Journal for the Study of Postsecondary and Tertiary Education

An Official Publication of the Informing Science Institute
InformingScience.org

JSPTE.org

Volume 5, 2020

Higher Education in Crisis? An Institutional Ethnography of an International University in Hungary

Laura Parson*	Auburn University, Auburn, AL, USA	LJP@auburn.edu
Ariel Steele	Auburn University, Auburn, AL, USA	als0089@auburn.edu

* Corresponding author

Abstract

Aim/Purpose	Our goal is to provide understanding of if and how the institutional factors found to contribute to a chilly climate are experienced in an international setting and provide a broader understanding of the discourses that create challenges for marginalized and underrepresented groups in STEM.
Background	In August 2018 the Hungarian government stopped funding gender studies program and took direct control of funding at the Hungarian Academy of Sciences in order to focus "taxpayer money on areas that can generate a payoff for society" (Witte, 2018).
Methodology	Data collection and analysis focused on how the interface between students and mathematics education was organized as a matter of the everyday encounters between students and faculty and administration by exploring their experiences inside and outside of the classroom (Smith, 2006).
Contribution	There is little in the scholarly literature on how the recent threats and policy changes by the Hungarian government will impact Hungarian higher education; as such, this research has the potential to be a significant and leading contribution to the field by critically examining how ongoing changes to higher education policy, practices, and procedures in Hungary impacts the educational environment for students seeking a graduate degree in Hungary.
Findings	Although students and faculty at IU were aware of the political discourses surrounding higher education in Hungary, they largely felt that their work as mathematicians was not largely impacted by threats to academic freedom and institutional autonomy. Instead, these findings suggest that many of the same discourses

Accepted as an empirical research article by Editor Crystal Chambers │Received: January 8, 2020│ Revised: January 13, 2020 │ Accepted: January 13, 2020.
Cite as: Parson, L., & Steele, A. (2020). Higher education in crisis? An institutional ethnography of an international university in Hungary. *Journal for the Study of Postsecondary and Tertiary Education, 5,* 17-34. https://doi.org/10.28945/4490

	that coordinate the work of STEM students in higher education persisted to create similar challenges for IU mathematics students.
Recommendations for Practitioners	The first step toward improving the chilly climate in STEM fields requires revising the STEM institution from one that is masculine to one that is inclusive for all students with the goal of creating a STEM education environment that supports, validates, and gives students an equal voice (Sidlauskiene & Butasova, 2013).
Recommendations for Researchers	Subsequent inquiries guided by this work can extend to additional institutional environments in Hungary and in other authoritarian countries where academic freedom and institutional autonomy are challenged in order to understand how political reform and institutional factors play a role in creating challenges for students from underrepresented groups.
Impact on Society	By providing an international perspective, we can explore trends in institutional factors in order to make recommendations that mitigate or reverse the traditional competitive and intimidating STEM classroom environment.
Future Research	Future inquiries can explore discourses that contribute to the chilly climate in STEM with an international perspective, to explore if these discourses are consistent across different types of universities around the world.

Keywords	institutional ethnography, Hungarian higher education, STEM in higher education, mathematics education

INTRODUCTION

The focus of recent research on STEM in higher education has shifted from the individual through a deficiency lens to understanding the institution of STEM higher education and how processes, procedures, and discourses coordinate trans-local practices in STEM education and create challenges for marginalized and underrepresented groups. As such, it is important to explore a variety of institution types in diverse settings in order to truly understand the institutional factors that contribute to a chilly climate for underrepresented groups and also to explore the institutional factors that mitigate or reverse the traditional competitive and intimidating STEM classroom environment. In this study, we explored the STEM Higher Education environment in Hungary, a country frequently in Higher Education news in 2018 and 2019 because of government threats to academic freedom and institutional autonomy (Karáth, 2018; Matthews, 2017; Parson & Steele, 2019; Witte, 2018; Wilson, 2018). For example, in August 2018 the Hungarian government stopped funding gender studies programs and took direct control of funding at the Hungarian Academy of Sciences in order to focus "taxpayer money on areas that can generate a payoff for society" (Witte, 2018). Concerns about the erosion of institutional autonomy and academic freedom are global, especially with the recent resurgence of new direct control mechanisms and more centralized forms of governance, such as those seen in Hungary (Kováts, Heidrich, & Chandler 2017; Parson & Steele, 2019). In this context, we explored the institutional factors that structured STEM in higher education in Hungary in order to provide insight into how students experience STEM institutional factors as well as external policy changes that impact the university as a whole. Our goal is to provide understanding of if and how the institutional factors found to contribute to a chilly climate are experienced in an international setting and provide a broader understanding of the discourses that create challenges for marginalized and underrepresented groups in STEM.

Through the lens of standpoint theory (Smith, 2005), this study explored the everyday "work" of graduate mathematics students to begin to understand the teaching and learning environment at an international higher education institution (IU; pseudonym) located in Hungary. There is little in the scholarly literature on how the recent threats and policy changes by the Hungarian government will impact Hungarian higher education; as such, this research has the potential to be a significant and leading contribution to the field by critically examining how ongoing changes to higher education policy, practices, and procedures in Hungary impacts the educational environment for students seeking a graduate degree in Hungary. This research is pivotal in the field of higher education because it is exploring these issues at a time when higher education in Hungary is under threat from the Hungarian government and it responds to calls for greater understanding of how institutional factors create challenges for women and traditionally underrepresented groups.

CURRENT STATE OF HIGHER EDUCATION IN HUNGARY

The election of Viktor Orbán as Prime Minister of Hungary in 2010 symbolized the return to power of the Fidesz conservative party (Marcus, 2014). Touting reforms as symbolic of becoming an "illiberal democracy," Orbán's administration changed education law and policy and reduced the institutional autonomy of higher education institutions and diminished government support for higher education in Hungary (Parson & Steele, 2019). For example, in addition to cutting public funds to institutions by 18% (as a percentage of GDP) between 2010 and 2015, Orbán reduced the compulsory school leaving age from 18 to 16 (Matthews, 2017). The Orbán administration also restricted state funding to government-sanctioned majors dictated by "workforce demand"; for example, telecommunications, computer programming, and car manufacturing (Marcus, 2014; Matthews, 2017). At the same time, the Administration attempted to reduce the number of state-funded places from 44,000 to 10,480; but after student protests, Orbán announced that any student who scored high enough on the tertiary education leaving exam would receive state funding (Marcus, 2014). As a result, higher education enrollment and graduation rates dropped between 2008 and 2016; enrollment went from 66.48% to 48.03% of college-age students and the graduation rate dropped from 39.76% to 32.05% (UNESCO, 2018).

