

Virtual Learning: A Cognitive and Sociocultural Perspective for Rehabilitation Counselor Educators

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An instrumental case study was conducted to document the impacts virtual learning had on two university students during the coronavirus disease-2019 (COVID-19) pandemic through cognitive and sociocultural approaches. This study provides an analysis of schemata presenting as a contributing factor to transfer and accumulation of knowledge and positive academic outcomes in two university graduate students through the sporadically-introduced learning formats as a result of COVID-19. This study also examined resilience and competency as mediated means to navigating virtual learning during the COVID-19 pandemic. The author describes how schemata of resilience and competency were found to be significantly associated with transfer of knowledge, accumulated knowledge, and positive academic outcomes in two university students. The author also described how affordances provided by resilience and competency as mediated action contributed to positive academic performance and outcome in two university students. This study draws from semi-structured interviews conducted in-person and provided complementary insights into how learning occurs. These insights are reflected in the discussion section.

Keywords: virtual learning, schema-based theory of transfer, mediated action, rehabilitation counselor education

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Prior to the COVID-19 pandemic, most university students were accustomed to in-person learning and considered it a preference in how they chose to learn. The pandemic unexpectedly introduced different learning formats including virtual and remote learning, allowing students to experience learning in a different way—consequently stirring anxiety and depression (McAlpine, 2021), compelling students to strengthen and transfer existing schemata. It was useful to study and understand the process of how two university students were able to navigate learning during the COVID-19 pandemic through the lens of schema-based theory of transfer and mediated action.

A schema is a cluster of knowledge representing a particular generic procedure, object, percept, event, sequence of events, or social situation. This cluster provides a skeleton structure for a concept that can be instantiated, or filled out, with the detailed properties of the particular instance being represented (Reed, 1993).

Long before students begin school, they develop schemata about everything they have experienced. Schemata become theories about reality. These theories not only affect the way information is interpreted, thus affecting comprehension, but also continue to change as new information is received (California State University, n.d.). Relatedly, past studies (Carrell, 1983; Floyd & Carrell, 1987; Hudson, 1988; Qi & Wang, 1988) examined the effect of language competence/complexity and prior knowledge on reading comprehension and found that background information is more likely to determine the comprehension of a passage than linguistic factors. Other studies (Gatbonton & Tucker, 1971; Kintsch & Franzke, 1995; Levine & Haus, 1985; Steffensen & Joag-Dev, 1984) found that subjects who were familiar with reading content recalled and inferred significantly more ideas while those unfamiliar forgot or misinterpreted significantly more ideas.

In the cases of two university students, Wendel and Lucy (both pseudonyms), both participants shared experiences of navigating learning during the COVID-19 pandemic. During interviews, it was interpreted that learning during the pandemic was difficult and required the incorporation of certain cultural tools. Wendel deliberately relied more on to-do-lists and Google Calendar to avoid procrastination, while Lucy admitted to playing video games during her qualitative classes to stay awake.

However, these *external* cultural tools or mediated actions were inadequate in ensuring positive academic performance and outcomes. Mediated action involves the agent and their cultural tools (Wertsch, 1997). It includes various contexts and factors that constitute teaching (Wertsch, 1991). Both participants benefited from *internal* cultural tools, resilience and competency, as mediated means of navigating learning during the COVID-19 pandemic. Resilience is defined as a process of positive adjustment to adversity (Pakenham et al., 2018) and one's ability to withstand or adaptively recover from stressors (Aiena et al., 2015). Competency is defined as those direct and indirect skills and behaviors that allow individuals to perform given tasks or assigned roles effectively (Draganidis & Mentzas, 2006). More specific to learning, competency is the ability to perform teaching or educating tasks gained through education and training (Sahertian, 1994).

School effectiveness is influenced by external and internal factors (Rahayu et al., 2018). In the context of education, resilience has been found to help students overcome stressful situations and pressure arising from their studies (Vizoso-Gómez et al., 2018). Moreover, resilience is one of the main dimensions associated with psychological wellbeing and academic success (Kristjánsson, 2012). Regarding competency, classrooms are the places where the knowledge and growth of students are constructed (Kavrayici, 2020) and this construction is based on certain skills. For instance, communication, which is a vital competence, is at the core of the teaching profession in terms of teacher-student relationships (După, 2015). Communication skills are also key factors in managing classrooms and is regarded as one of the skills required to improve student learning and achieving academic goals in classroom settings (Kavrayici, 2020). Moreover, problem-solving was found to be a crucial skill that affects all life actions. Problem-solving skills support individuals' ability to cope with behavior (Heppner et al., 2002). Individuals who have high levels of problem-solving skills tend to have a democratic attitude, show critical and reflective thinking (Demirel, 2004), and build effective communication (Payne, 2001).

