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About *The Learning Assistance Review*

The Learning Assistance Review is an official publication of the National College Learning Center Association (NCLCA). NCLCA serves faculty, staff, and graduate students in the field of learning assistance at two- and four-year colleges, vocational and technical schools, and universities.

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Letter from the Editor

I've never been particularly good with names.

Ask me about a literary or movie character, and chances are I'll remember the character's name. As I read or watch, I make an indelible connection to that character because, when the writing is good, the writer coaxes me into seeing myself in the role. But when it comes to real people, I forget. I'll remember what they were wearing when we met, perhaps their favorite book or movie, but not their names. I don't think it rises to the level of the definition of "lethologica," which is "a psychological disorder where one has the inability to remember the right word or name." I tell my students on the first day of classes that they need to "do something purposeful to help me remember their names" as I tend to only remember the moniker of the "good" and the "bad" students (though I'd never tell them under which category they fall). Those "in the middle" tend to blend together over the years. Thus, I end up playing the "Hey…you!" game whenever a student shouts hello to me across campus.

But I'll never forget Deborah. Or her name.

I met her at one of those pretentious writing retreats. You know the type: located in some rustic, backwoods cabin, taught by eccentric, goateed creative writers, populated by unshaven graduate students wearing Birkenstocks and over-laundered t-shirts while smelling vaguely of patchouli, the stars in their eyes and the grit in their determination because they just know they are the ones to change the publishing world with the eloquence of their carefully practiced prose. She stretched and yawned, catching my eye as her black hair cascaded over her shoulders. She noticed me staring, and she smiled broadly in that, "I know you were watching me and I'm glad you noticed," kind of way. I cast my eyes down at my page and scribbled in the margin, embarrassed by my vaguely creepy voyeurism as the retreat's leader droned on about rhyming couplets or sestinas or something. After a measured moment, I looked up to find her still looking at me. I felt my face flush. She laughed and tapped her pencil against her front teeth, her eyes flashing in mischievous glee. I may have fallen in love.

During a break, I exited to the kitchen area to pour myself a glass of anything. I turned away from the counter and she was standing behind me, clearly in my bubble, but it was *her*, so I didn't find the proximity an unwelcome violation.

"Hi, Michael!" she said, and I caught of a whiff of her citrusy perfume. It was a moment before I noticed her outstretched right hand. I clumsily shook it.

"Uh…hi. Hello," I said. My voice may have cracked as if I was experiencing a second puberty. She pulled in closer, still holding my hand.

"I like your writing," she whispered, the heat from her breathing lingering dangerously close to my ear.

"Thanks. I like yours, too," I managed to say. That was followed by small talk consisting of where we were from, the usual "I'm here because," and other things when it must've dawned on her that something was off. I was running the gamut of awkward sentence constructions to avoid saying her name. We'd introduced ourselves to the group on several occasions, but she'd done nothing specific to enable me to remember it (and her writing wasn't that spectacular, to be frank). Then she stretched, smiled, and cornered me, so I suddenly wished I knew hers. She pulled her hand from mine.

"You don't remember my name, do you?" Her smile, and the glint in her eyes, was gone.

"No. I'm sorry."

"Well, at least I remembered yours!" She spun on her heel and exited the kitchen. Though the retreat was several days long, we never spoke again.

It should come at no surprise that, in the last issue of *TLAR*, I called Martin Bonsangue "Mark," despite having emailed him at least a dozen times regarding his wonderful article, forgot to mention Nicole Engelke Infante entirely in my Letter from the Editor, and even forgot West Virginia University, calling it something even I don't understand. I did, however, love their article, "The Effect of Supplemental Instruction on Transfer Student Success in First Semester Calculus." I'm sure you did, too.

As for my second issue as editor, one of which I am quite proud, I shall never forget the names of the contributors: Joseph Cunningham, Lisa B. Peden, Christine Reichert, James E. Johnson, Jacqueline R. Harris, Tiffany M. Peters, Joshua D. Adams, V. Barbara Bush, Timothy Daugherty, Theodore (Ted) Coladarci, Mary Beth Willett, and Debra Allen. I want to thank them personally for their hard work and dedicated scholarship.

However, I've only met two of these authors, so if I ever have a chance to meet them in person and am forced to play the name game, I trust they'll forgive me more than Deborah did.

Best,

Michael Frizell
Editor

Georg Simmel's Spatial Sociology and Tutoring Centers as Cultural Spaces

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Abstract

Student culture carries a variety of benefits for the student population, including better social integration and stronger academic performance. At a two-year commuter college, however, student culture is far more difficult to construct due to the travelling distance as well as the lack of conducive space for its generation. The sociology of spaces, as written about by German sociologist, Georg Simmel, provides four crucial characteristics of space, and these features can be appropriated by tutoring centers in order to serve as one of the few spaces at the commuter college where student culture can flourish.

Introduction

Culture is such a ubiquitous concept that we often take it for granted. More significantly, there is a tendency to take *the generation of culture* for granted as if culture produces itself or the production of culture is beyond our control. Ultimately, the construction of culture (or lack thereof) is within the hands of people interacting in a shared space, and in the case of student culture, students, staff, and faculty members all contribute to its creation. However, in many institutions—in particular two-year commuter colleges—student culture can be compromised by a lack of conducive spaces. This unfortunate reality has serious academic and emotional consequences for many students, including those of poor academic performance and increased student alienation.

With its emphasis on community, student ownership, and collaborative academics, college tutoring centers serve as pivotal spaces where student culture can flourish. Moreover, many of these centers reflect a sociology of space that was written about by esteemed German sociologist, Georg Simmel. Although Simmel was writing near the dawn of modernity about more macro-sociological concepts, his spatial reflections operate as a powerful socio-philosophical theory that could positively influence how we

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understand the way through which tutoring centers construct student culture. Within Simmel's theory, we have a similar spatial-cultural construct present in many of the best tutoring centers—one that can facilitate student interaction in commuter colleges and foster academic success.

