportunity. Lasisi combined faith, humility, and action:

> Anyone that successfully goes out of [my home country] to study, you are going to respect this person, people think you must be very wealthy to do it. Actually, you need to be very wealthy to go abroad. But for me, I say that I don't need to be wealthy, I just need to be prayerful. I need to be focused. I believe so much in prayer, so I say, God, I want you to open doors, I want you to open doors. And I started sending those emails to professors.…I applied to those universities, and who am I? I just applied, and they are so eager to have me, so I'm eager to go out there.

Having an interest, a goal for their talent development, in place offered motivation to purposefully seek out and take salient opportunities for growth. For example, Hao's immediate advisor in the Master's program did not supervise his research, so Hao was looking for experts, professors at his home university as well as visiting researchers, to work with. He met a professor who was visiting from the U.S., worked with him at the university in his home country first, and then came to the U.S. as a visiting scholar. This research visit, in its turn, prompted Hao to apply for a PhD program at that U.S. university.

Discarded opportunities. The researcher explored the talent development opportunities inside and outside of the academic environment that were offered to the participants, but which the participants decided not to take, because they did not match their field of interest. The discarded opportunities started appearing around the time when the participants' interests began to crystallize and became more pronounced when the participants were following a specific niche interest. Discarded opportunities that transpired can be grouped into the following categories:

1. *Taking time off of the academic path.* It was important for the participants to not just get accepted into a program or continue on the academic path on the same timeline as their peers, but also to be sure that this was what they wanted to do with their lives and with their abilities. Diego decided not to start college at all for three years, because he didn't feel mature enough to make a choice of major. Marcos took a year off during his undergraduate program to gain some life experience and make sure that continuing on the path that he started was what he wanted to do. Some participants gave themselves time to think before entering a PhD program. James Lee talked about making this decision during his gap year after completing the Master's program:

   But at that time I didn't really know what my life goal is. It's very simple, but it's very important for me to protect the people I love and the people who love me, and explore what I want to do for my life. At that time I thought that science is not the only way to

achieve my life goal, but it's the way I'd like to contribute to something. At that time I decided to have a PhD.

2. *Refusing viable academic offers.* Many participants had the option to continue their graduate studies in their home countries. Some were offered to be in doctoral programs and offered funding, but refused to accept it, because they wanted a different experience. Lucia was invited to participate in the research meeting at a university in North Carolina to present the research project she completed during her Master's program, and after that had doubts about doing a doctoral program in her home country:

> So I got into a program [in my home country] and got funding, but I knew I wouldn't be happy, and the way I finished my Master's, you know, having the sabbatical here [in the U.S.] made it clear that if I wanted to pursue a PhD I wouldn't be happy staying in that program.

Some participants refused academic offers with better funding in favor of being in the program that allowed them to do the specific kind of research they were looking for or in favor of the particular academic advisor they wanted to work with.

3. *Refusing lucrative job offers.* Abe received graduate education and was successfully working as an architect for three years when he decided to quit and go into counseling because: "I started feeling bored, and I was feeling that I'm not fulfilling my life and my interest." Fei proved himself

to be one of the top students at the university in his home country, and was

offered both, a job and a PhD program, but decided to keep pursuing his

niche interest:

> I had some job offers while I was still in my Master's program.
>
> And it was pretty exciting, I think one of them was from the Bureau
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> of Water Resources in [my home country], and many people
>
> wanted to go to that place, it was a good job. And I also had an
>
> opportunity to stay in my previous institute, which is also a
>
> prestigious institute for environmental science in [my home
>
> country], but the way I felt was that I had not fully realized my
>
> potential. I think I might do something in the field of physics rather
>
> than ecology or biology.

The opportunities that the participants chose to discard point to the

conclusion that the participants valued the learning process and their talent

development, not just the ability to obtain higher education degrees or find a job.

For Lasisi, the interest in archeology was a strong driving factor since high school

and a motivating factor for entering graduate school:

> But I studied well and I was fascinated with archeology, not many people
>
> want to do archeology. So people just pick up a profession, like I want to
>
> be an engineer. But I thought, I need to be in school, and I said that only
>
> when I picked archeology. I was very passionate about it.

The participants' niche interest and realization of potential became the most

important factors when making decisions about future studies or work. Also, their

perceptions about jobs and careers changed: the goal became to not only get a job, but to have a meaningful, fulfilling professional career in the field of their interest, be the best they can be in the area they chose to pursue. Kelly shared her thoughts about why she decided to go into a PhD program:

> I thought it's a good thing to do, and I've already done so many years, and I… I think I could do it better. Like if I have more research skills and knowledge, maybe I could make some contributions in this area, in education, so that's what I mean, like I could do better.

Unoffered opportunities. Unoffered opportunities, similar to discarded opportunities, transpired at a later stage of the participants' niche interest development. The participants were more aware of what they needed and what they were looking for, and were able to understand what the opportunities that were available to them were lacking. All participants made a decision to go into a PhD program to continue gaining expertise and develop their academic talents. However, the participants found that what they were looking for was not offered within the academic environment in their home countries. The participants were looking for expertise in their niche interest, for a challenging academic and research environment in which their talent could be developed further, and for opportunities for personal growth. The environment at home could not meet their needs, so they made a decision to change their environment and go abroad. Id's reasoning was similar to many other participants:

> So the reason why I chose to study abroad, because in [my home country] we don't have many universities. And the place where I got my Master's degree,

is the best institution that does marine science, so I think I've already learned

everything from professors over there. I thought, if I'm going to get a PhD, I

need something else, not in the same country, because I already got the best

from them. So I thought I need to get more experience from other professors in

other countries.

Search for unoffered opportunities served as a driving factor for international mobility

of the participants.

Preparedness and support from environment. Similar to the perception of

their own role in talent development, the participants perceived opportunities that

helped them on the talent development path in a two-fold way: expressing a sense of

agency and gratitude for support. They described attaining pertinent opportunities by

means of hard work, persistence, and taking action, and also attributed attaining these

opportunities to the support from the people who offered these opportunities or made

them possible (most often parents, mentors, and professors). Diego described his

experience of finding an opportunity to connect with his current advisor and apply for

a doctoral program in the U.S. During the program at his home university he decided

that he wanted to continue on to the doctoral program, and was looking to connect

with experts in the field. He conducted a research project and worked to publish his

study in the research journal. Then, he worked extra hours to make money to afford a

conference and research visit to the U.S. During the conference he was introduced to

his current advisor, who was not very enthusiastic about funding a new doctoral

student until he read Diego's paper that Diego brought with him. After that he

encouraged Diego to apply for a doctoral program. Diego concluded: "So you have to

do your job, but you also need support from the outside. When the right opportunity comes along, you need to be ready."

Apart from proactively searching for the salient opportunity, being prepared for it was an important element. Once the participants discovered that the research they were interested in was done by experts at the universities abroad, they were preparing in the three main ways: by enhancing their English language skills, doing research of their own, and connecting with experts in the field of interest. Taking these steps allowed them to communicate with the experts, formulate their research interest, and build their own network of connections at the universities of interest, all of which increased their chances of being accepted into a doctoral program in the U.S.

Support from the receiving environment was an especially important element when the participants were looking to switch environments. Due to easy and free access to information, support from experts, and availability of merit-based funding, the participants perceived that access to desirable study abroad opportunities at the graduate school level was no longer restricted by the socio-economic status of their families, but rather depended on their work, motivation, persistence, and willingness to move abroad. The participants also perceived the following factors as supports for this opportunity: welcoming climate of the U.S. higher education institutions, fulfilling academic environment, and interest from and efficient communication with professors.

Summary

The current study focused on exploring the experiences of successful academic talent development of international doctoral high-ability students at a selective U.S.

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higher education institution, and making meaning of their perceptions about their own role in the talent development process and opportunities on their talent development path. Demographic survey, interview, focus group interview, member checking, memoing data, and construction of the academic talent development trajectories were used to fully analyze the foci and provide answers to research questions.

The construction of trajectories of academic talent development provided findings that are consistent with what is presented as enhancing factors of talent development throughout gifted education literature (e.g., Davis et al., 2011; Subotnik et al., 2011; VanTassel-Baska, 2010). It is important for a precocious child to have exposure to various enrichment activities, have access to books and learning resources, and be practically and meaningfully engaged with the help of an adult mentor(s), for example, family members or teachers. Parent involvement in their children's education is a pertinent component of development, particularly at early stages. At later stages, the participants perceived that the main influences for their academic talent development and discovering the niche of interest were: a) academic environment that provides opportunities for growth (access to higher education and majors of interest) and b) meaningful experiences in the area of interest (e.g., research projects). Notably, these enhancing factors were universal for participants from different countries, cultures, and education systems.

Besides the trajectories, findings for Phase 1 of the study produced four superordinate themes. Theme One: education as family value and Theme Two: fulfilling academic environment, addressed enhancing experiences as well as barriers to successful academic talent development of the participants throughout their lives.

The participants' families' investment in education instilled the importance of learning and value of education in the participants and guided their career-setting goals. Gender appeared to be a barrier due to the much lower numbers of female participants and mothers' lower education level as compared to the fathers' education level. International academic mobility was an enhancing factor for successful academic talent development of the participants. It was achieved through doing research, help from experts in the field, access to unique resources, and learning in an advantageous academic culture.

Theme Three: English Language, technology, and funding as three pillars of mobility and Theme Four: brain circulation and knowledge sharing as a non-zero-sum game addressed the enhancing experiences and barriers on the path of the participants to becoming international doctoral students in the U.S. The participants' search for expertise and their drive to find a fulfilling environment was supported by: their knowledge of and willingness to improve their English language skills; access to technology, Internet resources, and email; and availability of merit-based funding that came from either the U.S. higher education institutions or from their home governments. The participants' own international experiences and, even more so, international experiences of professors in their home countries and in the U.S., as well as international academic experiences of peers and alumni offered and facilitated a path to the doctoral program in the U.S. For some of the participants, the support for brain circulation and academic mobility from their home governments and institutions was an important enhancing factor. These supports proved to be essential for the participants' international academic mobility from their home countries to the U.S.,

which usually became possible at the graduate level of studies. On the other hand, distance, isolation, and racism and xenophobia were named as challenges to international education.

Findings for Phase 2 focused on perceptions of the participants about their own role in their academic talent development process and their perceptions of the construct of opportunity. The findings revealed that once the participants discovered their field of interest, they developed a strong sense of agency and started proactively pursuing pertinent opportunities for their talent development. The participants also proved to have a strong sense of resilient self-efficacy, which was a necessary prerequisite for successful international academic mobility. The participants perceived opportunities in the later stages of their talent development as something they were proactively seeking out and were willing and prepared to take. They also acknowledged support, especially from family members and experts and faculty, which made these formative opportunities attainable.