Further impacting institutional autonomy and academic freedom, specifically in regard to research and freedom to pursue an independent research agenda, in 2015, the politically independent Hungarian Scientific Research Fund merged with the National Research, Development and Innovation Office (Karáth, 2018). The independence of research was further impacted when the government took control of funding at the Hungarian Academy of Sciences (Witte, 2018). Citing higher education to be a "luxury," the Hungarian government views higher education as unnecessary for a large percentage of the Hungarian people and instead suggests people need to be prepared for vocation and manual labor (Witte, 2018). Finally, in April 2017, the Hungarian government amended the nation's Higher Education Law to require foreign universities without an agreement between Hungary and the home country of the university to have a campus in their home country (Matthews, 2017). Despite months of protest and attempts by top-ranked Central European University (CEU) to meet the government's demands, it was forced to open a campus at Bard University in New York and opened a new main campus in Vienna, where it announced it would move much of its operations (Karáth, 2018).

Higher education governance in Hungary

The Ministry of Human Capacities (EMMI) oversaw all education in Hungary including higher education. In that capacity, EMMI set education policy, which included determining the number of state-funded positions for every discipline and every institution and controlling the public institution budget (OECD, 2015). While EMMI retained control over education, it was advised by the Hungarian Rectors' Conference for curriculum-related matters like learning outcomes and program structure. A chancellor, selected by the government, oversaw the rectors at every public institution to oversee all financial and strategic decisions (OECD, 2015). Hungary's three-degree (bachelor, master, and doctoral) structure was introduced in 2006 as a part of the Bologna Process. Tertiary or higher education was divided into four dimensions: public/private and university/college. Universities award doctoral degrees and no more than 40% of faculty could have less than a doctoral degree, while colleges could only award undergraduate and master's degrees and had lower terminal degree requirements for faculty (Eurydice, 2018). Only students who had received the secondary school leaving certificate could be admitted to tertiary education; admission was determined by secondary leaving exam scores with a minimum score of 240 required for admittance to any program, and some programs in high demand or viewed as low priority by the government required scores over 450 for admission (OECD, 2015).

STEM in higher education discourses

Research on the STEM environment has long suggested that it is particularly hostile to women and underrepresented groups because of the teaching and learning practices in STEM, which are directed by the institutionalized discourses of difficulty, competition, and individualism (Sallee, 2011; Shapiro & Sax, 2011). The chilly climate persists because the discourses that inform and guide the teaching and learning practices that create a chilly climate are institutionalized within STEM education (Parson & Ozaki, 2017). As a result, while the classroom practices that contribute to the chilly climate may have changed, the chilly climate persists because the discourses that informed those classroom practices have not. For example, the “discourse of difficulty” leads to coursework expectations that define the nature of learning for physics and math for students. STEM courses are designed to be tough because faculty want to convey the difficulty of the subject matter they are learning. In courses that occur early in the curriculum, these courses act to “weed out” (Gasiewski, Egan, Garcia, Hurtado, & Chang, 2012; Mervis, 2011) students and become gatekeepers for students who are intimidated by the difficult and time-consuming homework and assessments. In addition, exceptionally difficult coursework can be discouraging to high-achieving students when they receive or expect to receive low grades (Vogt, Hocevar, & Hagedorn, 2007). Research has found that high grades are related to persistence in STEM for woman students, and difficult work can cause self-doubt (Parson & Ozaki, 2017;Vogt et al., 2007). Second, the discourse of individualism leads to an institutional climate where the individual is responsible for their own learning without the support of faculty or fellow students. A lack of support, perceived or real, can create a double bind where women and students from underrepresented groups struggle because they are not receiving support they need but do not feel like they can go to faculty for support because they do not want to be seen as struggling (and, therefore, reinforcing perceptions that women and students from underrepresented groups do not belong in STEM) (Morganson, Jones, & Major, 2010). The discourse of individualism informs teaching and learning practices that places the onus on women students, reducing support, and possibly increasing feelings of incompatibility between themselves and their major (De Welde & Laursen, 2011; London, Rosenthal, Levy, & Lobel 2011; Sartorius, 2010; Trujillo & Tanner, 2014). Third, the discourse of competition is often promoted as a necessary part of STEM by faculty and students. The competitive climate leads to teaching methods, grading practices and classroom environments that are often disconfirming for women. For example, although an accepted pedagogy in STEM education, competitive practices such as grading on a curve, have been found to be contrary to some women student’s need for collaboration and a collectivistic environment (Shapiro & Sax, 2011; Vogt et al., 2007).

As a result of the discourses of difficulty, individualism, and competition, the STEM classroom is often described as “chilly,” an impersonal and even hostile teaching and learning environment (Morganson et al., 2010; Vogt et al., 2007). Research suggests that the chilly climate exacerbates the discomfort already felt by women and underrepresented groups who are already struggling to reconcile with stereotypes and treatment from fellow students and faculty that tell them that they do not belong and will not succeed (Deemer, Thoman, Chase, & Smith 2014).

In this study, we explored the STEM institutional environment at IU to identify what discourses coordinated the work of students and faculty. Research that explores the institutional STEM higher education environment is necessary to understand how and why women and marginalized groups continue to be underrepresented in STEM in higher education and industry; instead of a focus on individual deficiencies (Šidlauskienė & Butašova, 2013). With this research, we extend the body of literature on the discourses that coordinate the work of STEM faculty and students in an international context in order to make recommendations for structural changes that could have a positive impact on experiences, retention, persistence, and graduation rates.

METHODS

Institutional ethnography (IE) is a qualitative research method that begins from the experiences of individuals as a lens to explore the institutional practices, procedures and discourses that coordinate their work (Smith, 2005). Framed through Feminist Standpoint Theory (Harding, 2009), IE explores how the lives of groups of individuals are structured. By identifying the structures that coordinate work, through IE, research questions seek to identify what institutional practices, policies, procedures, and discourses are creating challenges for marginalized or minoritized groups, such as women and immigrant students in Hungary. While standpoint theory was originally formulated as a methodology to examine feminist research, it is now widely used in scholarship projects focused on race, class, sexuality, and gender (Harding, 2009). Data collection and analysis focused on how the interface between students and mathematics education was organized as a matter of the everyday encounters between students and faculty and administration by exploring their experiences inside and outside of the classroom (Smith, 2006).

Data collection was guided by the following research questions:

1. How is the relationship between STEM institutional practices related to the institutional practices of higher education as an institution in Hungary?
2. Do challenges emerge as a result of these organizational processes? If so, how and where do they emerge?

In an institutional ethnographic inquiry, data collection begins with the collection of entry-level data, or data that describes day-to-day work (Campbell & Gregor, 2002). Entry-level data then informs the collection of level-two data, which seeks to identify what institutional processes are coordinating the day-to-day work of participants (Campbell & Gregor, 2002). In the present study, entry-level data was collected through observations and interviews that sought to understand what was happening by describing what characterized the lives of IU mathematics students. Level two data was gathered through interviews with students and faculty, and questions sought to understand why students did the things they did every day. Data was collected intentionally and iteratively, with each level of data collected informing what data needed to be collected next to inform understanding of that process.