The Challenge of Student Culture

The concept of student culture is a challenging one to securely grasp. While a general definition describes it as "the environment and social norms held in a school that lead or do not lead to social cohesion" (Moiseyenko, 2005, p.94), the numerous factors and implications influenced by student culture are vast and specific to the college. Everything from student preparedness to perceptions of the college to academic honesty to issues regarding mental health can be included in the cultural spectrum. Additionally, this culture is continually changing and evolving with new students coming every year with their own cultural characteristics (Bishop et al., 2004). Urie Bronfenbrenner's influential ecology model is yet another way to understand the consistency of student culture as the product of "the specificity of the individual life history, the campus milieu, and the larger societal and historical context of development" (Renn & Arnold, 2003, p.273). Within this model, student community is produced by a series of groups, consisting of students and faculty (Nitecki, 2011). However, with students belonging to several communities and many of these groups "invisible" to college employees, student culture becomes a slippery concept, one that cannot easily be apprehended (Kuh, 1995, p.564).

The most common ways to measure or approach student culture is, like any other culture, its products and members' reflections. Students who are socially integrated into the campus are more likely to be successful due to having a stronger understanding of what is means to be a college student (Barbatis, 2010). Furthermore, colleges can foster this integration by offering a variety of "agents" for students to contact, and indeed, in a recent survey, 92% of students pointed to a specific agent who was "instrumental to their sense of adjustment, comfort, belonging, and competence as college students" (Deil-Amen, 2011, p.61). Consequently, colleges often have more power in improving student integration than employees often realize, yet in a two-year commuter college such efforts may not come to fruition.

The primary reason for this struggle is that the student culture in two-year colleges differs significantly from traditional four-year universities, largely due to a different student makeup that includes more nontraditional students, part-time students, students with lower socio-economic status, and a greater

diversity of reasons for attending school—all of which fold together to define the two-year college's overall mission (Ethington, 2000). The other critical facet of the two-year college experience—one that often hinders the development of student culture—is the large percentage of commuter students whose involvement with the school is rather limited (Davis, 1999).

Unsurprisingly, this lack of involvement dilutes the college experience for many students, which is why residential students are overwhelmingly more satisfied with their college experiences compared to their commuter counterparts (Qi, Anderson, Reid, Toncar, 2007). Furthermore, the principal dimensions separating traditional college students from commuter students—"(1) socio-economic and demographic differences; (2) academic differences; and (3) non-school obligations and activities" (Newbold, Mehta, & Forbus, 2011, p.142)—favor traditional students and serve as the fundamental sources of student culture. The student culture at two-year commuter campuses has a tendency to reflect this disparity, leading to a greater possibility for a lack of investment and poor academic performance.

This burden is not squarely on the shoulders of the students. The commuter college faces unique challenges in fostering student culture, challenges that often prove difficult to overcome. Particularly in issues of access to spaces and services, many two-year colleges struggle to facilitate a positive cultural construction with their nomadic populations (Stevens, 2000). As Barbara Jacoby (2000) concludes in her article, "Involving Commuter Students in Learning: Moving from Rhetoric to Reality":

> The enduring challenge is to create opportunities that involve commuter students explicitly and intentionally in learning that enhances their college experience rather than allowing these opportunities to become yet another example of the unintentional exclusion from which commuter students have historically suffered. (p.86)

The culture of commuter students, consequently, is compromised by the students' backgrounds and connection to college as well as the college's lack of a concerted effort towards academic support. Once again, this inattention possesses real consequences, including the possibility of alienation, specifically a form of educational alienation, indicative of these populations (Muller & Pazaki, 2011). In order to actively confront alienation generated by spatio-cultural relationships, reviewing existing theoretical frameworks regarding space becomes crucial. In this venture, the sociology of space, as constructed by Georg Simmel, demonstrates how spatial formulations can be considered and applied to tutoring centers, reconfiguring them as rare spaces of cultural construction in two-year commuter campuses.

Georg Simmel's Sociology of Space

In many ways, Georg Simmel defies easy classification. The German sociologist, whose publications range from 1890 to 1917, acted as a shrewd commentator on modernity, yet also anticipated several postmodern inclinations. In some sense, Simmel draws close affiliation with Marx, most notably in that his best known work is the tome-like, *Philosophy of Money*, yet Simmel's work goes beyond pure Marxist materialism into more abstracted realms. This is perhaps best represented in Simmel's attempts to avoid analyzing sociology or society in a rarefied manner, but instead he examined society from an interactionist and conflict perspective, discussing how "the fleeting, fragmentary, and contradictory moments of our external life are all incorporated into our inner life" (Frisby, 1986, p.62).

For the purposes of this discussion, Simmel's sociology of space is of considerable interest, particularly how the external spaces we inhabit influence our internal experiences. Like much of Simmel's theory, his sociology of space is quite intricate with reoccurring themes of "separation and connection, distance and proximity, boundaries and openings" (Frisby, 1994, p.1). Simmel's theory of space insists upon the significance of "spatial context and [individuals'] use of space" in human interaction and socialization (Lechner, 1991, p.196). This is not to argue that Simmel conveyed a certain "spatial determinism" (Lechner, 1991, p.195), but rather espoused a dialectical process in which people both construct the socialized space in which they operate and are influenced by this space internally.

Perhaps the most useful document in Simmel's overture on space is an essay appropriately titled, "The Sociology of Space." Within this essay, Simmel (1997/2007) discusses four key features of space as it relates to socialization: (1) the exclusivity or uniqueness of space, (2) spatial divisions and boundaries, (3) the notion of fixed contents, and (4) the proximity and distance afforded by the space. Each one of these characteristics requires some unpacking to comprehend their relationship to tutoring centers and student culture.

The first concept, the exclusivity or uniqueness of space, is perhaps the most difficult to grasp initially, yet what Simmel essentially argues is that all spaces possess an undeniable uniqueness that differentiates them from other spaces (even similar ones); what generates this uniqueness is a combination of physical characteristics and objects as well as more abstract principles such as "the intellectual, economic, and political waves" (p.139). Therefore, each space possesses its own geography and culture, which both harmoniously and discordantly relate to one another to generate exclusivity. Also, Simmel's

sociology of space indicates a complimentary relationship between individuals and the spaces they inhabit—a simultaneous construction and influence on one another. This is best exemplified in this first concept, for what ultimately makes the space unique, beyond that of its physical characteristics, is the people who operate within that space.