CHAPTER 5

DISCUSSION

Globalization has spurred knowledge sharing and internationalization of higher education institutions across the globe, both in Western world and in developing countries (Dill & van Vught, 2010; Postiglione, 2013). Internationalization of education has been rapidly increasing in the U.S., attracting a consistently growing number of international doctoral students in all fields (Institute of International Education, 2016a). Through internationalization and individual academic mobility, international doctoral students provide American universities with an inflow of talented students with high potential (Anderson, 2013; Saxenian, 2006). However, few empirical studies focused on high-ability international doctoral students, and no studies have examined the perceptions of academic talent development and opportunities in the talent development process of international doctoral students from developing countries.

This study explored the perceptions and experiences of international high-ability doctoral students from developing countries who followed the trajectory of academic talent development and were enrolled in a doctoral program at a selective U.S. university. Specifically, enhancing experiences for talent development throughout the life of high-ability international students were examined, as well as barriers and challenges to successful talent development. The process of international academic mobility was investigated through studying offered, mismatched, and unoffered but sought-after opportunities for academic talent development in the lives of the students. The synthesis resulted in a clearer conceptualization of a high-ability

international doctoral student from a developing country and a construct of opportunity in the process of academic talent development of high-ability students.

Fifteen potential participants were selected for the study through a combination of convenience, snowballing, and maximum variation purposeful sampling procedures. Thirteen participants met eligibility requirements and agreed to participate. Each participant completed a demographic survey, participated in an in-depth semi-structured interview, and member checking process. Three of the 13 participants participated in a follow-up focus group interview.

In Chapter 4, findings were reported in two parts, consistent with a two-phase study design. Phase 1 addressed the first two major research questions, and Phase 2 addressed the third major research question. Discussion of the findings reported in Chapter 4 is presented in a similar manner. Discussion will address the findings in the way they intersect with and diverge from existing literature on high-ability international doctoral students, enhancing academic talent development experiences, and literature on internationalization and international academic mobility. Then the discussion will focus on the construct of opportunity and perception of opportunity in the process of successful academic talent development of high-ability young adults. Discussion will also include implications for future research and practical implications of the study for higher education institutions engaged in internationalization, policy makers, and international students. Brief conclusions will be presented at the end of the chapter.

Enhancing Academic Talent Development Experiences

One of the key issues in the research base in gifted education has been efforts to determine how to help students identified gifted in their childhood and precocious youth from underrepresented populations realize their potential beyond secondary school years and keep successfully developing expertise in adolescence and adulthood (Rinn & Bishop, 2015; Simonton & Song, 2009; Sternberg, 2006; Subotnik et al., 2011). The first research question of this study asked: What opportunities taken by high-ability international doctoral students throughout their lives (offered inside and outside of the academic environment) helped them develop expertise in their chosen domain? This study sought to explore successful academic talent development through experiences and perceptions of international high-ability doctoral students from diverse backgrounds. These doctoral students, enrolled at a selective U.S. university, came from different developing countries, low-SES to middle-class families, and various cultural and academic backgrounds. In-depth interviews revealed characteristics, experiences, and opportunities that the participants found most helpful in the process of their academic talent development.

High-Ability Doctoral International Students

A paucity of data on international doctoral students studying in the U.S. higher education institutions results in the lack of understanding of the demographic characteristics and experiences of this population. This study allowed better insight by qualitatively exploring the characteristics and academic talent development experiences of the participants. The participants in this study were high-ability doctoral international students from seven developing countries from different parts of the world. The participants spent most of their lives in their home countries. They

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came from low- to middle-class families in their home countries, with two participants growing up in poverty conditions. Most of the participants grew up in urban areas, which allowed for better development and education opportunities. English was second or third language for all participants. There were no first generation students in the sample, and two students had one or both parents with PhD degrees. All participants came from families that prioritized learning and education of their children.

Interview data showed that the *characteristics* of international high-ability students in the sample coincided with those attributed to gifted students in extant literature (Coleman & Cross, 2005; Davis et al., 2011; Subotnik et al., 2011). Namely, the participants exhibited openness to new experiences and inquisitiveness in their chosen field of interest, as well as in areas they considered beneficial to their personal growth and life-long learning, such as learning a foreign language and experiencing living abroad. Once the participants found their field of interest, they revealed a strong sense of agency, persistence, and worked hard to develop expertise in the chosen area. When facing failure or searching for unoffered opportunities, they proved to have resilient self-efficacy. The participants remained hopeful and optimistic in difficult times or times of change.

There were important impacts of *gender* in this study: 1) there were significantly fewer female participants (3) than male participants (10) in the study, despite the fact that purposeful sampling procedure was used and allowed for the targeted recruitment of participants; and 2) education level of mothers of the participants was much lower than education level of fathers of the participants. All of

the participants' fathers received some form of higher education, but only seven mothers did. This finding points to the conclusion that, in agreement with existing literature, gender remains an impactful factor in talent development (Kerr, 1997; Kronborg, 2010; Lovecky, 1993). It may be an even more impactful factor in successful academic talent development of women from developing countries than from the Western world countries, because of gender stereotyping, socially imposed family roles and academic and career choices. The opportunities for education and professional careers of these women may be even more restrictive (Kitano & Perkins, 1996). As an example, one female participant described her experience of being pressured into a more family-friendly career and having restricted opportunities because of her gender. During college years she expressed a strong sense of agency and was proactively engaged in her academic talent development, which suggests that female agency can be successfully supported in early adulthood. It was also telling that most of the participants relied on their fathers for advice and guidance on their academic path: many of the participants' mothers simply lacked higher education experiences and did not appear to be figures of authority when it came to making academic choices.

Notably, regardless of country of origin, cultural, religious, or SES background, the participants' trajectories of academic talent development proved to be similar to the trajectories of academic talent development described in Subotnik et al.'s (2011) mega-model of talent development. Academic talent development trajectories of the participants were domain dependent, closely connected to the system of education, with specialization occurring at later stages, and age factor not

limiting the participants' productivity. As *producers* described in the model, the participants were motivated and committed to mastering the content in their specific domain through guided and deliberate practice and study, needed mentors to develop their expertise, and engaged in long-term multi-component tasks the outcomes of which were academic publications, research projects, grants, and awards. The trajectories constructed to describe the academic talent development of the participants in the study point at the universality of academic talent development described in Subotnik et al.'s (2011) mega-model of talent development: enrichment and meaningful education opportunities are needed during childhood and K-12 years, but crystallization of a specific academic interest usually occurs at the higher education level, placing the peak of talent development during the years of young adulthood.

The professional career of the participants remained their main focus at the stage of early adulthood (Wirthwein & Rost, 2011): most participants were under or in their early thirties, and only two participants had families with children. The participants reported being professionally productive: they listed publications in journals, conference presentations, grants received for past and ongoing research projects, academic awards, and so on. They perceived the doctoral program to be a step in their professional and talent development, and were motivated to seek out opportunities that would promote and advance their expertise and careers in the future, extending the trajectory of their academic talent development into later adulthood. The main future goal for the participants was to keep developing and using their expertise. Consistent with Subotnik et al.'s (2011) definition of *eminence*, most

participants stated that through their work and research they wanted to create and use knowledge that would benefit people and society, for example, reduce water pollution, save coastal areas and biodiversity of the atolls, find ways to preserve endangered fish species, discover unknown history through the legacy of archeological sites, increase teacher effectiveness in developing countries, and so on.

Also, consistent with models of talent development outlined in the literature review (Bloom, 1985; Piirto, 2004; Subotnik & Jarvin, 2005; Subotnik et al., 2011; Tannenbaum, 2003) the *key enhancing factors* proved to be: environmental influence, psychosocial factors, finding and exploring the domain of interest, and availability of pertinent opportunities for talent development. The analysis showed that the participants prioritized the following enhancing factors in their talent development process: finding a field of interest through meaningful practical experiences, their own sense of agency in pursuing the chosen field of interest, availability of external support, and pertinent opportunities for development. When striving to achieve their talent development goals, they relied on their own work and persistence, but also equally valued support that came from family members, peers and alumni, and faculty and experts in the field. Support from the participants' families manifested itself in instilling in the participants the value of learning and education, and made investing time, effort, and resources in their own education meaningful and desirable. Support from peers and alumni offered know-how and vicarious experiences, providing the participants with self-efficacy and specific knowledge necessary to take risks and successfully change environments. And support from faculty and experts in the field proved invaluable for developing expertise in the chosen niche areas and pursuing

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desirable opportunities in the chosen field, especially when the participants decided to become international students.

Exploration of the enhancing experiences of the participants' revealed a finding specific for gifted students following an academic talent development trajectory: academically gifted students need support and enrichment opportunities at later stages as well, not just during K-12 period. In gifted education literature some talent development models emphasize the importance of talent development early in a child's life and center most of the enrichment efforts during K-12 years, for example, Bloom's (1985) talent development model. However, the participants of this study perceived that they needed understanding of their needs, more support, and meaningful experiences at later stages, usually during college years, to help them find their field of interest and develop expertise in it. In search of such experiences and expertise the participants largely relied on support from researchers and faculty members in their home countries and abroad. Several participants identified access to liberal arts education as one of the possible supports at the college level. Liberal arts education provides the students who are undecided about their career path right after they graduate from high school with an opportunity to explore various academic paths and can help them determine which field to major in through practical engagement in different subjects. This was the opportunity that the participants did not have, and some of them had to completely change their field of study at later stages or take time off to realize what they were looking for, even when it meant disrupting their academic timeline.

International Academic Mobility

The second research question of the study focused on international academic experiences of the participants and asked the following: What opportunities helped or influenced international high-ability students to make the decision to become doctoral students in the selective U.S. higher education institution? International education proved to be one of the most formative enhancing academic talent development experiences for the participants at later stages of their academic talent development. In agreement with literature on the international mobility of doctoral students, such factors as gaining life experience and living abroad in a country with a Western world culture, speaking English, and quality of higher education in the U.S. proved to be the enhancing factors for international academic mobility of the participants (Ackers & Gill, 2008; Bhandari & Blumenthal, 2011; Goodman & Gutierrez, 2011; Jons, 2007; Knight & Madden, 2010; NORFACE, 2008; Spring, 2008). However, the participants perceived that the main factors that encouraged them to seek academic experiences abroad were connected to their search for a fulfilling academic environment. The following findings further our understanding of what "quality of higher education" meant to the participants:

1. Research and search for expertise in a specific area of interest served as both a segue and a motivating factor for the participants to engage in international education.