PARTICIPANTS

We used purposive and snowball sampling methods to identify study participants through the help of an insider-contact within the mathematics department who helped to facilitate ethical approval to conduct the research and sent the request for participation to students. Participants self-identified and either reached out to Laura to schedule an interview via email or found Laura once she had arrived at IU to schedule an interview in person. This exploration began with in-depth interviews with nine graduate mathematics students (see Table 1), and extended, as institutional processes shaping their experiences were identified, to classroom observations, additional interviews with three math faculty (See Table 1).

DATA COLLECTION

As is typical of an institutional ethnography, data collection methods were student interviews, faculty interviews and observations. In an institutional ethnography, the goal of interviews is not just to reveal subjective states, but to identify how individuals from different parts of an institution are connected and guide the next steps of an investigation into local processes that are similar because they are coordinated by institutional practices (Smith, 2006, loc 327). After the informed consent process, Laura conducted 30-60 minute interviews with each student participant that asked them to describe the everyday work they did as a student, the setting where they did that work, and what choices they had to make every day. Laura also conducted shorter formal interviews with math faculty after the student interviews were largely complete. In faculty interviews, Laura asked about the processes and policies that were identified in the graduate student interviews and/or observations and provided information about how student work is coordinated at the department, college, and institutional level. Finally, Laura conducted observations as an observer without participating (Hesse-Biber, 2013) and observed social dynamics and patterns while looking for the steps in institutional processes and discourses (Campbell & Gregor, 2002).

Table 1. Participant Descriptives

Pseudonym	Grade Level/Status	Gender
Benjamin	Graduate/Master's/1st year	Man
Laci	Graduate/PhD/2nd Year	Woman
Szabolcs	Graduate/Master's/2nd Year	Man
Tamas	Graduate/Master's/2nd Year	Man
Furkan	Graduate/PhD/1st year	Man
Kalman	Graduate/Master's/1st year	Man
Andras	Graduate/Master's/2nd Year	Man
Christian	Graduate/Master's/1st Year	Man
Erika	Graduate/PhD/1st Year	Woman
Arthur	Faculty	Man
Peter	Faculty	Man
Istvan	Faculty	Man

DATA ANALYSIS

As an institutional ethnography, data analysis began immediately upon collection as an iterative process (Hesse-Biber, 2013). We began analysis of participant accounts of their experiences as Laura collected them, because the focus of data analysis in an institutional ethnography is not only on collecting and describing participant experiences and perspectives but on the larger institutional processes that coordinate their work and that they may not be aware of (Campbell & Gregor, 2002). The data analysis process followed Carspecken's (2013) critical ethnography coding process and utilized discourse analysis of textual data (Creswell, 2013; Saldaña, 2016). After Ariel completed interview transcription, we began by coding the interview and observation data with low-level codes that included structural, process, and open coding (Saldaña, 2016). High-level coding followed low-level coding, which focused on "meaning and validity reconstruction, horizon analysis, and the analysis of interactive power" (Carspecken, 2013, loc 3673). Once low-level and high-level coding were complete, the codes were synthesized into categories and themes through code reorganization (Carspecken, 2013). Codes were grouped into categories based on what coordinated the work (e.g. institutional policy, procedure, discourse, or practice) and the discourses that coordinated the work. Data analysis was complete when saturation was reached, and no new themes emerged with subsequent re-readings.

ETHICS AND VALIDITY

The selection of an unstructured format allowed the participants to "shape the contours of the interview" (Adler & Adler, 2003, p. 167). Although our questions guided the content, participants were free to respond however they pleased and ask Laura questions about the nature of the interview, research, and Laura's experiences, which we did to reduce the hierarchical gap between researcher and respondent (Adler & Adler, 2003). Finally, Laura conducted observations as an observer without participating (Hesse-Biber, 2013) and observed social dynamics and patterns while looking for the steps in institutional processes and discourses (Campbell & Gregor, 2002). To confirm the validity and trustworthiness of the data collected and our findings and analysis, we triangulated findings with the literature to identify if the themes we identified were similar to those identified in prior research, including our own STEM research (Onwuegbuzie & Leech, 2007). Additionally, Laura conducted member checking with a faculty participant throughout the process of data collection by discussing themes identified in low-level coding and asking for assistance locating the policy or documents that directed that student work, when applicable. Finally, we reviewed the interview data separately and independently before our research team meetings to discuss emerging themes and codes. We used memoing as a process to record our impressions during data collection, and revisited those memos throughout the analysis process and prior to writing our findings to ensure that our analysis aligned with our initial analysis and to ensure that we did not lose any of the important themes we identified in the data collection process. While broad generalizability is not the intent of institutional ethnographic work, we used these measures to ensure the trustworthiness and reliability of our findings.

The study received ethical approval from Auburn University's IRB. Prior to beginning the study, we received permission from IU to conduct the research at the institution. IU provided a written letter of support and physical access to the institution and online resources for data collection. To keep participant identity confidential, we referred to the institution by the pseudonym IU. We have also redacted any descriptive information about the institution and participant nationality in order to keep the institution's identity confidential to protect the confidentiality of participants.

Author positionality

As a researcher, Laura is a white, middle-class, woman professor. In this study, Laura's privilege from her race and social class interacted with her privilege as a native English language speaker and American professor in Eastern Europe. The additional power she derived by determining the research process resulted in layers of power that included linguistic, national, racial, and class privilege. As a graduate student researcher, Ariel is a white, middle-class woman. She carries a level of privilege within her professional academic career. As white women that are committed to social justice and research, we recognize that our identities hold a level of privilege that positions us as knowledgeable in our fields. Ariel's experiences in STEM and our experiences in higher education give us an analytical lens that is well-rounded, however, we recognize that these experiences can also bias how we view the data. We acknowledge this bias in our work and sought to address and challenges our biases throughout the collection and analysis process.

FINDINGS

Analysis of interview and observation data suggested that the context of Higher Education law and policy coordinated and created challenges for students as it related to the process of immigrating to Hungary but did not, for the most part, impact their day-to-day lives once they had begun coursework at IU. In contrast, while the institution and department structure of IU and the mathematics department was designed to support students in their transitions to IU, institutional processes, practices, and procedures created challenges for mathematics students once they were fully admitted as students.

CHALLENGES CREATED BY LAW AND POLICY

First, Hungarian immigration law created challenges for students after they were accepted to IU and began the immigration process. For EU residents, the process was simple, but for non-EU residents, which included Christian, Erika, Furkan, and Kalman, the process of immigrating to Hungary involved a complicated Visa process that required students to visit embassies in different countries, getting their documents officially transcribed, and finding the funds needed to travel. First, EU citizen participants reported an easy transition to Hungary. This process was especially simple for participants who were a part of the Hungarian minority living in post-WWI Hungarian boundaries (e.g., parts of Romania, Bratislava, Slovakia, Ukraine, Serbia) so they had Hungarian citizenship. One doctoral student described the process of coming to Hungary:

> Laura: Did you have to go through a visa process or immigration process?
>
> Participant: No, because I'm European, and I'm also Hungarian.
>
> Laura: Okay because you fall under that category of Hungarian citizen in Romania?
>
> Participant: Yeah, like my family is actually Hungarian. So, there is big amount of Hungarians in Romania.