The next spatial concept primarily concerns how space formulates boundaries. Simmel's emphasis on these spatial boundaries led to the construction of a specific article, "The Social Boundary." Here, Simmel (1908/2007) writes, "Each border is a psychological, or more precisely, a sociological occurrence. But through its investment as a line in space, this reciprocal relationship achieves clarity and security through its positive and negative aspects" (p.54). Once more, physical boundaries, such as walls or, in the case of larger spaces, mountains and rivers, become sociological ones as cultural and political inclinations also serve to separate individuals. Boundaries not only serve to keep people apart, but serve to connect people as those contained *within* the boundary share sociological characteristics. Returning to "The Sociology of Space," Simmel (1997/2007) argues, "a society is characterized as inwardly homogenous because its sphere of existence is enclosed in acutely conscious boundaries" (p.141). In order to elucidate this concept, Simmel utilizes the effective analogy of a painting's frame in explaining how boundaries enforce a unity of vision and provide a window into understanding the laws of a particular space. While not always the case, spatial separations imply different rules and functions, applicable to spaces regardless of size.

The third characteristic of space, its ability to fix concepts is somewhat self-explanatory. Within most spaces, a system of objects becomes situated in the physical field. While these objects can be moved, a space will keep those objects within its boundaries. In a city for instance, various buildings are more or less fixed in their location. In a smaller space like a bedroom, the usual objects—a bed, a closet, a dresser—are often present. Simmel does, however, argue that these fixed contents serve as vital contributors to the socialization process. For example, Simmel discusses how a church serves as a fixed object of communal worship within a space. Without it, religious acts would occur largely in isolation. In addition, these fixed objects also operate as signs in navigating the space like landmarks or buildings used a rendezvous points.

Simmel's final characteristic, proximity and distance, is the most explicitly interactionist modality of space. Naturally, close proximity among individuals is conducive to social interaction, both positive and negative. However, Simmel puts even further significance on proximity as a foil to distance:

> An economic cartel or a friendship, a stamp collectors' association or a religious community can do without personal contact permanently or for a period of time, but the very moment when there is no distance to overcome, the possibility of innumerable quantitative and qualitative modifications of the cohesive bond immediately appears. (p.152)

Proximity and distance not only serve as catalysts and obstacles to social interaction, but can *qualitatively* change the nature of that interaction. Moreover, distance is not merely a spatial marker, but holds temporal or ontological features. As Robert Cooper (2010) writes:

> Social and cultural distances are constituted by this ambiguous unity between presence and absence: every *me* implies a *you,* every *here* reflects a *there,* every *today* includes a *tomorrow.* Distance in these examples is [as Simmel puts it] the "constant abandonment" of life in order to re-find itself. (p.72)

There is a multiplicity in distance, for distance is rarely fixed, nor is it limited to a single categorical plane. For Simmel, distance and proximity are undulating terms, evolving as the space evolves. Contributing to the previous three characteristics, distance and proximity represent the lifeblood of space, determining relationships and instilling spatial possibility.

Applications of Simmel's Sociology as it Relates to Tutoring Centers

In applying Simmel's spatial characteristics to tutoring centers as environments that generate college culture, numerous realizations arise. First, there is Simmel's exclusivity of space—a unique quality that is quite applicable to tutoring centers, particularly those of a smaller commuter college. Bryon L. Stay (2006) points out a number of unique facets to smaller centers' spaces (applicable to general tutoring centers in many respects) including a lack of training resources, limitations in regards to subjects tutored, and visibility that has legitimate implications in regards to college culture and politics: "Because the writing center direction likely has personal contact with most, if not all, faculty and administrators, it is possible for pressure to be placed on the writing center related to institutional goal and assumptions about writing" (p.149). As in Simmel's theory, there is a reciprocal connection between the physical nature of the space and the culture surrounding it. Tutoring centers serve as politicized spaces on campus, and the interaction among students, faculty, and staff make it uniquely politicized (Stay, 2006). With the convergence of contextual factors, center directors and staff should be aware of this unique position and make the proper efforts to ensure harmony to

benefit the student population.

In terms of Simmel's second spatial concept of fixed contents, it is vital to recognize the number of resources a center offers and how those resources contribute to the space. For Simmel, a space is more than merely a place in which objects are situated. The objects are influenced by the space and vice versa. Tables and chairs are different in a tutoring center than in a classroom; they hold greater functional capacities for studying, tutoring, and other forms of academic support. The specific objects that a tutoring center can provide—computers, books, studying resources, etc.—help students recognize the center, and these objects do not have to be purely material either. Services unique to a space hold similar functions to objects in regards to assisting students in "feeling at home," and both services and objects draw students into the center and help determine the wide variety of interactions within the center.

Boundaries are also imperative in conceptualizing a tutoring space. The most substantial boundary is that of designating the tutoring center space and distinguishing it from the classroom. Heather M. Robinson (2009) discusses this difference in terms of writing centers:

> In their writing center sessions, they [students] can express their reservations about their assignments, and express doubts and frustrations as well as enthusiasm about what they are asked to do, to someone who, while still employed by the college and part of the formal educational loop, can give sympathy and one-on-one attention. (p.74)

The boundary separating the tutoring center from the classroom is both a physical and psychological one that entices students to utilize tutoring services as well as repels them as something foreign to the classroom experience. Other boundaries exist in a tutoring center that houses a variety of subjects versus a college with separate math and writing centers that have strong boundaries and completely distinct protocols and rules. More subtle boundaries also exist in regards to relational/role boundaries among tutors, students, and faculty. Elizabeth H. Boquet (2002) perceptively argues that "The tutors, for their part, have difficulty maintaining the strict boundary that constitutes a student's *own* work when students frequently arrive with papers filled with the *professor's* comments…" (p.17). Once more, spatial boundaries can be conceived as psychological or sociological ones, and a delicate navigation of those boundaries is necessary to create a space conducive to the construction of student culture.