With regards to internal cultural tools or mediating means, Hayes (2001) examined the teaching and learning environment as it was constructed through the arrangement of social context, meaning, and action as one elementary school teacher planned and implemented science instruction in her classroom. It was reported that the most salient factor affecting the teacher's context was the socioeconomic status (SES) of students. The teacher felt that the lower socioeconomic conditions in which her students lived presented a definite disadvantage for them. Therefore, she formulated a direct connection between her students' socioeconomic backgrounds and what she felt she could reasonably expect of them in school. This *perception* of her students has meaning and is considered important for her teaching. So, she placed it into practice and used *perception* as a tool to consider appropriate teaching approaches for her students.

Efforts to understand the relationship between the task of teaching and the environment in which it occurs have taken researchers into socially oriented research including socio-cultural theory. In reference to learning science, an assumption that guides research conducted within this perspective is that

science teaching is composed within a multi-layered social environment that strongly influences the form and quality of instruction (Lemke, 1990). Additionally, a teaching and learning environment is composed of various contexts and was factors that constitute teaching in terms of what Wertsch (1991) refers to as mediated action.

Finally, it is important to me to note that almost all human action is mediated action (Wertsch, 1997). For example, when asked to solve a multi-digit multiplication problem, most individuals would place the numbers vertically in order to solve. If asked to place numbers horizontally, there may be some challenges to solving using this method. From a mediated action approach, the *spatial organization* of the numbers is an essential part of a cultural tool that contributes to one being able to solve the problem successfully (Wertsch, 1985, 1991).

Purpose of the Present Study

The author posits that to successfully produce positive academic outcomes during the unprecedented COVID-19 pandemic, university students must rely on schemata and mediated means of resilience and competency. This means, university students would have pre-existing knowledge from schemata and internal cultural tools of resilience and competency to assist with learning during the COVID-19 pandemic.

This study provides an analysis of schemata presenting as a contributing factor for transfer and accumulation of knowledge and positive academic outcomes in two university students, Wendel and Lucy (pseudonyms), through the sporadically-introduced learning formats as a result of COVID-19. This study also sought to examine mediated action presenting as a contributing factor to learning virtually and positive academic outcomes in Wendel and Lucy during the unprecedented COVID-19 pandemic.

Method

Procedure

UW-Madison Institutional Review Board (IRB) determined this study is not research involving human subjects as defined by the Department of Health and Human Services (DHSS) and the Food and Drug Administration (FDA) regulations. Therefore, the activities of this study are considered minimal risk and IRB review and approval were not required.

A convenience sample was used. The researcher emailed two university students she knew personally to participate in this case study. Individuals were included who fit the following inclusion criteria: (a) participants must have experienced virtual learning during the COVID-19 pandemic; (b) participants had to have been a university student; (c) participants had to be 18 years and older.

Participants

This instrumental case study involved two university graduate students. The two participants shared that they experienced virtual learning during the COVID-19 pandemic between years 2020 and 2021 and were selected based on their rapport with the author; and their availability and willingness to participate in this study. At the time of recruitment, both participants were pursuing their doctoral degrees. Both participants shared a similar identity with regards to age, race and ethnicity, and degree status, but different identities with regards to gender and sexuality. Wendel and Lucy (both pseudonyms) characteristics are outlined in Table 1.