The process of immigrating to Hungary was easiest for students who were already considered to be a Hungarian citizen, but it was also reported to be simple for students who were citizens of EU member countries. Master's student Benjamin described the process of moving to Hungary: "So the process was very easy . . . And then there were a couple of bureaucratic things even though [Eastern European country] and Hungary are a member of the European Union. Compared to other students, very easy. So, we just had to sign address card, and student card." Master's student Andras echoed the easy transitions, stating how he only needed permission to immigrate to Hungary due to his EU citizenship.

In contrast, the process was complicated procedurally for students who were citizens of countries located outside of the EU, especially countries where official business was not conducted in English. For Christian, a master's student from an African country, the visa application and approval process delayed his start in the program:

> Maybe has to do with some document processing. Cause for me, I encountered a lot of problems. I applied for visa in Nigeria. It took 2 months, or more than that to get the results. So, I was late for like three weeks or four weeks for the program. While I was waiting for the visa, I got information that the visa can come up in three weeks. So, I waited in Nigeria for three weeks. Then, the results did not come up, then I fly back to [Home country]. So, I did the interview. And then waited for all of August and September. The results did not come out until October. So, October. Then I got the results. During the process the head of the MSc program and the head of the department were both in touch, and they were communicating with the embassy as well. But it is up to the immigration office. Because for them [the embassy] it is the immigration office that will give the go ahead, and then they will start with the process. I arrived after the beginning of the semester.

Similarly, Master's student Kalman described the procedural hurdles of moving to Hungary and emphasized how hard the process was financially:

> The exam was fine, I got accepted. And then since I am from [African country], it is quite far. I cannot afford myself. I need to apply for travel grant, but I didn't get it [laughs], so I had some ideas. In the end, my cousin helped me but it was quite a bit late. So, uh, I'm trying to find some help, the university was helpful, professor called me many times [to see] if I need help. That was very, I guess, good. Like, in my country now there is no [Hungarian] embassy. So, I tried to discuss with the consulate to see if we could arrange with - the Hungarian embassy is represented by the Swiss embassy - but they could not do it. So, I had to move to Pretoria for 1 month, applied for it. It's quite hard, but money is very tight.

Procedurally, the move from outside the EU to Hungary was difficult and expensive, but students repeatedly emphasized how helpful IU staff and mathematics faculty were during the process, allowing Christian to start the semester late, and helping students to navigate the complicated immigration processes and requirements.

Second, from the perspective of faculty and students, changes to Hungarian Law regarding higher education did not impact their day-to-day lives as mathematics faculty and students. This was, in part, because the laws only impacted new students, but it was also because students and faculty saw political issues as separate from their work as mathematicians. Furkan explained that he was not concerned about the political situation impacting his studies at IU.

> Laura: Has the government in Hungary has influenced your experience as a student at IU? Has it influenced you?
>
> Furkan: I don't think so. Like not at all, for me personally. It depends on how you take the things happening around you. And since we do something that is totally unrelated to real life . . .Or what I meant, is the political sphere. Of course, mathematics influences real life and all the practical things. But like, in social ways and political ways, it doesn't really affect us. Like, so far, here happens some problems and some uncertainty about the university. But that is only for new students who are not enrolled . . . Like students who are already enrolled, they can finish their studies. Like the laws are not retroactive, so it's fine principally for me.

Furkan echoed other current students who were not concerned because the new law only impacted new students, but he also described a lack of concern because he viewed mathematics as distinct and separate from the political sphere. Similarly, Istvan sought to minimize the impact the legislation would have on the IU mathematics program by emphasizing the academic strength of the program,

> It is a political issue. Scientifically, this is a good thing. We [IU] are recognized well in Hungary, and people who teach here are proper mathematicians. So, it [IU Mathematics graduate degree] is considered a good degree. We have many students who go on to postgrad institutions, it is no problem.

Istvan did not seek to diminish the impact of the legislation on IU, especially if the institution were forced to leave the country, but he also emphasized that IU was a well-regarded institution that compensated faculty well so they could afford to relocate.

However, the mathematics department was impacted by Hungarian higher education law: early in the history of the mathematics program, IU had been prevented from becoming an accredited program in Hungary because the program was too small to meet accreditation requirements (e.g., they would have needed to add seven more faculty to the program). Faculty member Istvan explained the requirements for accreditation:

> The PhD program was initiated in 2000 or 2001. And then they tried to become accredited in Hungary. But to get accreditation, a PhD program needs to have a master's program. So, they [IU] introduced the master's program, and hired one more faculty . . . We couldn't actually follow through accreditation in Hungary because apparently, we need many more faculty. So, we would need to hire seven more faculty. We are on financial cap. That is insane from a financial perspective.

The lack of accreditation in Hungary meant that the future of the department was directly impacted by new Hungarian accreditation laws that would impact what IU programs could stay in Hungary. These laws made the department subject to political "issues" even if those issues were not mentioned as a concern for faculty and students.

Finally, Hungarian law required that any degrees received outside of Hungary be officially recognized in Hungary, which required faculty coming to work at IU to have their degrees officially recognized. Istvan explained the process of getting his degree officially recognized by Hungary:

> It has to be made Hungarian official recognition. Which is done case by case . . . At that time, we [Hungary] were not members of the European Union, so I had to renationalize it. I had to make it officially a Hungarian PhD. If it is a post-graduate degree, they would have

> to… it's a really brief process, like two months or one month. You have to pay this amount, and then you get a paper saying it is official.

This requirement also impacted students graduating from the IU Mathematics program. Because the program was not accredited in Hungary, graduates who wished to stay and work in Hungary had to get their degrees officially recognized.

Challenges Created by IU Institutional Structure

Although IU staff supported student's transitions to IU and all participants were fully funded, students perceived the institutional support for the mathematics department to be lacking. Although students were advised by and took classes from faculty at surrounding research institutions and other institutions, the number of full-time faculty was small. However, the IU mathematics department had a special relationship with a mathematics research institute in Hungary, so graduate students were often advised by and took classes from researchers at that research institute or other local universities.

Related to the small size of the department, many students felt that the mathematics department was neglected by IU. Students perceived that they were neglected by the institution because they lacked a student working space and were separated from the main campus in an older building with limited classroom space. Furkan described how he felt the program was neglected:

> For a lack of better words, we are neglected. Because, let's say for example, they're recently renovating the buildings and making new buildings. And put most of the important departments there. But we are conveniently left out in the old buildings. . . So, like, I really feel at home in this department. But like, university wise, not so much. I feel like our department is left out.