2. The participants looked for experts in the field they were interested in and found them in the institutions abroad, most often in the U.S. universities.

3. Some participants, especially students in the sciences, were looking for unique resources, such as extensive research collections, labs, and infrastructure.

4. And some participants were looking for a different academic culture for their doctoral programs. They were dissatisfied with the power dynamic between professors, students, and administrative staff, academic and research climate, and sometimes, student-professor relationships in their home institutions, and were able to find a fitting academic environment in the U.S.

This study explored the motivating factors for international academic mobility, but also focused on how this experience became possible. The analysis of the interviews revealed the following key supporting factors for international academic mobility of the participants: peer and alumni influence, English language, technology, funding, prior international experiences of the participants, and brain circulation.

Peer and alumni influence, often with the help of technology, played a dual role in supporting international academic mobility of the students. Firstly, peers and alumni popularized and perpetuated the appeal of the Western culture, learning English language, and living abroad in a Western world country, all of which made the idea of international education more attractive among young high school graduates and undergraduate college students. And secondly, the vicarious experiences of peers and alumni already engaged in international education provided future international students with essential know-how, self-efficacy, and confidence to start the international student application process. The participants of this study often

mentioned relying on advice of their friends and friends of their friends when it came to selecting international institutions, navigating immigration process, and preparing for GRE and TOEFL tests. In some cases this knowledge sharing support network was very well organized with specially created websites and chat rooms to help future international students. It is not surprising that Chinese students have developed this efficient support systems: they have been the leading largest group of international students in the U.S. and other countries for many years and have the most experience with study abroad process (Bhandari & Blumenthal, 2009; Institute of International Education, 2016b). Usually the participants who relied on and benefited from their peers' help mentioned that they were paying forward by supporting prospective international students with their own advice and experience. Creation and support of such knowledge sharing networks could provide a free and accessible source of information and help many potential international students obtain know-how and confidence to engage in academic mobility.

English language proved to be a multifaceted factor in the experiences of the participants: it was a motivating and enabling factor, as well as a challenge for some participants. As stated in the literature, English language is a driver and an enabling factor for mobility, because it is offered as a second language in the secondary schools worldwide (Goodman & Gutierrez, 2011; Lasanowski, 2011). However, many participants commented on receiving poor English language education during their secondary school years and reported learning the language by themselves at later stages. Some participants were enticed to learn English because of the appeal of the Western world culture. Many participants were encouraged to learn English during

their college years, because they wanted to read up-to-date research in the field of interest, present at international conferences, and communicate with experts in the field. GRE and TOEFL test preparation also involved honing of English language skills. Some participants felt advantaged, because their parents specifically invested in their language education. And some participants, especially those in the humanities, social sciences, and education fields, struggled upon starting a graduate program in the U.S., because of rigorous academic writing and reading requirements in their programs. Although English language remains a powerful driver for international mobility of students from around the world to the Western world countries, higher education institutions must provide additional supports for non-native English speakers, especially graduate students entering non-STEM fields.

This study found that technology was indispensable for international academic mobility of the participants. The ability to use Internet and email gave the participants access to the following resources: research, publications, and books in their field of interest; communication with experts and professors from abroad; English language learning resources and GRE and TOEFL test preparation; information about international universities, application, funding, and immigration processes; and to knowledge sharing websites and communication with peers and alumni with international education experience. Technology provided vital support for participants from low SES families by making the above-mentioned resources readily accessible and virtually free.

For students from low- and middle-SES backgrounds from developing countries, availability of merit-based funding was an essential attribute of

international education. Without the support from receiving institutions or their home governments and institutions, emergent academic mobility would be impossible (Gopinath, 2015). By providing merit-based funding for high-ability students, universities and governments empower individuals to rely on their own actions and efforts and see international education as an achievable opportunity.

Hence, one finding, specific for academic mobility of international students at the doctoral level, diverged from existing literature. Bhandari & Blumenthal (2011) list the increasing financial capabilities of families to support students in some developing countries, especially China and India, as one of the factors that influenced the increasing numbers of international students in the U.S. This is true for undergraduate students, because they are required to pay tuition at out-of-state rates and cover their living expenses for the duration of the program with very little funding available to them in scholarships. However, it is not necessarily true for the students at the doctoral level, because there are merit-based scholarships, graduate assistantships, and grants made available to qualifying doctoral program applicants either from U.S. universities or from domestic governments and institutions of the applicants. The participants in this study, especially students from low-SES families, perceived that the main factors that made the opportunity of studying in a doctoral program at a U.S. university possible for them were access to information, communication with experts in the field, and their own persistence, rather than financial capabilities of their families. Furthermore, it was inspiring to find that the participants did not choose to study in the U.S. for a prospective financial gain, but

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mainly because the U.S. university offered the desired level of challenge and expertise and sought-after opportunities for academic talent development.

Many participants relied on their own prior international experiences in deciding to continue their studies in the U.S. Consistent with findings on motivating factors for international education for doctoral students in the literature, this pre-doctoral mobility offered formative experiences, allowed the students to make strategic connections, and uncovered further education opportunities (Ackers & Gill, 2008; Jons, 2007; Knight & Madden, 2010; NORFACE, 2008). Nine out of the 13 participants visited the U.S. for academic or research purposes prior to starting a doctoral program: some came for conferences or research visits, some on a visiting scholar or a degree program. As Knight and Madden (2010) described in their study, the students' pre-doctoral mobility allowed them to create a network of connections, meet with experts in the field, and discover further opportunities in the host institutions. In addition to that, the participants of this study perceived that they found a fulfilling academic environment they did not have in their home institutions, as well as expertise they were looking for. The participants also stated that prior international experiences, with the U.S. researchers, as well as with researchers from other countries, helped them appreciate international collaboration projects and knowledge sharing, and made them more confident in their decision to become an international doctoral student.

Furthermore, international academic mobility of the participants was invaluably supported by prior international academic experiences of their family members, peers and alumni, domestic faculty members, and professors and

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researchers in the U.S. or, in short, they benefitted from brain circulation. Faculty members, researchers, and experts proved to be the most impactful group in supporting international academic mobility and academic talent development of the participants.

Brain circulation through the influence of experts surfaced in the interviews in various ways. The students often mentioned that progressive professors in their home institutions were PhD holders from Western world, often U.S., universities. These professors shared their international academic experiences with the students, encouraged them to apply to the universities abroad, connected the students with international experts, wrote letters of recommendation, and supported the students in this process. In some cases, domestic professors were engaged in collaboration projects with their international degree-granting institutions and invited the students to participate, which provided a path to a doctoral program abroad for some participants. This finding is consistent with research that shows that some developing countries stepped away from fearing brain drain, and started encouraging and supporting international academic mobility with the help of funding international exchange programs, research projects and visits, and offering lucrative job opportunities to the graduates and young professionals who obtained their degrees from the Western world universities (Altbach & Salmi, 2011; Postiglione, 2013; Powell & Sandholtz, 2012; Saxenian, 2005).

Professors and experts from the U.S. universities, some of them former international students themselves, made a difference in many participants' lives by engaging in internationalization in various ways. Some took on international projects

and involved students from the receiving foreign institutions in these projects. Some participated in exchange, scholar, or visiting lecturer projects. During their visits, they disseminated not only expertise, but also information about their home U.S. university and the process of becoming a doctoral international student there. And some experts engaged in dialogues with international students with whom they have never met in person: they communicated with, gave feedback, and even collaborated on research projects with the participants via email simply because the participants sent them letters with questions, requests, or suggestions.

This is a compelling finding not only because it supports the idea that internationalization of education creates brain circulation and transformation rather than brain drain by productive knowledge sharing and multiplication of research and academic capital in both host and home countries (Ackers & Gill, 2008; Altbach & Salmi, 2011; Grossman, 2010; Powell & Sandholtz, 2012; Saxenian, 2005). This finding is compelling because it shows that this generation of international doctoral students is enabled by and relies on the experiences and efforts of many previous generations, and thus, requires long-term investment and support from institutions and governments worldwide to continue to be successful.

Perceptions of Opportunity

The construct of opportunity was researched during Phase 2 of the study through perceptions of opportunities in the academic talent development process of the participants. This phase answered the third research question: How do high-ability international doctoral students perceive opportunity in their talent development process? The findings support the view of opportunity as an impactful factor that

provides context for talent development and requires a proactive approach from the individual (Austin, 2003; Barnett & Durden, 1993; Bandura, 1995; Subotnik et al., 2011; Syed, 2010). The following specific characteristics of opportunity factor found in this study further the understanding of the construct within the context of academic talent development of high-ability young adults from diverse backgrounds.

1. *Need for purpose and motivation first.* The factor of opportunity became more pronounced in the interviews after the participants discovered their field of interest, usually during their undergraduate college years. When they realized what direction they wanted to take, the participants started recognizing and rejecting *mismatched opportunities*, even though some of those mismatched opportunities were lucrative job or academic offers.

2. *Need for pro-active involvement.* The participants expressed a strong sense of agency when seeking out desired opportunities for talent development. Oftentimes, the participants sought out opportunities to work with experts outside of their program or academic path requirements. They worked for free or put in extra time, because they wanted to be connected to the academic environment they ultimately wanted to be in, but were constrained by the existing system or mismatched opportunities in their current environment.

3. *Need for change of environment.* The participants were purposefully seeking out *unoffered opportunities*, first in their home environment, and then, when they could not find what they needed there, they turned their efforts to finding a fitting environment that met their needs. Consistent

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with Bandura's (1995) statement that people can increase positive chance occurrences necessary for talent development by selecting better-fitting environments and Sternberg's (2006) theory of successful intelligence, the participants perceived that the change of environment was essential for their successful talent development. For the participants, the change of environment meant becoming international students, so that they could work with the experts in the field, study in the fulfilling academic environment, and conduct challenging empirical research.

4. *Need for preparedness.* Austin (2003), and later Tannenbaum (2003) and Subotnik at al. (2011) emphasized the need of the student to be willing and ready to take the opportunity, to have a prepared mind. The participants also perceived the need to be prepared to take a sought-after opportunity. For example, in order to be ready to take the opportunity of being an international doctoral student at a selective U.S. university, they proactively enhanced their English language skills, reached out to experts in the field, and conducted and published research.

5. *Need for support.* Coming from the environments of limited education resources and opportunities, the participants especially emphasized their appreciation of availability of opportunity to pursue the field of interest at a desired level of challenge. They perceived that support from people (especially faculty and researchers) and institutions that were offering these opportunities was invaluable for their successful talent development.