Distance and proximity play both obvious and nuanced roles in tutoring centers. Obviously, the tutoring center maximizes proximity in a number

of ways by ideally inhabiting a location readily accessible to the student population and gathering resources together within a single environment. In the larger context of the commuter student, the tutoring center serves as an integral location of distance and proximity. Students who are commuting from some distance can perceive tutoring centers as an entry point to which a number of academic support services can be reached.

Tutoring centers serve as proximal zones where students can interact with tutors and peers to generate organic learning and student cultural experiences. Hadfield et al. (2003) wrote a compelling article on how the spatial setup of a center can maximize student interaction and create a comfortable space to share his or her work. Ferruci and DeRosa (2006) refine those points to include "the importance of local conditions and concerns derived from our own students and tutors" (p.26). While the culture of commuter students is one that should be recognized and respected, one must understand how the distance inherent in that commuter student's experience dilutes the institutional student culture. The tutoring center operates as an area in which proximity to resources, support services, and other students are emphasized, thus providing a unique space for student culture to develop.

Conclusion

In considering the challenges of generating student culture at two-year commuter campuses, Georg Simmel's theories of space provide a helpful framework in understanding how tutoring centers serve as perhaps the best spaces for the construction of student culture to occur. The unique quality of space creates a set of fixed resources, fluid boundaries, and various examples of distance and proximity—all of which facilitate the student interaction necessary for cultural construction. At two-year commuter schools where student interaction is limited primarily to the classroom, tutoring centers serve as crucial spaces where interactions focused on academics happen—more so than the library, cafeteria, or student lounge. Additionally, this academics-centered interaction often progresses to more culturally-significant exchanges that occur when people are gathered together and united by common goals. The synthesis of these forms of interaction, facilitated by the characteristics of the space, make tutoring centers vitally important areas for student culture, in some sense transcending their original mission. Tutoring center directors and staff should be aware of the importance of space in this regard and maximize the characteristics that enable student culture development, for their spaces are perhaps best equipped for this profoundly significant endeavor.

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Topic Management in Tutoring Conversations

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Abstract

One challenging issue facing undergraduate tutors is remaining on task during the study session. Conversation analysis was applied to examine how one tutoring dyad navigates numerous topics during a study session. The tutor is a Caucasian female sophomore; the student is an African American female first-year student on academic probation. Analysis reveals that the tutor kept the student on task for most of the study session; however, the dyad jumped through topics on their way to concluding the session. Use of conversation analysis reveals the tutor's problematic areas that can be addressed through continuous training and role play scenarios.

Introduction

During the tutoring session, tutors must effectively balance rapport-building conversation with on-task conversation. The tutoring dyad may become caught up in off-task dialog for a variety of reasons. Tutors who can identify these reasons, or patterns of behavior, are better able to negotiate the conversation to remain on-task for a productive study session. The purpose of the study session is threefold: first, to review course content; second, to explore the student's application of metacognitive strategies; and third, to promote self-efficacy by encouraging the student to assess his/her learning process. For purposes of this article, these are deemed the three "arcs" of the study session trajectory. The ideal study session would proceed along those lines. In reality, however, students and tutors often lose this trajectory as the tutoring conversation unfolds. While conversational detours may promote bonding and rapport between student and tutor, it is the tutor's responsibility to guide the

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conversation back to the stated objectives of the study session. In this study, the issue of topic management is examined by applying the methodology of conversation analysis to a study session that occurred between a student on academic probation and her tutor.

Tutoring Conversations as Constructivist Learning Opportunities

Constructivist educators highlight the importance of interdependence among learners/facilitators and the interaction between people and their environment (Atkinson, 2007; Palincsar, 1998; Sahlström, 2009). Rather than transmitting knowledge to the learner, modern educators (including tutors) focus on a transformational process of co-constructing knowledge with the learner (Palincsar, 1998). In the peer-to-peer tutoring context, tutors assist students through guided reciprocal peer questioning (Palinscar, 1998) and scaffolding techniques (Valkenburg, 2010). The goal of peer questioning is to help students recall foundational knowledge rather than relying on the tutor for answers. Additionally, tutors are trained to ask questions that promote higher-order thinking skills, which include analysis, synthesis, and evaluation (Krathwohl, 2002). Scaffolding involves modeling problem solving in successive steps, in which tutor support gradually decreases and student autonomy increases, summed up by Wilhelm, Baker and Dube (2001) as "I do, you watch; I do, you help. You do, I help; you do, I watch." In sum, peer tutoring is an example of the constructivist paradigm of education.

The literature contains theoretical foundations for creating a learning environment, yet there is a lack of empirical evidence regarding what actually happens during a tutoring session. Glenn, Koschmann & Conlee (1999) have explored the dynamics of the problem-based learning environment (PBL) of medical students in their group tutoring sessions. However, dyadic communication between tutors and students has yet to be explored. This study is presented as an initial foray into the pragmatics of the tutoring conversation.

Applying Conversation Analysis to the Study of Tutoring Conversations

Conversation analysis emerged from sociologists' ethnomethodology techniques during the 1960's (ten Have, 2007). In this research methodology, aspects of conversations (such as opening and closing sequences; turn-taking; silences; initiating and making repairs; managing topics; overlapping; interrupting; and performing) are analyzed to see how the speakers interact.

Conversations are recorded (audio or video) and then transcribed using a codification scheme developed by Gail Jefferson (ten Have, 2007). Each line is numbered and coding within the transcript facilitates the understanding of how talk-in-interaction proceeds. For example, when a speaker's voice goes up or down in pitch, an arrow (↑, ↓) precedes the word. Words that are emphasized are underlined. Words uttered softly are encompassed by degree signs (°). Overlaps between speakers are marked by brackets ([ ). Exhalations are denoted by two or more h's, depending on the length of the breath ("hh") and inhalations are similarly denoted, with the addition of a dot preceding the letters (".hh").