Perhaps because the Mathematics program had not been included in recent improvements to IU institutional spaces, there were also a limited number of spaces for students to work together and collaborate. The lack of a student space was frustrating for master's and doctoral students, but especially doctoral students who compared their workspaces to the workspaces of peers in other programs. Doctoral student Erika described her frustration with the work space available:

> The math department is very small and it is not located in a new building. And students do not have office room. So, we can't stay in one room. I know I have a friend, and he is from [another program] and they have an office and they always stick together and discuss problems and something. But for us, I think we discuss online.

The lack of a student space to collaborate and separation from other programs prohibited students from meaningfully connecting with students from other programs. Benjamin described his need for spaces to collaborate: "We are kind of like detached from the different department, and like most other students don't even know that it exists. So, therefore I think it might be interesting to make, kind of more collaborate with them." The lack of space to work made it difficult for students to work together on coursework and research and the disconnect from the main campus made it difficult to collaborate with students in other programs.

Faculty, however, did not perceive this as a problem, emphasizing to students the importance of independent work. Despite a perceived lack of support, IU provided supports for students outside of academics. For example, IU's standard funding package that most students received was comprehensive and covered tuition, rooming, and a living stipend. IU support staff and program faculty assisted students, when possible, with immigration issues and questions. Although the institution may have neglected the department, individual students felt they were well-supported by the institution in order to allow them to study at IU.

Challenges Created by IU Math Department Structure

IU's master's curriculum, including mandatory courses, did not require any prerequisite coursework. Students reported being the most challenged by courses where they had no background knowledge. Szabolcs explained, "But here there is really no strong prerequisite system, so that you really can't take a course by definition if you haven't done something. If you talk to professor, okay I was learning this and this, and he says okay you can come, you can do the course. It may be a bit harder, but you can come, usually." The lack of a prerequisite system did not mean, however, that prerequisite knowledge would not have been helpful for most courses. Christian explained that he struggled the most with functional analysis because he did not have a strong foundation in the algebra and analysis knowledge that the course was built on.

Students reported being frustrated most when they lacked a mathematics background in mandatory courses. The structure of both the master's and doctoral degree programs had mandatory courses that most took in the first year of the program (two years for master's students, three for doctoral), although the doctoral program had far fewer required courses (1-2 every semester versus 3-4). The lack of background knowledge in required mandatory courses was most frustrating when those courses did not align with their interests. Andras explained his frustration with required pure mathematics coursework:

> In the PhD for example, most of them study the applied mathematics, but [one] needs to take the pure mathematics I have taken, but [they] will never use it. For me, it seems like a waste of time. Okay it is good, but she will not use it and she will probably forget it. And I think it is better to take some other course that is what you want to study . . . I don't know, I see it as a waste of time, because it's not using the time effectively.

While master's and PhD students acknowledged the need for some mandatory courses, Master's students felt the number of required courses (2/3 of the coursework) was too big or that there should be an element of choice within the mandatory course requirements.

Even for mandatory courses that students did not struggle with, they still viewed them as a chore, something to be endured: "I think the first year especially PhD student, is not very colorful. You have four very tough mandatory lectures. You have many homeworks and uh examinations. So, the first year is not very interesting" (Erika). In response, faculty sought to create courses that would provide foundational knowledge for students new to the course but still challenge students who had completed coursework previously. Because students arrived at IU with varying mathematical backgrounds, this curriculum structure, or lack thereof, was an intentional decision made by departmental faculty to ensure that access to courses was equitable for all accepted students. IU students came from a variety of institutions and degrees, and some were completing their second Master's degree at IU, so background knowledge varied greatly. However, students still felt that the requirements were excessive and disconnected them from the mathematics topics they were passionate about.

Challenges Created by STEM Discourses

Critically, understanding the experiences of graduate students in STEM requires understanding how STEM discourses coordinated their experiences and created challenges. The discourse of difficulty was a pervasive discourse that faculty used to explain why their exams were so difficult, particularly Arthur's use of oral exams, and used by student participants to explain the expectations for coursework and research. Coursework was designed to be difficult and time-consuming:

> They give you the homework questions, and these are not easy questions so you have to spend time on them. From week to week, I spend like 6-8 hours on just one class. And if I have four classes, then my whole week was solving questions. Because they are not easy, but if you can solve them then it shows that you understood the class. So, then they give grades based on your homework performance (Tamas).

The need for difficult coursework was reinforced because of the difficulty of the topic: "Because of their nature, they are very complex" (Christian). Students, especially, viewed the difficulty of coursework as a natural part of doing coursework in the field of mathematics.

Similarly, it was expected that exams should be difficult, and although some faculty deliberately made exams easier because the time to take the exam was limited while the time to complete coursework was perceived to be unlimited. However, other faculty designed the exams specifically to be exceptionally challenging and require students to respond in real time through the use of oral exams. A master's student explained the use of oral exams:

> So, for some, they will tell you it is going to be an oral exam. So oral exam, that means you have to know everything. That is why it is difficult. And you cannot leave anything behind. So, you come, and they give you a list of questions, and they say okay answer these two questions. So, for real analysis, example that happened, and they say 30 minutes or less, answer these questions of these topics, and remember everything, every proof, every letter, definition that was on there. And then write everything down. So, you can just kind of sketch for example, and then you present. You sit with them like this and say this is what I'm doing here and this is why I'm doing this. So, then they will start asking questions, based on those things. Then while you are talking, you will see what he likes and then he will depend on that [?]. That why it is difficult for oral exams. So, they orals, they will tell you what type of questions can come. There are some course that are not exam material. So, they are very complex and they can consist of things like assignments, but you cannot do it in exams.

Arthur, a faculty member who used oral exams, explained why he used them in all of his classes:

> [Students] take the oral exams to see if you're really worth the grade I will give you. And you have to know all of the material of which you have learned the whole year. That's it. You have to know exactly the definition, what the proofs are. So that you have to have a general idea of what you have learned. This is something totally different, and to them it could be quite stressful stuff.

Similar to the discourses that coordinated the difficulty of coursework, the need for coursework to be difficult was accepted as a necessary part of course work.

Additionally, the discourses of individualism and competition reinforced the discourse of difficulty and created additional challenges meeting course and research expectations for students. The discourse of individualism was reinforced to students by faculty when they referenced the importance of independent work. Arthur explained, "I expect students to be willing to learn by themselves," and students described the expectation that they work alone, "It's almost not the same, for most programs, for most classes, they encourage you to go and find out more than being given everything" (Christian) and "Like combinatorics, you can find the answer online sometimes, but it is forbidden" (Erika). Similarly, faculty described an intentionally competitive climate because this was the reality of mathematics study:

> Any intellectual activity is actually a social activity. So, you are fighting, you are struggling with other people, and you are trying to show if they are better. Are you actually as good as they are, are you smarter than those guys. And you can just think, okay I can give up, they are much better. So those things, they don't use it. Okay, that… that's something that there are students that never experience this feeling. But at least I guess, I expect the students to do this.