These findings suggest that the factor of opportunity in gifted education cannot be viewed as a chance factor or luck, something that is beyond the control of the individual and just happens to them, especially when talking about academic talent development beyond K-12 years. When the interest and at least a general realization of academic talent crystalizes, opportunities become subjective rather than accidental, and depend more on the actions of the individual to create fortuitous events, as long as talent development remains a priority for the individual. It also becomes up to the individual to make these opportunities more impactful with a potential lasting effect on their life. Moreover, individuals can choose to change and select environments to those that allow them to realize their potential better, and thus, increase availability of opportunities required for talent development. Emergent academic mobility, knowledge sharing, and virtually unrestricted access to information make creation of such subjective impactful academic opportunities for talented students from all backgrounds more probable than ever before.

Implications of the Study

The experiences and perceptions of high-ability international doctoral students from developing countries studying at a selective U.S. university provide a much needed insight into the population of high-ability young adults from various backgrounds, their successful academic talent development, and pertinent opportunities that helped them on this challenging path. These experiences also helped to uncover underlying internationalization, knowledge sharing, and brain circulation processes supporting academic talent development of the participants. The

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following are some recommendations for future research, internationalization of higher education institutions, policy makers, and prospective international students.

Implications for Research

The present study focused on qualitative exploration of characteristics and academic talent development of high-ability doctoral students from diverse backgrounds. It offered a better understanding of the participants' experiences, but the delimitations of the phenomenological approach do not allow for obtaining the nationwide perspective or generalization of results to the whole international doctoral student population studying in the U.S. universities. Thus, it would be beneficial to use this qualitative knowledge and construct a quantitative study to further outline the academic talent development trends happening within this population and areas in most need of support. A follow-up longitudinal study could offer an insight into further achievements and future international involvement of the participants and its impact on brain circulation between their home and host countries. And an expanded study using a grounded theory methodology could further the findings about the factor of opportunity in the talent development of high-ability students from diverse backgrounds.

Female participants were underrepresented in this study: it included only three female students. It also transpired, that the level of participants' mothers' education was much lower than the level of education of participants' fathers. Future research needs to focus on academic talent development experiences of female high-ability students from developing countries, as it would be an essential contribution to the

body of research on the limiting effect of gender and successful strategies to overcome it.

All participants perceived that faculty members, researchers, and experts largely contributed to their academic talent development and creation of opportunities, especially international education opportunities. A study with the focus on professors and researchers, and their experiences of supporting potential students from various backgrounds, including international students, is recommended. Results may uncover strategies that allow these professionals to successfully recruit and support students from various backgrounds and countries.

Implications for the Internationalization of Higher Education Institutions

This study showed that successful internationalization is a long-term process that requires considerable support and coordinated effort on the part of receiving institutions, but also allows to receive benefits from brain circulation long after the cycle has been established. The participants in this study perceived that faculty members, researchers, and experts were the key influence in their decision and ability to become international doctoral students. The participants also perceived that working with professors who had some form of international experience and possessed cultural competence helped them to better adjust in the program at the U.S. university. Thus, institutions must encourage internationalization efforts and outreach especially on the part of faculty members and researchers, support international exchange, visiting scholar, and research collaboration projects. These efforts could be very cost-efficient by using technology for collaboration and exchange.

The participants proved to be hard-working, enthusiastic, and talented, but they also required additional help, especially during the application process and the first semester of the program. The following strategies will support successful recruitment and adjustment of international students:

- Through the school website, provide access to up-to-date application, funding, and immigration information specific for international students.

- Provide on-going professional training for the staff of the center for international education, so that they can understand, meet the needs, and successfully support international students from various countries.

- Encourage community building for current international students and create easily accessible space with shared know-how and experiences from current international students for the potential students.

- Provide language (e.g., academic writing) and academic culture (e.g., communication with professors via email) support.

Finally, the participants of this study would not be able to become international students in the U.S. without receiving merit-based funding for the doctoral program. To ensure the inflow of diverse talent from various backgrounds, the institutions should allocate funds for merit-based scholarships, grants, and graduate assistantships for prospective students.

Implications for Policy Makers

The increase in numbers of international graduate students in the U.S. reflects the high quality of education and sought-after expertise available in the U.S. higher education institutions. However, the continuous inflow of talented students also relies

on supportive immigration policies, creation of welcoming environment, and availability of post-graduation work opportunities for international students. The participants of the study valued the welcoming climate, acceptance of religious, racial, and cultural diversity, and the opportunity to work and apply their acquired expertise in the U.S. universities and companies after graduation. However, even as this study was being carried out, the changing and increasingly more restrictive immigration policies, especially for particular ethnic and religious groups, affected some participants of this study and their decisions about where to lead their future professional careers. Restrictive immigration policies and creation of xenophobic climate can have detrimental effects on successful development of internationalization of U.S. higher education institutions and, eventually, on brain circulation between the U.S. and other countries of the world.

Implications for International Students

The present study explored successful academic talent development experiences and pertinent opportunities in the lives of international doctoral students. Future international students and their families should benefit from the analysis. The participants perceived the following experiences to play the most influential role in their successful academic talent development and international academic mobility experiences:

- Developing the love of learning, valuing education, and investing in education and enrichment opportunities.
- Acquiring computer literacy skills.
- Investing time, effort, and resources in English language learning.

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- Engaging in practical meaningful experiences to help find the field of interest.

- Being proactive in seeking out and participating in talent development experiences connected with the field of interest (such as participating in research projects, visiting lectures, going to conferences, reading up-to-date empirical research and current publications).

- Contacting and starting a conversation with experts in the field of interest.

- Using know-how and international experiences of peers and alumni for international program search, application and GRE and TOEFL test-taking processes.

- Developing resilient self-efficacy: learning from both successful and unsuccessful experiences and being confident to try again.

Conclusions

This study explored in-depth the experiences of high-ability international doctoral students from developing countries and their perceptions of the factor of opportunity in their successful academic talent development. It offered a better understanding of the population with one of the longest lasting talent development trajectories and a substantial impact on the knowledge society. The study explored enhancing factors for successful academic talent development of students from diverse backgrounds. Through perceptions and experiences of the participants, the study also analyzed internationalization of higher education institutions and international academic mobility processes. This analysis offered a clearer

understanding of brain circulation between the U.S. and developing countries occurring through higher education channels.

Results of the study suggest that high-ability students following an academic talent development trajectory have universal influencing factors outlined in the gifted education literature, including the limiting influence of gender on precocious female students. The analysis showed that high-ability students heavily rely on the following psychosocial supporting factors: a) developing persistence, work habits, and resilient self-efficacy, b) finding the field of interest through meaningful practical experiences and learning to draw motivation from exploration of the chosen academic field; and c) support from family, peers, faculty members, and experts in the field they chose to explore. These findings mean that precocious students of all backgrounds could benefit from acknowledged gifted education supports, regardless of culture, race, religion, SES, or country of origin. Furthermore, offering gifted education supports to academically high-ability students at later stages of development, for example, throughout college years, could help more students realize their potential and continue developing expertise in their chosen field.

Interesting findings emerged from participants' perceptions of the factor of opportunity in their academic talent development and international academic mobility processes. Opportunity was viewed as subjective rather than accidental, and the participants felt that they could create pertinent opportunities by being proactive, optimistic, purposeful in their search, and prepared to take the right opportunity when it came. They were also willing to change environments when the existing

environment failed to meet their needs for further talent development, which involved participating in international academic mobility at the graduate level.

Another exciting finding was the synthesis of results that connected academic talent development experiences of the participants, internationalization, and brain circulation processes. The participants who started their international education at the graduate level were among the top students in the highly rated universities in their home countries, and the main reason for engaging in international academic mobility was their search for expertise and a fulfilling academic environment. Many participants mentioned high research ranking of the selected U.S. institution to be an enhancing factor in making the choice of the program. By choosing to complete their graduate education in the U.S. universities they not only benefited from a fulfilling academic environment, but also supported and sustained the development of this academic environment in the U.S. universities (Postiglione, 2013; Saxenian, 2006; West, 2015). It is essential that U.S. higher education institutions maintain a high quality level of their programs, retain and attract top experts and scholars, provide and create unique resources, and support rigorous empirical research, because these are the factors that attract talented students with high academic potential from around the world.

One of the key findings of the study was uncovering the experience of international academic mobility of the participants from various backgrounds that did not rely on the financial capabilities of the participants' families. Emergent academic mobility of doctoral students was empowered by the following key supports: a) easy access to free information via Internet (for example, up-to-date research publications,

English language learning materials, know-how sharing websites, and international

application process information); b) accessible and free connection with experts in the

field via email; and c) brain circulation and increased exposure to internationalization

opportunities via prior international experiences of alumni and especially faculty and

scholars. The influence this exchange of expertise had on the international academic

mobility, and ultimately, on academic talent development of the participants cannot

be overestimated.

In closing, the current study was the first to empirically explore successful

academic talent development experiences and perception of opportunities of high-

ability international doctoral students from developing countries studying at a

selective U.S. university. Results of this study have implications for future research,

and practical implications for internationalization of higher education institutions and

policy makers in the U.S., as well as for prospective international students from

various backgrounds.