The researcher analyzes the transcript with an open-ended approach rather than a preconceived hypothesis, noticing unique features of the conversation or the pragmatics of talk-in-interaction (Glenn, Koschmann & Conlee, 1999). Pragmatics encompasses speech acts that impact how parties arrive at meaning and alignment in conversation.

Data for this study was collected during the spring semester 2013, during a tutoring session between a tutor and a student enrolled in UCOL 103, *Learning and Metacognitive Strategies*. As a requirement of the UCOL 103 class, the student and tutor were required to meet twice a week throughout the duration of the course. This study session, lasting 31 minutes, occurred in the tutoring lab in the lower level of an administrative building on campus.

The tutor and student, renamed Toni and Amy for the sake of anonymity, are undergraduate students in a large, Midwestern research university. Toni is a female, Caucasian sophomore from a suburb of a major metropolitan city; Amy is a female, African-American first-year student from a different suburban community near the same major metropolitan city.

Analysis of Topic Management in the Tutoring Conversation

Setting the trajectory for the study session and staying on-task is the tutor's responsibility. Occasionally, the student will shift or shade into other topics, and the academic coach must figure out how far to go along with the new sequence. Detours on the conversational trajectory include sequences in which the student typically introduces anecdotes or narratives that explain or defend her academic behavior. Some detours occur as a result of the academic coach intentionally asking questions meant to encourage use of critical thinking skills.

Figure 1 shows the trajectory of topics that arise in the study session under investigation. Major topics are indicated by roman numerals; a topical "shift" occurs when the speakers leave one topic and initiate a new topic.

Figure 1. Outline of Topics Discussed in Toni and Amy's Tutoring Conversation.

I. Greetings
   A. Discomfort with being recorded
II. Philosophy paper
   A. Books on reserve in library
   B. Developing a thesis
   C. Review of two books
      1. Course objectives
         a. Procrastination
         b. How to avoid procrastination
            (i) Tutor will send student reminder text
            (ii) Immediate plan for finishing paper
            (iii) Resident Assistant will review paper
            (iv) Plan for next paper
            (v) Tutor will send student reminder text
            (vi) Spring Break dates
      2. Not having books delayed start of paper
         a. Buying books online
            (i) Tutor's experience with buying books online
III. Speech class
   A. Recitation of speech
   B. Speech test – review of exam questions
      1. Unprepared – student had not reviewed
IV. Brother's court date
   A. Brother's jobs to pay off court fees
   B. Other family members who had been in jail
V. Note taking style
VI. Assessment of study session
VII. Note taking style – outlining, dating notes
   A. Notes as verification of attendance in class
   B. Color coding the highlighting of notes
VIII. Plans for the evening
   A. Painting garbage cans for fundraiser
   B. Studying and writing paper
   C. Tutor will send student a reminder text message
IX. Assessment of study session
X. Good-bye sequence

A topical "shade" occurs when the speakers veer to a related, but different aspect of the topic; shades are indicated by capital letters, Arabic numerals, lower case letters and lower case roman numerals. Topics may be renewed throughout the conversation, such as when the tutor offers three separate times to send the student a reminder text.

Figure 1 reveals numerous topical shades that occur during Item II, the discussion of the philosophy paper. The student and tutor accomplish all three arcs of the proposed trajectory – they review the content for the philosophy paper, review metacognitive strategies and assess the student's efficacy. Again, in Item III, reviewing the speech class, it appears that all three arcs are addressed. However, as the study session progresses, topical shifts bring a variety of detours to the proposed trajectory. Item IV, the student's brother's court date, is the first deviation from the trajectory. Following that, the topics of note-taking and assessment of the study session are renewed before closing the session. The repetition of the final topics (V and VII, and VI and IX) pose interesting questions: What factors contributed to these meandering topics? How significant are the personal disclosure sequences to the student/tutor relationship? Who initiates the topical shifts? How does the tutor regain the trajectory if the session goes off-task? These questions can be addressed through the application of conversation analysis.

Opening the Study Session and Setting Trajectory

Excerpts of the transcript of Toni and Amy's study session will be presented as examples for discussion in this paper. An arrow (→) indicates lines that contain the phrase/utterance under analysis. The entire transcript is too lengthy for publication, but is available from the author.

At the beginning of the study session, following the discussion about being tape recorded, Toni (tutor) sets the trajectory by stating that they will be covering philosophy and speech. This statement is bracketed by the pre-shift initiator "Alright, so" and the tag question, "right?" which elicits agreement. Toni offers a second initiator token, followed by a choice of topic. Again, the choice is presented as a statement rather than a question, with a downward intonation rather than an uprising in pitch.

Example 1

15	**TM:**	**Alright, so we're doin' philosophy and speech today, right?**
16	**AM:**	**mm-hm**
17 →	**TM:**	**Alright, so, which one do you want to start with, philosophy or**
18		**speech.**
19	**AM:**	**Ummm, well philosophy I have a paper due on Friday …**

Example 2

43	**AM:**	**Yeah, people desire freedom but limit themselves.**
44 →	**TM:**	**ok. So:o what's the book about.**
45	**AM:**	**.hh the <u>se</u>cond book is abou:t (.) how:**

Example 3

85	**AM:**	**… And they made it mental.**
86 →	**TM:**	**Allright so how did the two books (.) like (.) connect.**
87	**AM:**	**They- (.) that's a good question. Um they connect (.)**

The student (Amy) selects the topic "philosophy" with an introductory "umm" but no hesitation or pause. She goes on to say that she has just come from the library where she read one of the books required for the paper that is due Friday. It seems the student chooses philosophy as a result of her recent visit to the library. Later in the study session, Amy reveals that she has a test in speech class the following day. It is interesting to note that the course with the more immediate deadline – speech test tomorrow – is not Amy's first choice. The choice was presented in the context of desire (Toni asks which course Amy *wants* to start with, line 17) rather than on priority or immediacy of deadlines. Thus, topic selection here is an example of an interactional accomplishment by both parties, rather than by tutor directive.