Interestingly, this realization that intellectual activities were social activities when it came to competition did not reflect in the expectation that students work independently, suggesting that students should compete with each other but not work with each other.

Faculty had certain expectations of student behavior and academic performance that were internalized by participants. Faculty expected that students would be dutiful, which was evident by attending class on time and paying attention in class and expected that students work hard. Faculty expressed to students that if they worked hard, they would be able to successfully complete the required coursework: "I have discussion with professor, and he told me 'if you worked regularly, you do not have to worry about exams.' [laughs] and that's true . . . like if you just do the homeworks, and worked hard, you don't really have to worry about it. Like everything should go smoothly if you work properly" (Kalman). These suggested to students that, to faculty, evidence of hard work in a course might be considered successful, although faculty also emphasized the importance of students asking questions and coming to office hours when they needed help.

However, faculty also expected that students came to IU with a certain foundation of knowledge and that they would be able to succeed academically. Istvan described the purpose of the mathematics admissions entrance exams, which were to determine not just if the applicant could be successful, but if they deserved to be there. Istvan described a required element of ability that determined success in mathematics and felt that some individuals were more intrinsically capable and therefore more deserving of a mathematics education at IU than others. A belief in students who had that capability led some faculty to persuade promising students to continue their work, even if the student did not believe they were capable. The impact of that belief influenced Furkan to pursue his PhD at IU:

> So, his idea was basically like, so I had sort of like we call it imposter syndrome. Like, I didn't think I was good enough for that . . . Yeah for the PhD because it is famously difficult to do a PhD in mathematics. Well, like, but while I was writing my master's dissertation, it turned out to be unexpectedly good. I managed to do a tiny bit of original work. But it was original and like, he was impressed with that. He said like, you know maybe I could be good at academia. And he said like just give it one more shot. Just do the PhD and then decide what to do.

In addition to the knowledge and capability that students came into the program with, faculty expected that students would be prepared to be able to communicate math knowledge. The need to communicate math knowledge was described by Istvan:

> If the students give a talk, that is fresh, his passion is felt by the audience, that's the best. And then this is what they have to convey. It is a really interesting topic because of this… they can do it, it's great. But of course, we try to criticize those points, which could have done this better. But also, at which he achieved his goal. But it's not, you learn something, and you present it. You have to do it where you… it's not just learning. When you learn it over a class, that's basically a mathematician.

The master's program included a required seminar course where students would conduct an independent project and present it to their peers in a two to three-hour session at the end of their first year of coursework. The emphasis on communication was also evident in the use of oral exams, which required students to orally respond to mathematic questions without the use of resources or support. In mathematics education at IU, faculty reinforce and students internalized the discourses of difficulty, individualism, competition, and what it looked like to be an ideal student, and those discourses coordinated the teaching and learning behaviors of faculty and coordinated the work of students, their expectations for their own work, and how they perceived success.

DISCUSSION

With this research, we sought to understand how different political climates and policy requirements impact the practices of STEM in higher education. Although students and faculty at IU were aware of the political discourses surrounding higher education in Hungary, they largely felt that their work as mathematicians was not largely impacted by threats to academic freedom and institutional autonomy. Instead, these findings suggest that many of the same discourses that coordinate the work of STEM students in higher education persisted to create similar challenges for IU mathematics students. Importantly, however, in some ways, these discourses isolated students from political pressures, as faculty strove to reinforce that research and, broadly, mathematics, was isolated from the 'real world.' However, students were still impacted by Hungarian policy, specifically the requirements for non-EU citizens immigrating to Hungary to study at IU.

Recent amendments to Hungary's higher education laws had impacted institutional autonomy and academic freedom for higher education institutions in Hungary. Budget reforms cut public funding to higher education, which limited the number of students higher education institutions could admit, and significantly reduced student enrollment between 2012 and 2018 (Matthews, 2017). Additionally, in 2018, the Hungarian government stopped funding gender studies programs and took direct control of funding at the Hungarian Academy of Sciences in order to control where research funds are going to "generate a payoff for society" (Witte, 2018), limiting institutional autonomy and academic freedom in Hungary. However, despite these well-publicized policy changes, the students and faculty that participated in this study were not concerned that the laws might push them out or affect their department. In fact, the student participants explained that the new laws only impacted new students, and that they were allowed to continue their studies at IU. The faculty members were also not concerned with the recent legislation in Hungary, implying that the mathematics department was relatively safe because a mathematics degree at IU was regarded as rigorous by fellow academics. The students and faculty emphasized that the work they did in the mathematics department was separate from the political issues in Hungary. They felt that the legislation that affected institutional autonomy and academic freedom did not impact them directly, but they were also aware of the possibility that they may need to leave the country due to the political issues surrounding higher education institutions. These findings, while unique to Hungary's political situation, align with prior research that suggests that a predominant discourse guiding STEM in Higher Education is the objectivity of scientific knowledge (Hesse-Biber, 2013; Parson & Ozaki, 2017). The objectivity of scientific knowledge is described as knowledge being disconnected from human influence, and, therefore separate from the influence of human influence and political processes. This discourse of objectivity provides some insight into these findings as participants may have been seeking to disconnect their studies from the surrounding political context.

Second, findings suggested that prevalent discourses in STEM that coordinate student and faculty work, such as individualism, competition, difficulty, and ideal student characteristics, continue to persist across institutions, degree levels, and geographic locations. These findings reinforce prior research that has found that the chilly climate persists for women in STEM despite individual interventions designed to increase the retention of women and underrepresented groups in STEM (De Welde & Laursen, 2011; Herzig, 2004; Lindemann, Britton, & Zundl, 2016; Šidlauskienė & Butašova, 2013). Likewise, although IU strove to support students financially and academically, IU did not provide support in ways that contradicted these predominant discourses. Interestingly, the unique nature and mission of IU as an international institution that accepted students from around the world contributed to an academic structure that mitigated elements of a traditional chilly climate. Because courses did not require prerequisite knowledge, courses were more accessible to students with a variety of academic backgrounds. However, the admissions process still required a certain level of foundational mathematical knowledge to successfully complete the entrance exam, and faculty described the admissions process as trying to identify students who had the ability to be successful. This view of ability as fixed, in contrast to a growth mindset (Dweck, 2006), reinforced the idea of ability as fixed, a way of viewing ability that often reinforces traditional stereotypes about who will be successful in science and mathematics. Finally, the contradiction between student concerns about a lack of space to collaborate and faculty urging students to work alone creates a spatial example for how environments and spatial decision-making can reinforce discourses like individualism. If faculty do not see collaboration as a priority, they might not see creating a space for collaboration as a program priority.