APPENDIX A

List of Developing Countries (International Statistical Institute, 2017)

Afghanistan	Guatemala	Pakistan
Albania	Guinea	Palau
Algeria	Guinea-Bisau	Panama
Angola	Guyana	Papua New Guinea
Argentina	Haiti	Paraguay
Armenia	Honduras	Peru
Azerbaijan	India	Philippines
Bangladesh	Indonesia	Romania
Belarus	Iran, Islamic Rep.	Russian Federation
Belize	Iraq	Rwanda
Benin	Jamaica	Samoa
Bhutan	Jordan	São Tomé and Principe
Bolivia	Kazakhstan	Senegal
Bosnia and Herzegovina	Kenya	Serbia
Botswana	Kiribati	Sierra Leone
Brazil	Korea, Dem Rep.	Solomon Islands
Bulgaria	Kosovo	Somalia
Burkina Faso	Kyrgyz Republic	South Africa
Burundi	Lao PDR	South Sudan
Cabo Verde	Lebanon	Sri Lanka
Cambodia	Lesotho	St. Lucia
Cameroon	Liberia	St. Vincent and the Grenadines
Central African Republic	Libya	Sudan
Chad	Macedonia, FYR	Suriname
China	Madagascar	Swaziland
Colombia	Malawi	Syrian Arab Republic
Comoros	Malaysia	Tajikistan
Congo, Dem. Rep	Maldives	Tanzania
Congo, Rep.	Mali	Thailand
Costa Rica	Marshall Islands	Timor-Leste
Côte d'Ivoire	Mauritania	Togo
Cuba	Mauritius	Tonga

Djibouti	Mayotte	Tunisia
Dominica	Mexico	Turkey
Dominican Republic	Micronesia, Fed. Sts.	Turkmenistan
Ecuador	Moldova	Tuvalu
Egypt, Arab Rep.	Mongolia	Uganda
El Salvador	Montenegro	Ukraine
Eritrea	Morocco	Uzbekistan
Ethiopia	Mozambique	Vanuatu
Fiji	Myanmar	Venezuela, Bolivarian Rep. of
Gabon	Namibia	Vietnam
Gambia, The	Nepal	Palestine, State of
Georgia	Nicaragua	Yemen, Rep.
Ghana	Niger	Zambia
Grenada	Nigeria	Zimbabwe

APPENDIX B

Researcher as an Instrument Essay

I am writing a qualitative research project for my dissertation thesis that will help me study and better understand the experiences of international doctoral high-ability students from developing countries at a selective public research university. Using purposeful sampling, I will choose ten to fifteen students to interview for this phenomenological study (Creswell, 2013). As they are international students and not likely to be identified as gifted in their home countries, the proof of their advanced academic abilities will be their GRE test scores and current GPA, as well as the very fact of being accepted into a graduate program at the University and being granted financial aid, for example, graduate assistantship. As a side note, the assumption of various backgrounds means that these students are from developing countries rather than from Organization for Cooperation and Development member states, and probably from the low SES background, hence the financial aid supposition.

Using the method of interview, I am hoping to come across the opportunities that prompted international students to pursue their Doctoral degrees overseas, as well as factors that made this life-changing experience possible. I will be relying on empirical research in the field of Gifted Education to find whether the factors that will be mentioned during interviews will match those defined crucial at different developmental stages of the gifted or   students.

That being said, let me analyze my own experiences, attitudes, beliefs, and values as seen relevant to the described research design. It is crucial for me to do so, because all the building blocks of my research (i.e., linguistic diversity, international

factor, high ability, financial aid, and current enrollment in the graduate program at the University) highly resonate with my personal history. I am an international doctoral student from Ukraine, a developing country, working on my PhD in Gifted Education Administration at the School of Education.

In order to become an international student at an American higher education institution, a good acquisition of the English language is a must. How is this achieved? Should the language learning process start long before the goal to study abroad is set? Is it possible to receive sufficient TOEFL and GRE scores if a student decides to apply to an American university at later stages, for example, during his/her junior year in college? Or maybe, English language is viewed as a must-have skill by this group of students and, possibly, their families, and then serves as both a simplifier and catalyst for their decision to pursue a graduate degree in the States?

I grew up in a bilingual environment: both Ukrainian and Russian languages were spoken in my family, community, and at school. I started learning English during my last year of elementary school. My English teacher was very professional, spoke English flawlessly, and knew how to work with children. It is not surprising that English quickly became one of my favorite classes. Moreover, my mother arranged for me to take extra classes, because I enjoyed spending time learning it. She was delighted with this new hobby and encouraged me to work at it in every possible way (private classes, dictionaries and books, frequent interactions with my English teacher and tutor, etc.).

This experience singles out two very important factors, even values, that impact not only language acquisition, but student achievement and development

overall: the role of a teacher and family influence, especially during the first learning stages of a certain subject or area. Will the child, even linguistically talented, become averse to language learning because of poor teaching, or thrive and enjoy it even if he/she does not have the talent? In how many cases does the talent power through and flourish if there is no material and/or emotional support or encouragement from the family and immediate environment? What if the environment is openly hostile?

English language played an extremely important role in my life long before a thought of applying for a graduate program entered my mind. It gave me an opportunity to participate in the Future Leaders Exchange Program and spend an academic year living in a host family and going to a local high school in Linden, Tennessee. However, this was more than just an opportunity to travel across the world and live in an English-speaking environment. At fifteen years of age, it was a chance for me to experience a different lifestyle, take myself out of my comfort zone, gain interpersonal skills, and broaden my horizons in every way. This was a vicarious experience of living in the U.S. and studying at an American education institution, a building block for my academic and multicultural competency self-efficacy.

Even though I chose to earn my BA and MA degrees in Ukraine, they both were in English language and literature, linguistics and methodology. English was the key to my government-sponsored higher education, various job offers since my senior year in high school, and initial experience of working with high-ability students. I cannot overestimate the importance of my having learned English early enough.

My belief about English language learning is that it is one of the essential skills that enriches background knowledge, broadens horizons, grants opportunities,

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connects people, and opens doors, as well as boarders. It is a must for international students if they want to not only be accepted into the program of their choice and graduate, but also to make a successful career. Knowledge of the English language to me is also a value, as part of the value of being an educated person, striving for a specific field, and having a passion worth pursuing even if it means leaving your home and changing your life.

I do not expect to find that all my interviewees will share my belief and find similar value in knowing English, even though it may be the case for some of them. I think that depending on the area of their study English will be more of a tool, a required step to them, not a passion. However, I expect to find and am willing to discover that to all of them it is a source of diversity and a cultural and social asset. I am curious to compare their experience in second language acquisition versus advancing in their current field of expertise, taking into account such factors as availability of mentors and opportunities, professionalism and support from their teachers, family and cultural environment.

Being an international student is another important factor to consider. It means coming from a different country, culture, and background. It means growing up with a different set of values, social influences, within different educational, economic and political systems. It means leaving a familiar lifestyle, family and friends behind and essentially building a new life from scratch (Fullan, 2001).

How do high-ability international students cope with the challenge of adapting to and thriving in new surroundings? I had an advantage of having lived and studied in the States for a lengthy period of time before becoming an international graduate

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student. Before I started my PhD program, I visited the U.S. twice and traveled around. I lived for a year in New York City while applying to graduate schools. Moving to Williamsburg was a big change for me, but most of the things were familiar or anticipated. Lifestyle, logistics, household matters, paperwork, cultural and social norms, and communication peculiarities were not a surprise for me. I had a pretty clear picture of what my life here would be like.

However, I realize that for most international students this is not the case. The key characteristics to have in this situation, and I am very willing to find them in my interviewees, are resilience, adaptability, flexibility, open-mindedness, self-efficacy, willingness to take risks, and self-confidence (Davis, Rimm, & Siegle, 2011). Possessing strong communicative and social skills is a great asset, too.

Even though high academic ability is often associated with social awkwardness, I think that graduate international students will break this stereotype (Davis, Rimm, & Siegle, 2011). My belief is that they are making such drastic changes in their lives not only for the sake of an internationally acclaimed diploma and a chance of a better career (and if that is the case, I am extremely unwilling to discover that!), but also for the enjoyment of new experiences, diversity, and immersion in a new cultural environment. I am willing to discover that they are making a conscious decision and can foresee the challenges they will be facing in an unfamiliar setting, at the same time possessing coping strategies, skills, and characteristics to adjust successfully.

Judging by my experience, actual transition and beginning of the first academic year is quite unique for international students at the College of William &

Mary thanks to the facilitation and efficient work of the Reves Center for International Studies. The Reves Center offers a great amount of support and provides new-coming students with up to date pertinent information regarding documentation, life in the US, academic life at William & Mary, etc. For me it was the easiest university to work and communicate with out of eight higher educational institutions I applied to. The Reves Center offers pre-arrival programs, such as matching newly accepted students with a conversation partner and creating an online conversation forum with current students, both domestic and international, to help the students prepare for the change. A full week of orientation is organized before the classes start, so that the students can get acquainted with the city, campus, and each other. Moreover, the Reves Center helps international students throughout their whole program by organizing relevant workshops, information sessions, trips, events, sending out newsletters, and connecting international students with domestic students, faculty, and members of local community. I expect to find that adjustment process and culture shock is mitigated with the help of those efforts. The work of the Reves Center reflects another value related to my research: helping people, finding ways to provide opportunities and facilitate challenging experience.

The last, but not the least, concept that my study will be addressing is intellectual giftedness, or, in other words, high academic ability. I will be researching not just international ESL students, but high-ability students. As I have mentioned before, international students are not identified as gifted or non-gifted in their home countries. That is why the criteria of high-ability will be their GRE scores, current GPA, and the very fact of having been accepted into a graduate program at the

University and granted financial aid. This reflects my own experience, and I am not comfortable with the fact that by setting such criteria I am actually claiming myself gifted. I am not looking for identification either for myself or for the group of students I will be working with. I am interested in looking at the development and realization of intellectual potential of high-ability students.

I expect to uncover that these students found their way to the career path they desired by pursuing a field or fields of interest rather than grades. I am extremely willing to find out that they wanted and expected more from their domestic educational system and, having failed to find it, used their skills and aptitude to tailor their reality to match their intellectual needs rather than accept lower level of expertise.

On the other hand, I am not willing to discover that these high-ability international students changed their lives in pursuit of greater financial gain or as a solution to their personal problems, because these findings would diminish my value of education. I view educational advancement and realization of potential as a need of an individual rather than a side-effect of good schooling or high parental/teacher expectations.

More importantly, I would like to discover the opportunities that stimulated students' intellectual growth and helped their academic advancement, and connect these factors with those presented in the empirical gifted education research. This way the results of my research could be used to make gifted education more inclusive. International students, educators, and higher educational institutions may benefit from the outcomes of my study, because I am trying to create a framework and single out

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concepts that have lead international high-ability students to effective first steps in their careers. At the same time, American students may benefit from my research as well by learning about what kind of experiences and factors lead to a successful, even if a more challenging, career path.

I am hoping that this research will give me a chance to find more ways and opportunities to support high-ability students from other countries and various backgrounds. This can be done not only by offering them a strategic action plan, but also by getting more education professionals and organizations interested in promoting and supporting high-ability student advancement.

APPENDIX C

Interview Protocols

Individual Interviews

In-depth semi-structured interviews will be used to collect data for the study

Recording of the interviews:

- Audiotaping (primary)
- Handwritten Notes (supplementary)

Interview Protocol Components:

1. A heading (date, place, interviewer, interviewee)
2. Instructions for the interviewer to follow so that standard procedures are used from one interview to another
3. Icebreaker question followed by four to five questions that are often followed by sub-questions, followed by a concluding statement and a request to name other graduate international students who would like to participate in the study
4. Probes for the four or five questions, to follow up and ask individuals to explain their ideas in more detail, or to elaborate on what they said
5. A final thank you statement to acknowledge the time the interviewee spent during the interview
6. A log to keep a record of documents collected for analysis.

Resource consulted:

Cresswell, J. W. (2014). Research design: Qualitative, quantitative, and mixed methods approaches. Los   Angeles, CA: Sage Publications.