Table 1*Participants' Characteristics*

Participant	Characteristics (age, gender, race/ethnicity, degree status)
Wendel	25, cisgender male, Black/African American, PhD
Lucy	25, non-binary woman, Black/African American, PhD

Wendel

Wendel, the first participant interviewed agreed to meet at a library. Wendel was a Black 25-year-old, cisgender male, and third-year PhD student. At the time of the COVID-19 pandemic, he was in the middle of his first year as a graduate student. When Wendel's studies transferred to Zoom during the Spring 2020 semester, everything was new. It was interesting for him to see the different ways people approached this new learning format. In the beginning, Wendel noticed that there was not much use of the virtual rooms. However, leading into the Fall 2020 semester there was a lot more use of Zoom features. There was a realization that three hours in real-time was different virtually therefore, it was important to be mindful of the amount of screen time students were getting. Wendel relocated to stay with family and continued his studies remotely, until Spring 2021. Spring 2021 was overwhelming for Wendel; however, it was nice for him to be back in person. Wendel compared the COVID-19 pandemic to a "snow week" in a geographical location that does not normally experience snow; where there is limited food and toiletries, panic, and everyone stayed at home. However, Wendel is unsure if there will ever be another snow week like he previously experienced because of the advancement of technology and virtual learning platforms.

Lucy

Lucy, the second participant interviewed agreed to meet at a library. The participant Lucy was a Black 25-year-old, non-binary woman, and first-year PhD student. At the time of the COVID-19 pandemic, she was completing her master's program. Her motivation for learning was decreased, and she felt like simply showing up to classes was enough. Learning virtually for Lucy was a huge adjustment, and it was made more difficult because her professors were not allowed to be flexible. She admitted to playing video games during her qualitative classes to stay awake and would review the recorded lectures for her quantitative classes outside of class time. She started to care less and put in less effort towards her academics. During the COVID-19 pandemic while learning virtually, Lucy suffered from deep depression and anxiety because her academic and personal life was becoming burdensome. She described her experiences of growing up poor and Black in a world that generally discriminates against individuals who are poor and/or Black. She mentioned that, ironically, anti-Blackness and discrimination against the poor were brought to light during the COVID-19 pandemic. She highlighted that social injustice is always there, but she still needed to get things done.

Maintaining Participant Confidentiality

The number of graduate students who experienced learning during the COVID-19 pandemic, year 2020-2021 is relatively vast. Members of academia are usually familiar with each other through their work in research and teaching positions therefore, the author purposely eliminated personal identifying information which would likely make the participants identifiable. This personal identifying information included name or initial, university, department, program of study, geographical location, health information, contact information, and any other unique identifying information.

Siebert (1992, p. 52) defines confidentiality as the researcher's "agreements with persons about what may be done with their data." Each participant in this case study provided verbal consent to participate in this study prior to the audio recorded interview. This form of consent was adequate consider-

ing this study involves no more than minimal risk to the participants; the participants were provided with an information sheet and the interview guide prior to their involvement; and the interview process included various check-ins to affirm the participants fully understood key components of the study's procedures (The Regents of the University of California, 2022). Therefore, the author assured the participants that the reports resulting from the study would not contain any information that could be used to identify them. The findings and themes have been reported in a general way that is void of specific identifiers to maintain the confidentiality of the participants.

Measures

The interview guide used was comprised of 27-items. A qualitative approach was selected because the process is open-ended and provides context, reflection, and in-depth insight into the individuals' academic experiences during the COVID-19 pandemic. A general interview guide approach is structured yet flexible in its composition (Gall et al., 2003). According to McNamara (2009), the strength of the general interview guide approach is the ability of the researcher "... to ensure that the same general areas of information are collected from each interview. This provides more focus than the conversational approach, but still allows a degree of freedom and adaptability in getting information from the interviewee" (Types of Interviews section, para. 1). For instance, in this case study, the researcher adhered consistently to an interview protocol for both participants and utilized prompts and probes based on the unique responses received by each interviewee.

Questions were derived from publish literature on knowledge transfer, mediated action, student learning experiences, and the researcher's academic experience. Questions content included the following topic areas: (1) COVID-19 pandemic and its impact on academic performance; (2) impact on grades; (3) impact on relationships with peers and professors; and (4) feelings about COVID-19 pandemic and another disaster/crisis that may be similar. Brief demographic questions were asked prior to the interview while contextualized and reflexivity interview questions were crafted to support each topic area.

Semi-Structured Interview

The researcher conducted each interview which averaged 56.5 minutes in length. The open-ended interview questions were designed to collect data on whether knowledge transfer and mediated action is a contributing factor to positive academic outcomes during the COVID-19 pandemic. The participants were asked to describe their academic performance during the COVID-19 pandemic with regards to grades, completed assignments, and emotional response. They were also asked to reflect on concerns they may have had about their relationship with peers and professors. Finally, participants were asked to identify similar disastrous or crisis events that may have prepared them for the COVID-19 pandemic. The interviews were audio-recorded and transcribed verbatim, omitting any identifying information.