Altogether, findings reinforced prior research conducted primarily in the United States and Western Europe that have found that the discourses of individualism, competition, and difficulty coordinated and organized the teaching and learning climate (Fransceschini, Galli, Chiesi, & Primi, 2014; Gonsalves, 2014; Leathwood, 2006; Lindemann, Britton, & Zundl, 2016; Sallee, 2011; Sanabria & Penner, 2017). By extending the research to different institutions and expanding to include graduate education, the present findings suggest that that discourses previously found to coordinate the experiences of STEM in higher education are not limited to institutions in the United States and United Kingdom. These findings reinforce calls to focus attention on the institutional environment of STEM in Higher Education and work to recreate the institution instead of continuing to rely on individual interventions that seek to remake individuals to fit the institution instead of revising the institution to be more inclusive for all individuals. The unique nature and mission of IU makes it less of a chilly climate – IU understands that the students accepted will have different backgrounds, and so therefore instructors have to scaffold courses so that those from different backgrounds will be successful. On the other hand, this also reinforces the perception that ability for math is fixed because how else can they know that students can be "successful" when making admissions decisions.

Recommendations

The first step toward improving the chilly climate in STEM fields requires revising the STEM institution from one that is masculine to one that is inclusive for all students with the goal of creating a STEM education environment that supports, validates, and gives students an equal voice (Sidlauskiene & Butasova, 2013). Changes need to focus on remaking the institution instead of remaking individuals to fit the STEM institution (Sidlauskiene & Butasova, 2013). This process is daunting and lengthy and requires transformation at three levels: student, faculty, and institution. For example, some methods of institutional change found to be effective for reducing marginalization of women faculty and administrators include the empowerment of STEM faculty and administration as decision makers, organizational structure changes, clear career progression paths, hiring women faculty, policies that support work-life-family balance, consistent progress reports, and the establishment of clear indicators of success (Sidlauskiene & Butasova, 2013). For students, similar methods of institutional change could include empowering students by giving them decision-making power, such as course enrollment choices, undergraduate research options, and in classroom projects. Finally, it is important to explore a variety of institution types in diverse settings in order to truly understand the institutional factors that contribute to a chilly climate for underrepresented groups. We hope that by providing an international perspective, we have explored trends in institutional factors that should be continued in future research.

Future Research

This work largely focuses on the institutional factors that contribute to a chilly climate for underrepresented groups in STEM education. Additionally, we look at how the political environment of an authoritarian government influences the everyday work of students at an international university. Subsequent inquiries guided by this work can extend to additional institutional environments in Hungary and in other authoritarian countries where academic freedom and institutional autonomy are challenged in order to understand how political reform and institutional factors play a role in creating challenges for students from underrepresented groups. Other future inquiries can explore discourses that contribute to the chilly climate in STEM with an international perspective, to explore if these discourses are consistent across different types of universities around the world.

Conclusion

It is important to explore a variety of institution types in diverse settings in order to truly understand the institutional factors that contribute to a chilly climate for underrepresented groups. Additionally, since the chilly climate has been found to contribute to a decreased sense of belonging or a perception that women's identities are incompatible with STEM (Ahlqvist, London, & Rosenthal, 2013; Good, Rattan, & Dweck, 2012; Sallee, 2011; Griffin, Gibbs, Jr., Bennett, Staples, & Robinson, 2015), we see the findings as important because they reinforce how important challenging dominant discourses are to remaking the STEM in Higher Education Institution to be more inclusive and supportive. We hope that by providing an international perspective, we can explore trends in institutional factors in order to make recommendations that mitigate or reverse the traditional competitive and intimidating STEM classroom environment.

REFERENCES

Adler, P. A., & Adler, P. (2003). *The reluctant respondent.* Thousand Oaks, CA: Sage Publications, Inc.

Ahlvqist, S., London, B., & Rosenthal, L. (2013). Unstable identity compatibility: How gender rejection sensitivity undermines the success of women in science, technology, engineering, and mathematics fields. *Psychological Science*, *24*(9), 1644-1652. https://doi.org/10.1177/0956797613476048

Campbell, M., & Gregor, F. (2002). *Mapping social relations: A primer in doing institutional ethnography*. Walnut Creek, CA: AltaMira Press.

Carspecken, F. P. (2013). *Critical ethnography in educational research: A theoretical and practical guide [Kindle reader version]*. New York, NY: Routledge.

Creswell, J. W. (2013). *Qualitative inquiry & research design.* Thousand Oaks, CA: Sage Publications.

Deemer, E. D., Thoman, D. B., Chase, J. P., & Smith, J. L. (2014). Feeling the threat: Stereotype Threat as a contextual barrier to women and science career choice intentions. *Journal of Career Development*, *41*(2), 141-158. https://doi.org/10.1177/0894845313483003

De Welde, K., & Laursen, S. L. (2011). The glass obstacle course: Informal and formal barriers for women Ph.D. students in STEM fields. *International Journal of Gender, Science, and Technology*, *3*(3), 571-595. Retrieved from http://genderandset.open.ac.uk/index.php/genderandset/article/download/205/363

Dweck, C. S. (2006). *Mindset.* New York, NY: Random House.

Eurydice (2018, December 27). Hungary: Higher education. *Eurydice.* Retrieved from https://eacea.ec.europa.eu/national-policies/eurydice/content/higher-education-35_en

Franceschini, G., Galli, S., Chiesi, F., & Primi, C. (2014). Implicit gender-math stereotype and women's susceptibility to stereotype threat and stereotype lift. *Learning and Individual Differences*, *32*, 273-277. https://doi.org/10.1016/j.lindif.2014.03.020

Gasiewski, J., Eagan, M., Garcia, G., Hurtado, S., & Chang, M. (2012). From gatekeeping to engagement: A multicontextual, mixed method study of student academic engagement in introductory STEM courses. *Research in Higher Education*, *53*(2), 229-261. https://doi.org/10.1007/s11162-011-9247-y

Gonsalves, A. (2014). Persistent discourses in physics education: Gender neutrality and the gendering of competence. *Cultural Studies of Science Education*, *9*, 461-467. https://doi.org/10.1007/s11422-012-9423-1

Good, C., Rattan, A., & Dweck, C. S. (2012). Why do women opt out? Sense of belonging and women's representation in mathematics. *Journal of Personality and Social Psychology*, *102*(4), 700-717. https://doi.org/10.1037/a0026659

Griffin, K. A., Gibbs, Jr. K. D., Bennett, J., Staples C., & Robinson, T. (2015). "Respect me for my science": A bourdieuian analysis of women scientists' interactions with faculty and socialization into science. *Journal of Women and Minorities in Science and Engineering*, *21*(2), 159-179. https://doi.org/10.1615/JWomenMinorScienEng.2015011143

Harding, S. (2009). Standpoint theories: Productively controversial. *Hypatia*, *24*(4), 192-200. https://doi.org/10.1111/j.1527-2001.2009.01067.x

Hesse-Biber, S. J. (2013). *Feminist research practice: A primer.* Thousand Oaks, CA: SAGE Publications, Inc.