Date: _____   Interviewer:

_____

Place: _____   Interviewee:

_____

Interview Protocol Instructions: The open-ended questions (listed below) are designed to encourage study participants to reflect upon and explain their personal experiences of becoming graduate international students. Depending on participant's answers, the interviewer may need to alter the order of questions. Each question is preceded with a "Purpose of question" section that guides the selection of questions. The interviewer will use their own best judgment to determine which questions, or similar questions, will best elicit an open-ended response from the participant that addresses that question's purpose. The multiple variations of each question are intended for situations when the interviewer believes the participant may have additional information to provide but did not offer it. The interviewer may occasionally need to rephrase a question to better match a participant's background, situation or point of view. Interviewer is encouraged to ask additional questions she feels are relevant to the current topic. Interviewer cannot continue a line of inquiry, if at any point the participant indicates verbally or non-verbally, that they are in any way uncomfortable with (unable or unwilling to answer) the current line of questioning. Optional member checking will be done at the end of each question and compulsory member checking will be done at the conclusion of the interview to review the

authenticity of the captured dialogue. Reflections of the participants on the interview

process and their answers will be collected via e-mail.

Hello and thank you in advance for your time today! I am conducting qualitative research to understand the successful opportunities in the lives of international doctoral students at the University for my dissertation. I plan to use my findings for further research with the aim to help future international students and promote internationalization of education. If at any point you feel uncomfortable in any way, please let me know, and I will move on to the next question or discontinue the interview process. Let's start our conversation.

1. Purpose of the question: Collect initial information about the participant's academic experience and current academic standing, and give the participant time to develop a rapport with the interviewer before asking to share information. Some of the questions may be changed on the basis of the information obtained from the demographic survey.

    a. First of all, I want to gather some general information. What program are you enrolled in at the University (name of the program, year of studies, etc.)?

    b. Are you receiving/have you received financial aid for this program? What kind?

    c. Where are you from?

    d. Where did you receive your previous (undergraduate & Master's) degree/s?

    e. How long have you lived in the United States?

    f. How did you happen to become a doctoral student at the University?

g. What are your academic and career achievements so far (publications, internships, grants, etc.)?

h. Optional Member Checking

- I heard you say…

- Let me share what I captured and allow you to agree that it is accurate…

- Can you elaborate on that statement…

- I want to make sure I understand correctly…

2. Purpose of the question: Determine the participant's abilities and domain of talent, the time when the participant started to learn about this particular domain, how it was and is being developed, and what opportunities spurred this interest and development. This question is aligned with the following principals of the Mega-Model of Talent Development: "Abilities, both general and special, matter and can be developed" and "Domains of talent have varying developmental trajectories"; and targets such specific contributors to giftedness as domain-specific ability, motivation, interest, and passion (Subotnik, Olszewski-Kubilius, & Worrell, 2011).

a. What are you studying at the University?

b. Do you remember when you first noticed your interest for _____ (participant's domain)? How did it become your central professional interest?

c. Please take a moment and think about the essential experiences throughout your life that enabled you to be here. What opportunities helped you

develop and master your interest in your domain? What experiences, even

those that are not directly connected to your domain, contributed to it?

How did you come across these experiences?

d. Thinking of the opportunities and experiences that you have mentioned,

how would you say they came about?

e. *Possible prompts*: help and support (e.g, family, teachers, and peers);

experiences that were not offered but sought after (extracurricular

experiences, additional projects, volunteering, etc.); experiences that

mismatched the domain of interest (other pathways of development, going

a different way).

f. Optional Member Checking

- I heard you say…

- Can you elaborate on that statement…

- I want to make sure I understand correctly…

3. Purpose of the question: Understand why (or whether) becoming an international

student at the University was a necessary step to continue the pursuit of the

participant's domain of talent. This question is aligned with the principle of the

Mega-Model of Talent Development: "Opportunities need to be provided to

young people and taken by them" and targets such specific contributors to

giftedness as opportunity and motivation (Subotnik et al., 2011). It is also aligned

with Sternberg's (2006) theory of successful development, specifically, selecting a

different environment if the existing environment is not fitting for the goals and

needs of the individual.

a. Can you tell me how you came up with the idea to pursue your domain of interest in the U.S. rather than in your home country?

b. What was happing at that time in your life?

c. Please describe your experience going through this process.

d. *Possible prompts:* What made this decision necessary? What challenges did you face? What made it possible? What factors (environmental, personal abilities, skills, personality traits, people, knowledge of the English language, etc.) made this life choice easier for you? Who/what supported you in this decision and how?

e. Optional Member Checking

- I heard you say…

- Let me share what I captured and allow you to agree that it is accurate…

- Can you elaborate on that statement…

- I want to make sure I understand correctly…

4. Purpose of the question: To determine other factors contributing to becoming an international graduate student in the U.S. higher educational institution and possible barriers for potential international graduate students. This question is aligned with the principle of the Mega-Model of Talent Development: "Psychosocial variables are determining factors in the successful development of talent" and targets such specific contributors to giftedness as cultural factors and personality (Subotnik et al., 2011).

a. How can you describe the experience of becoming an international student?

b. *Possible prompt:* What traits of character, special skills, and/or desires helped you become an international student?

c. Can you remember a time when you felt that doing a graduate program in the U.S. was the right choice for you? What made you feel this way?

d. Can you remember a time when you felt that doing a graduate program in the U.S. was not for you? Why did you feel that way?

e. What motivates you and keeps you interested in your field?

f. How do you see yourself in five years?

g. Optional Member Checking

- I heard you say…

- Can you elaborate on that statement…

- I want to make sure I understand correctly…

Thank you so much for your time today! In the next few days, I am going to share the interview transcript with you and ask you to reflect on it as well as give me feedback about its accuracy.

Resource consulted:

Subotnik, R. F., Olszewski-Kubilius, P., & Worrell, F. C. (2011). Rethinking giftedness and gifted education: A proposed direction forward based on psychological science. *Psychological Science in the Public Interest, 12*(1), 3-54. doi: 10.1177/1529100611418056

Focus Group Interview Protocol

In-depth semi-structured focus group interview will be used to collect data for the study

Recording of the interviews:

- Audiotaping (primary)
- Handwritten Notes (supplementary)

Focus Group Interview Protocol Instructions: The open-ended questions (listed below) were designed after individual interview data were collected and processed. The questions aim to clarify and expand researcher's understanding of the participants' experiences and perceptions of their academic talent development and becoming graduate international students. The group dynamic of a focus interview allows and encourages the participants to engage in conversation with each other rather than just direct answers to the interviewer, triggering a discussion of experiences and meaning making in the process of the conversation. The interviewer will use their own best judgment to determine which questions, or similar questions, will best elicit an open-ended response from the participants that addresses that question's purpose. The multiple variations of each question are intended for situations when the interviewer believes the participants may have additional information to provide but did not offer it. The interviewer may occasionally need to rephrase a question to better match a participant's background, situation or point of view. Interviewer is encouraged to ask additional questions she feels are relevant to the current topic. Interviewer cannot continue a line of inquiry, if at any point the participant indicates verbally or non-verbally, that they are in any way uncomfortable

with (unable or unwilling to answer) the current line of questioning. Optional member checking will be done at the end of each question and compulsory member checking will be done at the conclusion of the interview to review the authenticity of the captured dialogue. Reflections of the participants on the interview process and their answers will be collected via e-mail.

Hello and thank you for coming today! It is good to see you again, and I'm looking forward to our conversation. Please feel free to comment, follow up and ask each other questions during the interview. If at any point you feel uncomfortable in any way, please let me know, and I will move on to the next question or discontinue the interview process. Let's start our conversation.

1. How can you describe your experiences of becoming an academic?

    a. *Possible prompt:* What formative experiences helped you become a doctoral student and researcher in your chosen field?

    b. *Possible prompt:* What built you as an academic in your chosen field?

2. How can you describe your experience of becoming an international student?

    a. *Possible prompt:* Can you remember a time when you felt that becoming an international student was the right choice for you? Why did you feel that way?

    b. *Possible prompt:* Can you remember a time when you felt that being an international student was not the right choice for you? Why did you feel that way?

3. How do you see yourself in the process of becoming a doctoral student and researcher?

    a. *Possible prompt:* What role do you think you played in becoming who you are now?

    b. *Possible prompt:* Thinking of the experiences you mentioned, how did they come about?

Optional Member Checking:

1. I heard you say…

2. Let me share what I captured and allow you to agree that it is accurate…

3. Can you elaborate on that statement…

I want to make sure I understand correctly…

Demographic Survey

Q1 Thank you for participating in my dissertation study about opportunities in the lives of doctoral international students! Please fill out this demographic survey before we conduct the interview. If you have any questions or concerns, feel free to contact me at ndudnytska@email.wm.edu. Please remember that all your responses are confidential and will only be statistically represented in the study. They will never be shared with any third party or discussed with anybody.

Q2 Name and surname

Q3 Gender

❍ Male (1)
❍ Female (2)

Q4 Age

Q5 Country of citizenship

Q6 Are you in the U.S. on the F1 or J1 visa?

❍ Yes (1)
❍ Other (2) _____
If Other Is Selected, Then Skip To End of Survey

Q7 What is your ethnicity/race?

Q8 Where were you born? Please name city/village and country.

Q9 Where did you live the longest? Please name city/village and country.

Q10 What is your native language?

Q11 What other languages do you speak?

Q12 What is your program and concentration at the University?

Q13 When did you start your doctoral program at the University?

Q14 What higher education degrees do you currently hold (Bachelor's, Master's, Specialist's)? Please name institutions and countries where you obtained them, for example, Master's degree in Linguistics from Chernivtsi National University, Ukraine.

Q15 Have you been to the U.S. before you started your doctoral program at the University? If yes, please explain why and for how long.

❍ Yes (1) _____
❍ No (2)

Q16 What is your mother's education?

❍ Less than 9th grade (1)
❍ Some high school (2)
❍ High school graduate (3)
❍ Some college (4)
❍ Community college/technical college degree (5)
❍ Bachelor's degree (6)
❍ Master's degree (7)
❍ Specialist/Professional degree (8)
❍ Doctoral degree (9)

Q17 What is your father's education?

○ Less than 9th grade (1)
○ Some high school (2)
○ High school graduate (3)
○ Some college (4)
○ Community college/technical college degree (5)
○ Bachelor's degree (6)
○ Master's degree (7)
○ Specialist/Professional degree (8)
○ Doctoral degree (9)

Q18 How many brothers and sisters do you have?