Design

This study utilized an instrumental case study design to explore the learning experiences of two graduate students during the COVID-19 pandemic, year 2020-2021. With regards to schemata and mediated action, resilience and competency were investigated as contributing factors to positive academic outcomes.

An instrumental case study is utilized mainly to provide insight into an issue or to redraw generalization (Stake, 2000). For instance, the two university students interviewed for the purpose of this case study are of secondary interests however, both individuals play a supportive role in facilitating understanding of virtual learning during the COVID-19 pandemic year 2020-2021. The case of Lucy and Wendel and their activities are looked at in depth only to help the researcher pursue the external interest of schemata and mediated action of resilience and competency as contributing factors to positive academic outcomes during the unprecedented COVID-19 pandemic.

Data Analyses

Transcript from the two individual interviews comprised 64 single-spaced pages. University-issued Microsoft Office was used to facilitate qualitative analysis. Data was analyzed using descriptive and thematic coding. Themes were developed based on frequencies and patterns found in the interviewees' responses. All data collected from participants were not labeled with participants' real name or any identifying information. The researcher also refrained from mentioning the participants' names or any identifying information while the interview was being audio recorded. Each interview was transcribed verbatim and checked for accuracy two to three times by audibly comparing the transcripts with the recordings. All recordings were labeled appropriately using interviewee codes and stored using a university issued Box. Box is a free online file storage and collaborative service used to store and organize files. All information stored in Box can be accessed via the web from a wide range of devices. Box ensures files are stored and transferred securely and allows approved outside collaborators to access shared data on secure devices. Data organization and management was an essential and ongoing process of this research, and it helped with supporting, refining, and making sense of the data analysis.

After the data was transcribed, managed and organized, significant statements were identified and selected from the transcripts. These statements provided information about the participants' experience with resilience and competency during the COVID-19 pandemic. These statements reflected entire sentences and were applicable to answering the research questions. In this phase of analysis, insight was gained on how schema of transfer and mediated action contributed to learning and academic outcomes during the COVID-19 pandemic.

Response to Researcher Bias

A specific validity threat that is more serious and plausible in this study includes researcher bias. Researcher bias involves the selection of data that fit researcher's existing theory, goals, or preconceptions; and the selection of data that "stand out" to the researcher (Miles & Huberman, 1994). It is important to mention that the researcher conducted research on a topic that she personally experienced. This familiarity accompanied preconceived thoughts, beliefs, and values towards the phenomenon under observation that may be detrimental to the description, conclusion, explanation, and interpretation of this study.

In order to see the phenomenon from a fresh perspective, I took some time to "bracket" (i.e., set aside) my assumptions and judgements about the phenomenon, and document such presuppositions. This strategy is known as epoché, a Greek word employed by Edmund Husserl (Moustakas, 1994). Epoché is used by qualitative researchers with hopes of revealing new and meaningful understanding that transcends the extant knowledge about a particular phenomenon (McLeod, 2001). With regards to this study, the phenomenon is virtual learning during the COVID-19 pandemic.

This instrumental case study has facilitated in many ways my ability to reflect on the current status of university students who experienced learning during the COVID-19 pandemic year 2020-2021 and their need for refined instruction delivery that supports knowledge transfer and use of relevant cultural tools. Additionally, I reflected on my ability to personally relate to the higher educational circumstances that occurred during this time. It was imperative that I approached this study being mindful of my preconceived notions and assumptions while maintaining sensitivity and empathy to the experiences of the participants.

The interview represented a fundamental phase of the study's process and aimed to examine the learning experiences of university students during the COVID-19 pandemic, year 2020-2021. I conducted two in person interviews with Wendel and Lucy on two separate occasions. During the interviews, it was noteworthy to listen to the participants' perspective on the way their universities and professors spearheaded virtual learning. Their perspective was entirely different from my preconceived notions or assumptions. I was careful to not ask leading questions and allowed the participants to share their experience as a university student learning during COVID-19 from their perspectives. I

remained neutral as they spoke about strategies, tools, and knowledge they used to ensure positive academic outcomes. Wendel spoke confidently throughout the entire interview and steered the interview in a direction that focused on limited stimulus to keep students engaged on a virtual learning platform. Lucy too spoke with a demeanor of self-assuredness about her experience with learning during the COVID-19 pandemic, 2020-2021. Lucy's interview responses entailed student advocacy and support. She steered the interview in a direction that emphasized institutional change on the academic level.