Herzig, A. (2004). 'Slaughtering this beautiful Math': Graduate women choosing and leaving mathematics. *Gender and Education*, *16*(3), 379-395. https://doi.org/10.1080/09540250042000251506

Karáth, K. (2018). Hungarian science troubled by nationalism: Government standoff with Central European University is coming to head. *Science*, *360(*6389), 584-585. https://doi.org/10.1126/science.360.6389.584

Kováts, G., Heidrich, B., & Chandler, N. (2017). The pendulum strikes back? An analysis of the evolution of Hungarian higher education governance and organizational structures since the 1980s. *European Educational Research Journal*, *16*(5), 568–87. https://doi.org/10.1177/1474904117697716

Leathwood, C. (2006). Gender, equity, and the discourse of the independent learner in higher education. *Higher Education*, *52*(4), 611-633. https://doi.org/10.1007/s10734-005-2414-3

Lindemann, D., Britton, D., & Zundl, E. (2016). "I don't know why they make it so hard here": Institutional factors and undergraduate women's STEM participation. *International Journal of Gender, Science, and Technology*, *8*(2), 221-241. Retrieved from http://genderandset.open.ac.uk/index.php/genderandset/article/download/435/791

London, B., Rosenthal, L., Levy, S. R., & Lobel, M. (2011). The influences of perceived identity compatibility and social support on women in nontraditional fields during the college transition. *Basic and Applied Social Psychology*, *33*(4), 304-321. https://doi.org/10.1080/01973533.2011.614166

Marcus, J. (2014). The erratic path of Hungarian higher education. *Change: The Magazine of Higher Learning*, *46*(3), 37-44. https://doi.org/10.1080/00091383.2014.905427

Matthews, D. (2017, August 24). The state of higher education in Hungary. *Times Higher Education*. Retrieved from https://www.timeshighereducation.com/features/the-state-of-higher-education-in-hungary

Mervis, J. (2011). Weed-out courses hamper diversity. *Science*, *334*(6061), 1333. https://doi.org/10.1126/science.334.6061.1333

Morganson, V. J., Jones, M. P., & Major, D. A. (2010). Understanding women's underrepresentation in science, technology, engineering, and mathematics: The role of social coping. *Career Development Quarterly*, *59*(2), 169-179. https://doi.org/10.1002/j.2161-0045.2010.tb00060.x

OECD (2015, November). *Education policy outlook: Hungary*. Retrieved from http://www.oecd.org/education/Hungary-Profile.pdf

Onwuegbuzie, A. J., & Leech, N. L. (2007). Validity and qualitative research: An oxymoron? *Quality & Quantity*, *41*(2), 233-249. https://doi.org/10.1007/s11135-006-9000-3

Parson, L., & Ozaki, C. C. (2017). Gendered student ideals in STEM in higher education. *NASPA Journal About Women in Higher Education, 11*(2), 171-190. https://doi.org/10.1080/19407882.2017.1392323

Parson, L., & Steele, A. (2019). Institutional autonomy and academic freedom in Hungary: A historiography of Hungarian higher education. *College and University, 94*(4), 10-23.

Saldaña, J. (2016). *The coding manual for qualitative researchers.* Thousand Oaks, CA: SAGE Publications Inc.

Sallee, M. W. (2011). Performing masculinity: Considering gender in doctoral student socialization. *Journal of Higher Education*, *82*(2), 187-216. https://doi.org/10.1353/jhe.2011.0007

Sanabria, T., & Penner, A. (2017). Weeded out? Gendered responses to failing calculus. *Social Sciences*, *6*(2), 1-14. https://doi.org/10.3390/socsci6020047

Sartorius, K. C. (2010). Experimental autonomy: Dean Emily Taylor and the women's movement at the University of Kansas. *Kansas History: A Journal of the Central Plains*, *33*(Spring), 2-21. Retrieved from http://emilytaylorcenter.drupal.ku.edu/sites/emilytaylorcenter.drupal.ku.edu/files/taylor-article.pdf

Shapiro, C. A., & Sax, L. J. (2011). Major selection and persistence for women in STEM. *New Directions for Institutional Research*, *2011*(152), 5-18. https://doi.org/10.1002/ir.404

Šidlauskienė, V., & Butašova, K. (2013). Designing gender equality as institutional transformation at a higher education institution. *Gender Studies & Research*, *11*, 50-69. Retrieved from https://etalpykla.lituanistikadb.lt/object/LT-LDB-0001:J.04~2013~1407398427639/J.04~2013~1407398427639.pdf

Smith, D. E. (2005). *Institutional ethnography: A sociology for people*. Lanham, MD: Altamira Press.

Smith, D. E. (2006). *Institutional ethnography as practice*. Lanham, MD: Rowman & Littlefield Publishers, Inc.

Trujillo, G., & Tanner, K. D. (2014). Considering the role of affect in learning: Monitoring students' self-efficacy, sense of belonging, and science identity. *CBE – Life Sciences Education*, *13*(1), 6-15. https://doi.org/10.1187/cbe.13-12-0241

UNESCO (2018). Hungary. *UNESCO Institute of Statistics*. Retrieved from http://uis.unesco.org/country/HU

Vogt, C. M., Hocevar, D., & Hagedorn, L. S. (2007). A social cognitive construct validation: Determining women's and men's success in engineering programs. *The Journal of Higher Education*, 78(3), 337-364. https://doi.org/10.1353/jhe.2007.0019

Wilson, L. (2018). State control over academic freedom in Hungary threatens all universities. *The Guardian*. Retrieved October 20, 2018 from https://www.theguardian.com/higher-education-network/2018/sep/06/state-control-over-academic-freedom-in-hungary-threatens-all-universities

Witte, G. (2018). Amid illiberal revolution in Hungary, a university with U.S. roots fights back. *The Washington Post*. Retrieved September 04, 2018 from https://www.washingtonpost.com/world/europe/amid-illiberal-revolution-in-hungary-a-university-with-us-roots-fights-to-stay/2018/09/03/7061771c-a547-11e8-a656-943eefab5daf_story.html

BIOGRAPHIES

Laura Parson is an Assistant Professor in the Higher Education Administration Program at Auburn University and Higher Education Administration MEd/PhD Program Coordinator. Her Ph.D. is in Teaching & Learning, Higher Education from the University of North Dakota. Her research interests focus on identifying the institutional practices, processes, and discourses that coordinate the teaching and learning experiences of women in higher education, explored through a critical lens. She is a qualitative methodologist, with a focus on ethnographic and discourse methods of inquiry.

Ariel Steele is a Doctoral Graduate Student in the Higher Education PhD program at Auburn University. She has an MS in Biological Sciences from Auburn University. Her research interests focus on the intersections of gender and STEM education and on understanding how discourses impact the experiences of women in STEM higher education using institutional ethnography and critical discourse analysis. Specifically, her research focuses on understanding the experiences of women in STEM undergraduate and graduate programs and how discourses can contribute to or perpetuate the "chilly climate" that makes it challenging for women to persist.