Q19 Were you married when you started your doctoral program at the University?

○ Yes (1)
○ No (2)

Q20 Did you have children when you started your doctoral program at the University?

○ Yes (1)
○ No (2)

Q21 What was your family's annual household income when you started your doctoral program at the University?

○ Under $16,000 USD (1)
○ $16,000-30,000 USD (2)
○ $35,000-75,000 USD (3)
○ $75,000-150,000 USD (4)
○ Over $150,000 (5)

Q22 Have you been receiving financial support from the University during your doctoral program? Please select all that apply.

- ❑ Graduate Assistantship (1)
- ❑ Scholarship (2)
- ❑ Research grant (3)
- ❑ Other (4) _____
- ❑ Other work opportunities at the University (5)

Q23 What other sources of financial support have you been relying on during your doctoral program at the University? Please select all that apply.

- ❑ Parents' support (1)
- ❑ Spouse's support (2)
- ❑ Personal savings (3)
- ❑ Outside grants and scholarships (4)

Q24 Please list any awards and/or grants you have received, books and/or articles you have published, or other academic achievements while in the doctoral program at the University.

Q25 If you know other international doctoral students currently at the University, would you be willing to provide a reference for participation in this study?

- ❍ Yes (1)
- ❍ No (2)

Q26 Thank you for your time. Have a wonderful day!

Examples of Data Analysis

Example One: Initial coding of transcripts

This example presents initial coding of the transcript. First round of coding was done by highlighting sections of the transcript as relevant to research questions of the study (see legend below). Second round involved noting initial codes, memos, and questions for further rounds of analysis. These notes are presented in the brackets using a different font and highlighted in bold for better distinction.

Interview Coding Legend (by research questions):

Yellow: opportunities pertinent for development (offered & taken) RQ 1a

Blue: not offered but sought after RQ1c

Green: offered but discarded RQ 1b

Teal: internationalization (enhancers, challenges) RQ2a,b

Dark green: psychosocial factors/personality RQ2c

Magenta: perception of opportunity factor (RQ3a) fortuitous events resulting from proactive involvement

Red: sense of self-agency (RQ3b)

Participant: K. Interviewer: Natalie

N: How did you find the University? Why did you come to the University?

K: So I found the University because, actually I have a friend here at the University, he's 80 years old, he was somebody who I contacted while I was in Venezuela working on a project, an archeological project. He's a specialist, retired actually, curator of the historic foundation of ceramics and glass. He worked there for decades. And I contacted him [**Proactive behavior; also see later in the paragraph: research project and conference**] because I was interested in his expertise on some artifacts that I was finding in my excavation [**Relevant talent development behavior**] then, and he was a specialist in this certain ceramics type [**Search for expertise**]. And after

he found out that I was doing my undergraduate at the time in 2009 at Rollins [**Prior international education experience**], he invited me over here to [this city], and I came, and he gave me a few tours of the campus, of the museum installations here [**Involvement and help from experts in the field**], and that's when the idea of maybe to come to the University arose. And then in the summer of 2010 I did, I presented at the Congress of the International Association for Caribbean Archeologists in Martinique, and actually there I met Fred Smith, he was at the time a professor here at the Anthropology Department [**Pertinent opportunity resulting from proactive behavior**], a historical archeologist, and he was really interested in my work, and that was my last semester of undergrad, so he told me to apply here, that he would be very interested in having me as an MA/Ph.D. student, and I did [**Desire to continue on the academic path**]. And I also applied to Boston University, and I got into both programs, but I decided to come to the University, because I had already… I had known it, I had seen it [**Familiarity, vicarious experiences**], and also the financial package was better; it's cheaper to live here; I had five years of funding here, at Boston I only had four years, and also life expenses are through the roof at Boston, so it was various factors that influenced that, but those were kind of the… the finances were probably the decisive thing that made me choose the University [**Availability of merit-based funding**], especially because I was already engaged to the girl who is now my wife [**Academic/professional vs family priorities?**], and we were also thinking where maybe we would find ourselves in the next few years. That was the goal.

Example Two: Fragment of the table with initial codes and frequency count

This example presents a fragment of the table with initial codes and frequency count for each participant.

Participant	Expert mentor	Peer influence	Funding (merit-based)	Language comes up	Lang self-taught, viewed as a tool	Internet & tech	International/ special school
Konrad	x	x	x	x school benefit		x	x
R	x	x	x	x	x	x	no
Hao Shi	x	by negative example	x	GRE TOEFL	x	x	no

Lasisi	x		x	x	x	x	no
Jay	general	x support from alumni websites & groups	x	x difficulties	academic challenge in MA	x	no

Example Three: Fragment of significant statements for the code "Interest & Passion" (exported from NVivo)

<Internals\\FeiTranscript> - § 1 reference coded [1.76% Coverage]

Reference 1 - 1.76% Coverage

And also the way I see it, when you work on something as a hobby it's always much more fun than when it's your major ☺. But interestingly, I don't feel that way about physics, I think doing physics is interesting enough. You know, sometimes on a perfect sunny weekend I spend all my time in the library or reading some physics book that is not directly related to my research ☺ My research is on modeling and hydrodynamics, but there are a lot of topics I like in physics.

<Internals\\KonradInterviewTranscript> - § 4 references coded [1.80% Coverage]

Reference 1 - 0.73% Coverage

And also looking into documents and that opened a treasure trove, and I think that even fueled my interest even more so, because I had found this pristine subject that nobody had ever looked into, which again fueled my desire for adventure and finding new answers and rediscovering all this…

Reference 2 - 0.30% Coverage

For motivation, there was always the sense of discovering something new. And that kind of sense of intellectual adventure.

<Internals\\LasisiTranscript> - § 2 references coded [1.78% Coverage]

Reference 1 - 0.71% Coverage

But I studied well and I was fascinated with archeology, not many people want to do archeology. So people just pick up a profession, like I want to be an engineer. But I thought, I need to be in school, and I said that only when I picked archeology. I was very passionate about it.

It's the easiest thing I've ever done in my life. I just love it! I just love digging and learning about our past, and giving it an interpretation. I have this conception that I want to find the lost identity of the African child. I might find something on it. It's kind of technical, but I believe that through archeology I can get to understand the lost identity of Africa, which I'm working toward and it's really nice.

Example Four: Development of super-ordinate themes and essential structures

This example presents a stage in development of the super-ordinate theme "Fulfilling

Academic Environment" with its essential structures.

**Theme 2:
(Search for a)
FULFILLING
ACADEMIC
ENVIRONMENT**

**Essential
Structures:**

Determination to pursue a field of interest	Life-long learning, self-directed learning	Importance of expertise	Searching for unoffered opportunities	Positive academic environment
following interest even if less practical than other options	undergraduate thesis/research	looking for expertise	expert mentors	academic independence: professor - student relationships
interest/passion	satisfaction with quality of work, research	publications	unique resources	
discarded opportunities	challenge & research			

Example Five: Strategies employed in IPA analysis

This example illustrates *subsumption, polarization, and function* IPA analysis strategies recommended by Brinkmann & Kvale (2015) and Smith et al. (2009). These strategies were used to search for patterns and connections between emergent themes in the following ways:

Subsumption was used to identify super-ordinate themes in groups of essential structures. Super-ordinate theme "Education as Family Value" was identified within a series of the following essential structures: parent involvement; support from family; investing family resources in education; investing one's own resources in education; helping family through receiving education; mismatch between chosen and desirable field of study as seen by parents; support for choosing academic path even in the undesirable field by parents; support of international academic experiences by family.

Polarization was used to look for the oppositional relationships between essential structures of the themes by focusing on differences instead of similarities. For example, within the super-ordinate theme "Education as Family Value", two essential structures proved to be in an oppositional relationship: *mismatch between chosen (for example, history) and desirable (for example, engineering) field of study as seen by parents* and *support for choosing an academic path*. In this case, polarization helped identify that receiving higher education was the priority for the participants and their families, regardless of the choice and popularity of the field of study. Even though some parents would rather see their children choose what they

perceived was a more desirable field of study, they supported their children, because they were on the higher education path.

Function was used during Phase 2 to examine the emergent themes for their specific function within the transcripts. For example, the function of language use and manner of presentation enabled a deeper interpretation of data, especially when analyzing perceptions of the participants. Let's review Jay's description of his early interest development in history and anthropology (italics introduced by researcher).

> Jay remembered how his interest in anthropology started:
> Childhood is *a vague memory*, maybe *subconscious* now. But I think the point that *ignited* my interest, *inspired* my interest, is the books my father brought home. They were Japanese books for children, they gave you kind of an outlook of the world and how the universe works, it's kind of *like scientific educational books, something like an encyclopedia*, but *delicate*. All these Japanese books are well-designed with a lot of pictures, and it made me think that the other part of the world is really interesting, the world we are living in is not that simple.

In this part of the interview Jay takes care to phrase his explanation, find the right words that would describe his memories in a better way and render the importance that this experience had, and still has, for him. That oftentimes results in expressing the same idea twice, but always using different language: 1) a vague memory; subconscious memory; 2) ignite interest; inspire interest; and 3) scientific educational books; encyclopedias. Also, in describing the level of difficulty of the books, Jay avoids saying words like *simple*, *easy*, *basic,* or elementary. Instead, he chooses to use the word *delicate* that renders a sense of endearment he has for these books as his first introduction to the field he is now passionate about.

APPENDIX F

Participant Demographics

Name	General Discipline	Country of Origin	Annual Family Income	Father's Education	Mother's Education
Konrad	Humanities & Social Sciences	Venezuela	Under $16,000	PhD	PhD
R	Natural & Computational Sciences	Indonesia	Under $16,000	Bachelor's degree	High school
Hao Shi	Natural & Computational Sciences	China	Under $16,000	Community/ technical college degree	Less than 9th grade
Lasisi	Humanities & Social Sciences	Nigeria	Under $16,000	Community/ technical college degree	Less than 9th grade
Jay	Humanities & Social Sciences	China	$16,000-30,000	Specialist/ professional degree	Bachelor's degree
Diego	Marine Science	Brazil	$30,000-75,000	Master's degree	High school
Lucia	Marine Science	Brazil	$30,000-75,000	Specialist/ professional degree	Specialist/professional degree
Marcos	Marine Science	Brazil	$16,000-30,000	Bachelor's degree	Bachelor's degree
Id	Marine Science	Thailand	Under $16,000	Bachelor's degree	High school
Fey	Marine Science	China	$16,000-30,000	PhD	Community/technical college degree
James Lee	Marine Science	China	Under $16,000	Bachelor's degree	High school
Kelly	Education	China	$30,000-75,000	Bachelor's degree	Bachelor's degree
Abe	Education	Iran	Under $16,000	Master's degree	Bachelor's degree

Academic Talent Development Trajectories

Legend: Experiences highlighted in green show development of interest in a specific field. Milestones highlighted in blue show crystalization of specific niche within the area of interest which participants intend to further explore in their professional careers.