Both interviews stimulated my interest even more in investigating the learning experiences of university students during the COVID-19 pandemic, 2020-2021. My hope was to highlight the strengths and capabilities of these individuals while bringing attention to potential learning loss and the need for refinement in instruction delivery through knowledge transfer and mediated action.

Results

Data collection and analysis from the semi-structured interviews of two university students have yielded the following findings. Table 2 illustrates themes and subthemes that emerged from the interview transcripts. Findings included the strengthening of pre-existing schemata of resilience and competency and also its use as mediated actions by participants Wendel and Lucy (pseudonyms) of this study.

Table 2

Summary of Findings

Theme	Subthemes
1—Resilience	• There was a pre-existing schema for resilience. • Emerged from Wendel's experience with employment. • Emerged from Lucy's socioeconomic background. • Participants added predictions about the COVID-19 pandemic to this schema. • Both participants utilized resilience as a mediated action/cultural tool to produce positive academic outcomes. • Participants applied useful information in their resilience schema to maintain academic performance.
2—Competency	• Both participants considered skill development as an essential tool for navigating learning during the COVID-19 pandemic. • There was a pre-existing schema for competency. • Participants strengthened this schema producing positive academic performance. • Participants utilized competency as a mediated action/cultural tool producing positive academic outcomes.

Schema-Based Theory of Transfer

Resilience

Resilience is a process of positive adjustment to adversity (Pakenham et al., 2018) and an important predictor of academic performance throughout the COVID-19 pandemic. Participants previously had a skeleton structure for resilience that was easily connected to the COVID-19 pandemic. Since both participants have never experienced a pandemic, predictions of the pandemic's outcome can occur until the information becomes clear enough to specify differences in events.

According to Wendel, a sense of purpose was replaced with a monotonous way of life. However, he continued to thrive in his academics as a result of his resilience schema achieving all As in his courses. He stated "I'm just kind of a hamster in the wheel . . . What transition am I going to make right now in the middle of a pandemic? But I am doing it because I'm just passing time, you know?" (Wendel, personal communication, October 8, 2021).

Lucy reflected on past personal events of what it meant to be Black and an individual of lower SES in society. Identifying with these intersecting identities meant her general experiences were negative and considered an ongoing crisis. Despite these negative experiences, Lucy mentioned how she has attained a level of success by being a PhD student. The experiences of thriving despite the odds contributed to Lucy's ability to pull from her resilience schema and thrive through the COVID-19 pandemic academically achieving all As in her courses.

"The communities I come from, there's a lot of ongoing problems...What it means to be Black and poor felt like we're constantly in disaster mode . . . I think it just reinforced this notion that I have of like, there are things happening, but I still have to get things done" (Lucy, personal communication, October 12, 2021).

Further, both participants confirmed that they had a preconceived cluster of knowledge that was relevant to resilience as a result of past experiences. Wendel's cluster of knowledge relevant to resilience came from his experiences with employment. He compared academic life throughout the COVID-19 pandemic to a job. He reminded himself that his position and duty as a student were essential to continuing on the journey. He stated, "I'm pretty much a student, so this is my main thing I need to do . . . It's hard to balance, it's like working on a job and you have to take it seriously" (Wendel, personal communication, October 8, 2021).

Lucy's cluster of knowledge relevant to resilience came from her experience of being from a community known for violence and death. She was not accustomed to a global pandemic but was familiar with hard times. She stated "the virus itself is new, but the other things that are happening, aren't new. And so, this is no reason to stop being productive" (Lucy, personal communication, October 12, 2021).

Therefore, a positive relationship between schema of resilience and positive academic outcomes was represented in both Lucy and Wendel.

Competency

Competencies are those direct and indirect skills and behaviors that allow individuals to perform given tasks or assigned roles effectively (Draganidis & Mentzas, 2006). The competencies demonstrated and developed by Wendel (i.e., flexibility, time management, and self-awareness) played a vital role in his academic performance. Lucy also developed her intrapersonal and flexibility skills.

Wendel strengthened his schema of competency to assist with adjusting to virtual/remote learning.