Shading into Subtopics: Asking Questions

Throughout the tutoring conversation, Toni uses the initiator tokens, "alright," "OK," "so," and others to signal the topical shift or shade.

In Examples 2 and 3, the tutor asks questions that require successive increases in thinking skills, from comprehension to analysis (lines 44 and 86). Uptake by the student seems trouble-free, as there are no hesitations or pauses. Amy repeats words from the questions ("book" and "connect") to preface her responses. This may indicate either a cognitive processing strategy, or a buy-some-time strategy, as she formulates her answer. The student responds with robust sequences for almost every question posed by the tutor throughout the study session.

Topical Shades: Discussing Efficacy

Toni also makes a number of topical shades by commenting on Amy's efficacy. In Example 4, Toni initiates a conversational sequence that is renewed throughout the study session. Following Amy's confession that she has only a thesis for her paper, Toni could have elaborated on that topic, perhaps by encouraging Amy to begin writing the paper right then. However, Toni initiates a topical shade by offering an assessment of Amy's efficacy (lines 167-168). Toni elicits agreement from Amy with the tag question in line 169. The next question launches the subtopic of avoiding procrastination. Amy picks up on that shade with no pause or hesitation, and launches her answer with her customary preface of repeated words from Toni's question.

Example 4

164	**AM:**	**heh. An' I haven't- I haven't started it, I don't even have an**
165		**introduction or anything. I have a thesis and that's it.**
166	**TM:**	**Ok, so (.) for this- oh excuse me ((cough)) mm-mm**
	((clears	
167		**throat)) ok, so (.) for this paper obviously the**
168	**→**	**procrastination thing wa:s kind of a <u>big</u> thing,**
169		**[right?**
170	**AM:**	**[mmmmmm-hmmmmm**
171	**TM:**	**Ok. So what are you gonna do for the next paper to make**
	sure	
172		**that (.) you get it in time and that you (.) can get it <u>done</u>.**
173	**AM:**	**Ahh. For the next paper I am going to make sure number**
	one …	

The subtopics of avoiding procrastination and writing the philosophy paper are navigated smoothly by both parties. Amy and Toni demonstrate good rapport, as evidenced by their smooth turn-taking transitions, occasional overlaps, and exploration of numerous topics. Establishing rapport is an essential skill for tutors. Toni extends an invitation to send reminder text messages to Amy. In Example 5, Amy seems agreeable to the reminder text messages, and even offers directions to Toni on what to say.

Example 5

217	TM:	In ↑theory it sounds really great but execution's a little
218		fuzzy.
219	AM:	Yea:h! That's the same reason why I'm on probation because my
220		proce- my- my ↑plan was ↑grea:t.
221	TM:	[Ok.
222	AM:	[Then when it came to executing it.
223	TM:	Well, if you want, you can (.) let me know and I will keep
224		bugging you (.) it'd be like, "Did you start your paper yet?
225		[Did you start your paper yet?"
226	AM:	[That's a good thing to do! Cuz then I get irritated. Let me
227		start this paper so I can say "Yes, I have started (.) the
228		paper"
229	TM:	I'll send you text message it'll be like, "Amy (.) did you
230		start that paper yet"
231	AM:	((laughing)) And because it's you I feel like I have to
232		respond. [Anybody=
233	TM:	[((laughing))
234	AM:	=else it's like-
235	TM:	((laughing))
236	AM:	heh heh "I'll text you back when I feel like it." But this is
237		my (.) ok (.) this is my mentor. "No:: I have not started my
238		paper::" ((performing))
239	TM:	[And then I'll-
240→	AM:	[An' aks to see it, like it'll be OK next time I wanna see-
241		that'll work for me, [like if you ask to see it.
242	TM:	[That'll work?
243	AM:	If you go like, "OK, I need to see part of your paper by (.)
244		this time" (.) cuz then it's like ok now it's made a homework
245		assignment (2.0) so I have to do it.

The conversational sequence demonstrates alignment between tutor and student as evidenced by the overlaps and mutual performance of their parts. Amy indicates that she feels accountable to Toni (lines 231-232) and feels that Toni's role as "mentor" (line 237) means that Toni can assign work for Amy to do (lines 244-245). Further, Amy encourages Toni to make Amy prove that she is working (lines 240, 243). The overall sequence reveals an interesting insight into the relationship between the student and tutor. The performative aspect of the sequence and ensuing laughter indicates affiliation between the two. Playing out the roles of "doing being a tutor" and "doing being a student" occurs once more in the study session. Thus, the relationship between the two seems to be a significant topic in their tutoring conversation.

Student-Initiated Topical Shifts

Student-initiated shifts may serve to avoid some undesirable activity, or purposely introduce off-task topics that may have personal relevance or prominence. At the beginning of the study session, Toni explicitly declares that the session's agenda would include philosophy and speech (Example 1, lines 15 and 17). These courses are covered fairly extensively during the majority of the study session, taking approximately 25 minutes. Even though Amy is quite verbal and engaged throughout most of the session, she is also likely to steer Toni, through her direct suggestions, as shown in Example 6.

Example 6

567	TM:	**((laughs)) Ahem. Okay. "Which of the following is not one of**
568		**the five canons of rhetoric. A delivery. B (.) body language. C**
569		**(.) style. D (.) memory. E (.) arrangement."**
570		**(2.0)**
571	AM:	**And what's the question again?**
572	TM:	**"Which of the following is not one of the five canons of**
573		**rhetoric?"**
574	AM:	**Wha' does rhetoric mean?**
575	TM:	**Rhetoric**
576	AM:	**Wha's rhetoric**
577		**(2.0)**
578	TM:	**Um: (3.0) mm: ↑how do you define rhetoric? How- How would you**
579		**define rhetoric?**
580	AM:	**>I don't know what it is=that's why I'm asking you<**
581	TM:	**heh (.) hhh ↑okay, we may have to go on Google because I can't**
582		**come up with a (.) definition off the top of my head. heh**
583→	AM:	**Go to the next question**
584	TM:	**Okay. (1.0) Pt.**

This could have been a "teachable moment" had Toni managed the session, rather than allowing Amy to move on to the next question in the study guide. In the tutoring lab where the session occurred, there are computers available so that "Googling" a new phrase is a viable option.