R: Developing talent in physics.

Childhood & elementary school	Middle school	High School	Bachelor's Program	Work for 3 years	PhD Program
	First interest in math & physics	Developing interest in physics and math	Physics department at the second best institution in Indonesia	At education company with WM alumnus as mentor; editing books in physics, PD, and teaching	In final 5th year
	Encouraging teacher	Decision to go into physics for undergraduate degree	Taking an extra half a year to finish research thesis	decision to apply for a graduate program in 2nd year	Developed specific interest in computaitonal physics and modeling
	Started self-directed learning		Started working in 1st year of college: tutoring, teaching evening classes, teaching gifted students	Used 3rd year to apply to the U	

Lasisi: Developing talent in archeology.

Childhood & elementary school	Middle school	High School	3 years	Bachelor's program	National service	MA & PhD at the U
Mother sold jewelry to pay for school		Teacher mentioned archeology, but could not explain. Lasisi started reading about it on his own.	Applied to college in Nigeria for archeology, engineering, and again archeology	Received a scholarship starting 2nd year	Was asked to stay at the university and work for the department of archeology	Finished 1st year
			Got into college with the 3rd try	Made secretary for the journal 3rd year	Did research	
			Worked to earn tuition money	Did field research	Applied to grad programs	

Jay: Developing talent in anthropology and historical archeology.

Konrad: Developing talent in archeology.

Childhood & elementary school	Middle school	High school	Bachelor's program	Work for 1 year	Master's program	PhD program
Japanese books for children father brought home		Reading historic novels from around the world	Started as English major	Applied to U.S. grad schools	Brandeis University in Boston, MA, international experience	Finished 1st year
		Reading magazines on foreign arts, cultures, and subcultures	Transferred to anthropology in 2nd year		Develops interest in historical archeology through research project	
		Teacher encouraged to go into history	Research project with African community			

Hao Shi: Developing talent in physics.

Childhood & elementary school	Middle school	High school	Bachelor's degree	Work for 1 semester	Master's program	PhD program
Both parents are archeologists. Family vacations spent at excavations & digs	Living in London while parents were doing their PhDs in London	International school	Undergraduate studies at Rollins College, FL	Archeological work in the lab and digs, discovering a specific research interest	the University	Graduated with a doctoral degree

Abe: Developing talent in counselor education and supervision.

Childhood & elementary school	Middle school	High School	Bachelor's Program	3 years in Beijing	PhD Program
		Developing interest in physics and math	Goes to one of the top five universities in China	Does a Master's program at a univeristy in Beijing	In final 5th year
		Decision to go into physics for undergraduate degree	Follows a visiting professor to Beijing to do a thesis there for half a year	Meets a visiting professor from the U and comes to do a visiting scholar program	Developed specific interest in computaitonal physics and modeling
				Applies for a U doctoral program and leaves	

Childhood   Secondary School   BA & MA programs   Work for 3 years   2nd MA program   PhD program

Architecture

Works as an architect

Starts developing interest in psychology & counseling, self-educates, & looks into programs

Syracuse University, NY

Graduated with a doctoral degree

Diego: Developing talent in fisheries science.

Childhood & secondary school   Work for 2,5 years   Bachelor's program   Master's program   PhD program

Worked as an accountant for father's business

Took a class in systematics

Visiting U.S. museums and collections, going to conferences

Mid-program

Took a trip to Mexico, turtle on the beach

Took an evening prep course to get into college

Was introduced to his current PhD advisor at a conference, applied to PhD programs

Fei: Developing talent in hydrodynamics and numerical modeling.

Childhood & elementary school   Middle school   High school   Bachelor's program   Master's program   PhD program

Interest in environment and water quality

Interest in physics

Lower than expected test scores prevented him from going into physics

Majoring in environmental science

Found an advisor who worked on hydrodynamic models

In final year of the program, researching hydrodynamics and numerical modeling

During MS program found an open-source model created by a researcher in the U.S. and got in touch with him for a PhD program

Id: Developing talent in marine science.

Childhood **Secondary School** **Bachelor's program** **Master's program** **Work for 9 years** **PhD program**

A snorkeling trip to the island with her father, instant fascination with marine life

Interest in biology

Aquatic science major

Marine science major

Researcher and professor at the home university

In final year

Lucia: Developing talent in zoology.

Childhood & elementary school **Middle & high school** **Bachelor's degree** **Master's degree** **Conference in NC** **1 year application process** **PhD program**

Early interest in nature a and all living things;

Family members called her "Doctor"

Private school

Decided to have a degree in biology at the age of 12

Interest in zoology

Found her niche interest in protistoloy

Followed the advisor who did research of her interest to a private university for the graduate program

Interest in doing a PhD in the U.S.

Researching doctoral programs and contacting advisors

In final year

Marcos: Developing talent in aquatic health science.

Childhood & secondary school **BS program: Part 1** **Gap year** **BS program: Part 2** **Master's program** **Work for 1 year** **PhD program**

A trip to Rocky Shores with uncle, a biologist

interest in coastal environment and organisms

Majoring in biology

Trip to London to study English, work, and figure out one's interest

Majoring in ecology

Majoring in ecology

Professor & researcher at home university, application to PhD at the U

Mid-program

James Lee: Developing talent in marine science.

Childhood

Secondary School
- Wrote an essay stating he wanted to be a scientist
- Wanted to go into physics

Bachelor's program
- Could not get into physics because of the test scores
- Went into marine science and loved it

Master's program
- Marine science major at the U

Gap year
- Took time off to figure out what he wanted to do
- Worked at as an environmental consultant at a business company; did research

PhD program
- Decided to come back to the U and pursue an academic route
- Mid-program

Kelly: Developing talent in K-12 education.

Childhood

Secondary School
- Chose the arts route
- Interest in psychology

Bachelor's program
- Early childhood education major

Master's program
- International & comparative education at NYU

Work for 2 years
- Researcher and professor at the home university
- Met current advisor
- Decided to go back to the U.S. for her PhD

PhD program
- In final year

APPENDIX H

Themes and Supporting Essential Structures Frequency Table

This table provides a frequency count of essential structures within super-ordinate themes mentioned by the participants in the interviews.

Theme	Essential Structure	Frequency (max=13)
1. Education as Family Value	Investing in Education	13
	Father's Influence	7
	Gender	1
	Mismatched Career Paths	9
2. Fulfilling Academic Environment	Research	13
	Experts in the Field	13
	Unique Resources	4
	Academic Culture	12
3. Three Pillars of Mobility: English Language, Technology, and Funding	English Language;	13
	Technology;	13
	Funding	11
4. Non-Zero-Sum Game: Brain Circulation and Knowledge Sharing	International Experiences of Peers and Alumni;	11
	International Experiences of Domestic Faculty;	11
	International Experiences of U.S. Professors and Scholars;	13
	Prior International Experiences of the Participants;	12
	Support for Brain Circulation from Home Governments and Higher Education Institutions	5

Informed Consent Forms

Study Participant Informed Consent

The research problem for this study focuses on exploration of opportunities in the individual experiences of international high ability doctoral students at the small selective public U.S. higher education institution and exploration of the meaning they ascribe to their lived and academic experiences as it pertains to their talent development and achievements. The purpose is to determine and describe opportunities in the talent development process as perceived by the students. This study will allow exploring and connecting findings in two fields: gifted education and globalization and internationalization of education. Both fields are developing in the U.S. and contribute important findings to the field of education in general. This study will promote and popularize international education. I hope to use strategies and solutions found efficient in the field of gifted education and apply them to support high-ability international students from various backgrounds.

Your participation in this interview, which will take approximately 50 minutes, is voluntary, and you may refuse to answer any questions and/or cease the interview at any time. Following the interview, the researcher will review your responses for clarification.

Please know that:

- The confidentiality of your personally identifying information will be protected to the maximum extent allowable by law.
- The audio recordings of your interview described above will be erased after the study.
- Your interview responses will be sent to you following the interview.
- Please, if you wish, choose a pseudonym for yourself which may be used in the dissertation text instead of you real name.
- Because of the emotionally charged topic of discussing past experiences with the process of becoming an international student, there is a risk of minimal emotional distress during participation in this study. At any point, you may ask for a break, to stop, or pose questions to help clarify concerns.

If you have any questions or concerns about this study, please contact the interviewer's faculty adviser: Dr. Tracy L. Cross at the College of William & Mary, Williamsburg, Virginia.

If you have any questions concerning your treatment as a participant (human subject) in the study, please contact the chair of the Human Subjects Committee, Dr. Thomas Ward at tjward@wm.edu, phone number 757-221-2358.

By checking the "I agree to participate" response below, then signing and dating this form, you will indicate your voluntary agreement to participate in this study, and confirm that you are at least 18 years of age.

☐ I agree to participate in this study.

_____   _____

Print Name   Signature

_____   _____/_____/_____

Pseudonym   Date

Peer Examiner Informed Consent

The research problem for this study focuses on exploration of opportunities in the individual experiences of international high ability doctoral students at the small selective public U.S. higher education institution and exploration of the meaning they ascribe to their lived and academic experiences as it pertains to their talent development and achievements. The purpose is to determine and describe opportunities in the talent development process as perceived by the students. This study will allow exploring and connecting findings in two fields: gifted education and globalization and internationalization of education. Both fields are developing in the U.S. and contribute important findings to the field of education in general. This study will promote and popularize international education. I hope to use strategies and solutions found efficient in the field of gifted education and apply them to support high-ability international students from various backgrounds.

You are invited to conduct a peer examination review of the findings of the study. You will be asked to comment on the themes, essential structures, and findings, and to review a draft of the report with the purpose of validation of the analysis. Your participation in this study is voluntary, and you may refuse to participate at any time.

If you have any questions or concerns about this study, please contact the researcher's faculty adviser: Dr. Tracy L. Cross at the College of William & Mary, Williamsburg, Virginia.

If you have any questions concerning your treatment as a peer examiner in the study, please contact the chair of the Human Subjects Committee, Dr. Thomas Ward at tjward@wm.edu, phone number 757-221-2358.

By checking the "I agree to participate" response below, then signing and dating this form, you will indicate your voluntary agreement to participate in this study, and confirm that you are at least 18 years of age.

☐ I agree to participate in this study.

_____   _____

Print Name   Signature

Date: _____/_____/_____

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