"During the pandemic, it was difficult to time manage and complete to-do lists. I procrastinated a lot during the pandemic. I think I'm more equipped if I had to go back remote or virtual. I think the three skills developed...flexibility, better time management, more self-awareness" (Wendel, personal communication, October 8, 2021).

Lucy had a different experience as it relates to competency at her university's master's program during the pandemic. She described feelings of tension because her program was unwilling to be flexible during unprecedented circumstances of the COVID-19 pandemic. She reflected on a professor who was fairly new and willing to provide accommodations to help lower stress levels among students; however, the program disagreed so it stopped. Lucy emphasized the need for flexibility during the COVID-19 pandemic and felt that if professors acted accordingly, she may have gotten more done. Lucy highlighted the importance of strengthening one's schema when facing a new situation like the COVID-19 pandemic. For the most part, professors at Lucy's master's program university did not demonstrate the ability to develop new or strengthen existing skills with regards to teaching virtually during the COVID-19 pandemic, which affected her ability to strengthen some existing skills.

"I think in a math class just being able to have a whiteboard...is such an underrated...I wish the professor would have had access to [a whiteboard]...Not only do we not know how to interpret it [math virtually], but the professor doesn't even know how to teach it [virtually]. And so, it was like both groups of people just struggling" (Lucy, personal communication, October 12, 2021).

However, when Lucy was able to complete an assignment that resonated with her, the results were positive. She stated, "I was suffering from a lot of deep, deep, deep, deep depression and anxiety. And so, I don't think I felt enthusiasm about any assignments except for one" (Lucy, personal communication, October 12, 2021).

Wendel's ability to strengthen his competency schema assisted with him adjusting to virtual/remote learning. Lucy felt that if professors were allowed to demonstrate more flexibility and range in skill, it would have, in turn, helped students to develop some existing skills and adjust better to virtual/remote learning.

Further, as a result of strengthening the existing schema of competency, there was a positive association between the schema of competency and academic outcomes. According to Wendel, "virtual learning didn't impact my grades" (Wendel, personal communication, October 8, 2021) Lucy stated, "there was one class I almost got a B in, but I was able to finesse it in such a way that I figured out the formula for grading" (Lucy, personal communication, October 12, 2021).

Mediated Action

Wendel

Wendel presented good use of the internal mediated actions of resilience and competency which contributed to positive academic outcomes. Wendel stated that he never had to work through a global pandemic but his past experiences with employment instilled the discipline to see his work through to the end. According to Wendel, academic life throughout the COVID-19 pandemic was treated like an on-the-job experience, which required certain tools to get the job done. This can be interpreted as the use of the cultural tool resilience. He stated that his position and duty as a student were essential to continuing his academic journey. He also stated that he recognized the importance of balancing personal and academic life while taking academics seriously. Consequently, Wendel's grades were not negatively impacted during remote/virtual learning.

Further, Wendel expressed that it was difficult to practice time management and complete tasks on time during the pandemic. He mentioned the importance of developing competency during this academic journey. Wendel stated he developed flexibility, time management, and self-awareness skills in order to produce good grades. As a result, Wendel stated virtual learning did not impact his grades negatively. Wendel utilized the mediated action of competency to successfully perform academically. As a result, Wendel stated he is more equipped if he had to go back to remote or virtual learning.

What Wendel described was the relationship between his human actions and the cultural, institutional, and historical context in which the action occurred. From the perspective of mediated action, the ability to resonate with perseverance (or resilience) and skill development (competency) was an essential cultural tool that contributed to one's ability to produce positive academic outcomes.