After reviewing for the speech test, there is a prolonged silence in the study session. Typically, participants in conversation recognize these silences as floor-passing opportunities. Therefore, when a tutor fails to maintain the conversation, or to steer the topic along a desired trajectory, the student may see the opportunity to take the floor. In Example 7, the tutor opens the door for a topical shift with a thirteen-second silence.

Example 7

655		**(3.0) ((sounds of pages turning))**
656 →	**AM:**	**What page are you on?**
657	**TM:**	**I was flippin around**
658 →	**AM:**	**Oh, okay.**
659		**(5.0)**
660	**TM:**	**↑OK ((coughs, clears throat))**
661		**(5.0)**

It seems that Toni is engrossed in some document – perhaps the review sheet for the speech test. Amy's effort to engage Toni in lines 656 seems to fall flat. This short excerpt seems noteworthy; because the two had been in such close affiliation up to this point. Toni's inattentiveness to Amy seems uncharacteristic.

Finally, Toni invites a topical shift in line 662, with an ambiguous query. Of all the things she could have said, Amy responds with a narrative about her brother's court date. This appears to be a renewal of a topic from a previous study session, indicated by the phrase "I told you how…" in line 663. When the student offers an upshot assessment in line 700, the tutor seems ready to regain control of the trajectory, offering pre-shift tokens, "All right, so," in line 701. The topical shift occurs with difficulty, as evidenced by the drawn out vowel sounds in the words, "so" and "you." Micropauses punctuate the words, "note," "style," and "stuff." The tutor seeks to elicit agreement by adding the tag question at the end (line 702).

Example 8

662 →	**TM:**	**So what else has been going on.**
663	**AM:**	**Um (2.0) my brother (.) um, I told you how he had a court date**
664	**TM:**	**mmhm**
665	**AM:**	**an his court date was yesterday. …**
666-697	**(omitted lines)**	
698	**AM:**	**in California so I don't mind saying it!**
699	**TM:**	**↑hm ↑interesting**
700	**AM:**	**But (.) ↑yeah other than that (.) life's pretty good right now:**
701	**TM:**	**All right (.) s:o: ↑you:: wanted help with note (.) style (.)**
702		**stuff (.) right?**

Amy's narrative about her family seems to come out of left field. Toni is able to restore the trajectory of the study session in lines 701-702, albeit in a stumbling manner. Conversation analysis does not delve into participant's emotional states, nor make any attempt to explain behavior; however, a

tutoring supervisor would be interested in discussing this passage, as it seems this revelation caught the tutor by surprise.

Closing the Study Session

The process that typically occurs as a conversation comes to a close is constructed of sequentially paired statements, culminating with two good-byes, the terminal exchange. The following model shows three paired statements between A and B:

A: "So. Well, that's about it."
B: "Yup, that's it."
A: "OK, see ya."
B: "Yeah, see ya."
A: "Bye."
B: "Bye."

Participants engage in a type of verbal dance, ascertaining that all relevant mentionables have been exhausted before closing (Hopper, 1992). Closure for a study session is essential. Wrapping up a study session, the tutor must pay special attention to help the student consciously process what has occurred and to organize future activity. How should a tutor respond if the student attempts to end the session before the tutor is ready to end it?

Example 9

708	**TM:**	**OK.**
709 →	**AM:**	**°So°**
710		**(1.0)**
711	**AM:**	**↑<u>This</u> study session actually went pretty well.**
712		**(1.0)**
713 →	**TM:**	**↓Wait ↑what?**
714-720	**(lines omitted)**	
721	**TM:**	**OK. So how do you take notes then.**

During a conversational sequence regarding note-taking strategies, Amy utters a possible pre-closing in line 709. This elicited no response from Toni, and Amy goes on to offer an assessment of the overall study session in line 711. Toni seems surprised by this assessment, as indicated by her intonation and request for clarification in line 713. After Amy's clarification of her assessment, Toni renews the topic in line 721. They remain on this

trajectory for a few moments, until Toni indicates that she is satisfied with Amy's response (line 762).

Example 10

762	**TM:**	**Okay (1.0) Awesome.**
763	**AM:**	**↑Yup so ↑that's how my notes- taking sty:le is.**
764 →	**TM:**	**↑All right, so do you have any plans for the evening?**

After Amy offers her upshot of the note-taking strategy in line 763, Toni introduces a topical shift with her question in line 764, which also serves as a possible pre-closing utterance. The topic of Amy's evening plans deviates from the trajectory of the session, but it is possible that Toni has an ulterior motive for asking this open-ended question. With emphasis on the word "plans" (line 764), perhaps she wants to make sure that Amy is planning to write her paper and study for her speech test that evening.

Example 11

775 →	**TM:**	**alright I'm going to text you later tell you it'll be like "did**
776		**you do your paper- did you start your paper yet?"**
777		**[( )**
778	**AM:**	**[And I'm going to take a picture of the scree:n**
779	**TM:**	**Yes:!**
780	**AM:**	**Like "yes I'm doing that right now!"**
781 →	**TM:**	**Goo:d! Alright. Well (.) pt you gotta (.) get going**
782	**AM:**	**Ye:ah**
783 →	**TM:**	**All right. ↑Well. Pt Good study session!**
784	**AM:**	**Ye:s it was a really good study session even though it was recorded.**
785 →	**TM:**	**((laughs)) And I will see- see you on Friday.**
786	**AM:**	**Yes (.) Friday at five.**

In lines 775-776, Toni renews the topic of sending reminder text messages to Amy to make sure she is studying. This topic, which had been enjoyed previously, seems to ensure a laugh and a good way to close the study session.

In line 781, Toni officially initiates closure. This terminal exchange is an example of how the tutor provides a polite excuse for terminating the session and student agreement (lines 781-782), complimentary assessment and student agreement (lines 783-784), and reminding the student of the next session with student agreement (lines 785-786).