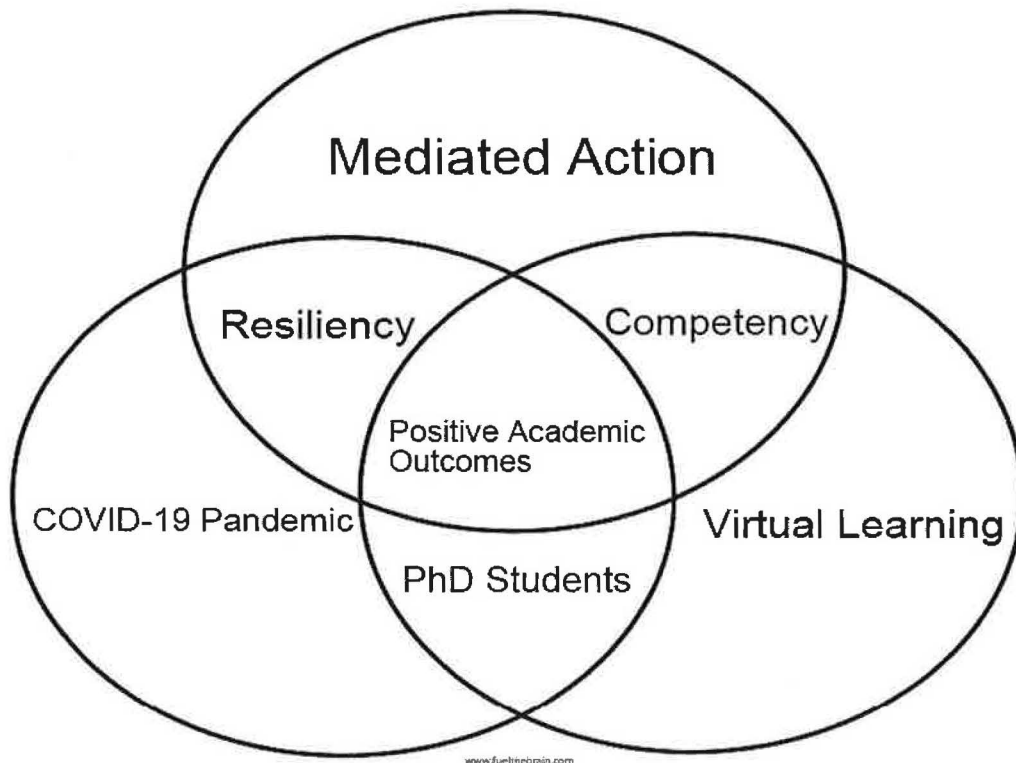
Lucy

Lucy presented good use of the internal mediated actions of resilience and competency which contributed to positive academic outcomes. Lucy reflected on past personal events of what it meant to be Black and an individual of lower SES in society. She stated that her experiences were negative and considered an ongoing crisis. She stated that what it means to be Black and poor felt like a constant disaster mode and this experience reinforced the notion that things are happening, but she still has to get things done. This can be interpreted as resilience, and in this case, Lucy used the cultural tool of resilience to navigate virtual learning during the COVID-19 pandemic. She stated that she was able to achieve all As in her courses.

Moreover, Lucy stated she developed her intrapersonal and flexibility skills during the COVID-19 pandemic as a result of virtual learning. She stated that increased competency is a relevant tool to navigating virtual learning. She stated, there was a class she almost got a B grade, but through figuring out the grading formula she was able to achieve an A. This can be interpreted as competency. Lucy utilized the mediated action of competency to successfully perform academically. Lucy was describing the relationship between her human actions and the cultural, institutional, and historical context in which the action occurs. From the perspective of mediated action, the ability to resonate with perseverance (or resilience) and skill development (competency) was an essential cultural tool that contributed to one's ability to produce positive academic outcomes. Figure 1 demonstrates the relationship between mediated action, virtual learning, and the COVID-19 pandemic.

Figure 1

Relationship Between Mediated Action, Virtual Learning, and the COVID-19 Pandemic



Discussion

This study on schema-based theory of *transfer* of knowledge and mediated action raised the question on whether learning loss was experienced by university students and how can educators refine instruction delivery and mitigate decreased academic motivation. With the use of mediated action or cultural tools, educators can create a learning environment that is conducive to student learning and engagement. An example in the literature demonstrating use of internal cultural tools or mediating means was found in the study of Hayes (2001). Hayes (2001) formulated a direct connection between her students' socioeconomic backgrounds and what she felt she could reasonably expect of them in school. The *perception* of her students has meaning and is considered important for her teaching. So, she placed it into practice and used perception as a tool to consider appropriate teaching approaches for her students.

Implications for Rehabilitation Counselor Education

It would be useful for rehabilitation counselor educators to refine instruction delivery through the use of mediated action or cultural tools to attain new perspectives on learning. This can be done by creating a class (in-person or virtual) that is inclusive and recognizes diversity in action. Educators can create activities to learn more about students' cultural, historical, and institutional backgrounds, while creating opportunities for students to apply their different ways of solving problems or completing tasks. Additionally, the SES of students can be considered, and this insight or perspective can be used as a tool to create appropriate pedagogy.

Further, it would also be beneficial for rehabilitation counselor educators to refine instruction delivery and mitigate decreased academic motivation through schema-based theory of transfer. One way to transfer hands-on activities to virtual learning can be through the internet platforms Google Docs and Google Drawings. Google Docs and Google Drawings allow a group of individuals to work on a project/activity simultaneously. Educators can also explore alternative virtual platforms that encourage socialization. For instance, Lucy and her cohort created a virtual social event, "Lunch Talk," where professors and students can meet and have lunch virtually together. Moreover, as a result of the COVID-19 pandemic, individuals no longer had designated campus spots they can physically go to meet new people. To solve the problem of socialization, the in-person social environment can be transferred to a virtual platform called "Slack Channel," which was used by Lucy and her cohort.

Pros and Cons of Schema-Based Theory of Transfer

There are some pros to using schema-based theory of transfer to navigate COVID-19's impact on academic performance and outcomes. By using schema-based theory of transfer during COVID-19, students are transferring pre-existing knowledge from schemata to assist with learning. This capacity to transfer pre-existing knowledge may help to lessen anxiety levels of learning during a pandemic and provide some assurance and security. Students are also strengthening their schemata, in turn, strengthening their ability to learn. Since the COVID-19 pandemic at the time was an entirely new experience, schemata provided a framework to organize and make sense of the new information of the world.

On the other hand, there are some cons to using schema-based theory of transfer in learning during the COVID-19 pandemic. This particular pandemic has never been experienced and was therefore met with uncertainties. Students who transitioned to a virtual learning platform may have difficulty transferring the correct or most appropriate knowledge needed. By using schema-based theory of transfer, students may exclude important information while focusing only on information that confirms their pre-existing beliefs and ideas on learning.

Pros and Cons of Mediated Action

Additionally, there are some pros to using mediated action in learning during the COVID-19 pandemic. As mentioned, the pandemic was a new event experienced by students requiring the use of a set of internal or external tools to ensure academic success. Mediated action can provide students

with assistance while they interact with their new virtual environment. Mediated action can assist with maintaining certain mental processes such as reasoning, problem-solving, and putting things in context. Moreover, mediation may introduce an informal approach to learning while alleviating some of the pressure of virtual learning. Since the pandemic may have contributed to low energy and motivation, encouraging students to utilize cultural tools may inspire creativity and drive.

On the other hand, there are some cons to using mediated action in learning during the COVID-19 pandemic. For instance, students may use inappropriate internal or external tools further promoting high levels of stress and anxiety. In using the wrong tools in learning, students may not be able to produce good academic performance and grades. In other words, there is no certainty that the use of a particular tool(s) would help students resolve the academic problems they faced during the pandemic. Further, virtual learning does not provide the same support as in-person learning so, students may experience difficulty determining which tools are most appropriate to use in virtual learning. In-person intervention may be needed to help students reflect on cultural tools that resonate with them. If there is no intervention, students may feel unprepared or incompetent in learning.

Limitations of the Study

Finally, this study is limited in several ways. First, the sample was small including only two participants. Second, the sample size was homogenous including both participants identifying as African American, PhD students, and both participants aged 25. Therefore, the results do not generalize to other populations because of a low percentage of diversity. Last, the method used to examine participants' learning experiences during the COVID-19 pandemic was limited to one-on-one interviews. Therefore, it is difficult to determine if the results would be the same if additional data collection methods were used such as the collection of artifacts, interviews with participants' professors, group interviews with a larger sample size, and direct observation.

Conclusion

In sum, this study provided an update on schema-based theory of transfer, mediated action, and academic outcomes. It was documented that the existence of resilience schema and strengthening of competency schema contributed to knowledge transfer and accumulated knowledge during the sporadically-introduced COVID-19 learning platforms. Additionally, the use of resilience and competency cultural tools was found to have a positive association with academic outcomes. This study reflected on how the two perspectives provided complementary insight into how learning occurs. Finally, this study on schema-based theory of transfer of knowledge and mediated action raised the question of how rehabilitation counselor educators can refine instruction delivery and mitigate decreased academic motivation. The author discussed the use of culturally relevant tools and the creative use of technology.

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