Discussion and Conclusion

The proposed canonical trajectory of a study session includes three arcs of reviewing course content; exploring the student's application of metacognitive strategies; and promoting self-efficacy by encouraging the student to assess his/her learning process. Topics and subtopics should incorporate those three arcs.

In this study, we have seen that both tutor and student initiate topical shifts and shades. The student, who dominates the floor throughout most of the study session, seems to initiate topical shifts to discuss personal issues such as her brother's court date, or her activities with the student organization. The tutor allows the student to pursue the topics, but usually employs topical shifts to get the study session back on track.

The tutor's ability to manage topics during the study session varies. Toni demonstrates trouble-free topical shades when she offers advice/support to the student regarding metacognitive strategies or tips for buying books online. Other topical shifts are prefaced by tokens such as "alright," "ok," and "so." This tutor could benefit from practicing questions/statements that serve as more effective topical shades or shifts. Such phrases might include, "How does that relate to this class?" or "Let's get back to the point of the lecture," or "Recap the main topics of the chapter." Additionally, this tutor can review the transcripts (or listen to the tape) to re-examine problem spots in the session. She missed some opportunities to have the student work on homework during the session (i.e. she could have helped the student start writing her paper rather than question her about how she plans to proceed.) The tutor also missed some opportunities to learn with the student, as when neither knew the definition of the word "rhetoric" while studying for the speech test. The supervisor can help her see how her silences may be interpreted differently than she intends. She can also work on developing other strategies for the student to monitor her progress with homework, rather than offering to send a reminder text message. The offer to send reminder text messages may be viewed as exceeding the boundaries of the tutoring relationship; it would be preferable for the tutor to help the student develop her own system of organizational skills and time management.

Not only does conversation analysis provide informative feedback to the tutor, the results of the analysis can inform future tutor training. From this study, it is suggested that future training sessions include strategies for minimizing student's off-task narratives, encouraging immediate application of metacognitive strategies (rather than "planning" such strategies), and utilizing resources necessary to successfully review course content. Rehearsal

of topical shifts and shades can occur in role-play during staff meetings throughout the semester, in an effort to keep tutors' skills honed.

Future Directions

While this study explored the concept of topic management, the same study session can be analyzed for a number of other aspects of talk-in-interaction. Typically, conversation analysts explore issues such as turn-taking, repairs, openings, closings, and performance, among other topics. Such analyses can inform tutor performance, and offer suggestions for managing different contexts, such as academic coaching for probationary students, content-area tutoring, Supplemental Instruction, or group study sessions. The methodology can be used for longitudinal studies, for example, to determine how an individual tutor develops tutoring skills; or for comparative studies to see what patterns emerge when multiple tutoring sessions are analyzed.

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Book Review: Handbook for Training Peer Tutors and Mentors

Agee, K. & Hodges R., eds. (2012). *Handbook for Training Peer Tutors and Mentors*. Cengage Learning: Mason, OH.

REVIEWED BY CHRISTINE REICHERT

The image of a welcoming, well-trodden, country road into the unknown is a perfect image representing this handbook. It is welcoming, comforting, and yet there is the lure of the mysterious just beyond the corner and hidden from view. So, too, does the handbook provide a user-friendly, easily navigated, pathway for those (ranging from "none" to "oodles" of experience) to successfully navigate the world of learning assistance.

Glancing through the table of contents is enticing, exciting, and quite impressive; the contributing authors are undeniably the who's who in the field of learning assistance. As a result, those experienced learning assistance professionals immediately know they are in for a treat because there will absolutely be an exciting "read" ahead. For those who are just joining the learning assistance discipline, there is a comfort in finding a plethora of authors. However, the Table of Contents does more than herald its "top drawer" contributors, the breadth and depth of the topics offered within each chapter is astounding. The six chapters follow a clear progression: theories, modes of training, general training topics, tutor training topics, mentor training topics, and training programs. Each chapter contains a wide range of ideas, trends, legal issues, ethical issues, etc.

The 400-plus page handbook by its very size is daunting, but the structure is far from it. Each contributing article is short, concise, and easy to read in a few moments. It is clearly organized for a busy professional who is looking for specific help—quickly—that can be implemented easily and presented with confidence.

While the reasoning behind adhering strictly to copyright laws is clear and honestly presented, the inability for readers to implement the ideas and recreate templates for implementation may be considered a disadvantage. I do applaud the editors for providing a free venue elsewhere, but I do fear

some may not agree with the decision, or they may not have read the section and could miss the opportunity that is provided for communal sharing. Abuse of copyright laws is an ongoing problem and it is a difficult decision, regardless. I urge readers to read the forward (rather than quickly skipping to the articles); the very discussion of copyright—by itself—presents a growing issue for learning assistance professionals and reinforces what should be part of everyone's awareness in each center. It is an important but difficult issue.

I particularly liked the section by Rita Smilkstein, "The brain's natural learning process;" specifically the six principles of learning. These principles are clear and are quite effective to calm students who come for assistance positive they suddenly can't learn. The information is well documented, to provide the professional with references for further study, if desired.

Two more excellent articles are on the importance of communication by Diana Calhoun Bell, "Positive and Supportive Communication," and Anita H. Ens, "Communicating across cultures." The two articles are essential for reinforcing first the importance of words when talking to "stressed out students," and second, the importance of understanding and incorporating "translation," steps to eliminate communication barriers with cultural diverse student communities. The list of tempting articles is too long to highlight in this review, but some of the refreshing topics that are addressed include those on gender issues, tutoring history with PERSIA, tutoring music, helping students in crisis, and self-regulated learners.

Finally, all the expected topics are clearly present (test taking strategies, reading techniques, tutoring mathematics, athletics, those with disabilities, etc). But they are fresh, innovative, and current.

Quite simply, this handbook is a must-read.

Tutor Use by Student-Athletes: An Exploratory Analysis

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Abstract

Although previous literature has examined a variety of academic outcomes for student-athletes (e.g., GPA, graduation rates), little is known regarding the academic behaviors of this student sub-group, especially regarding tutor use. Therefore, the current study examined 1,297 student-athlete tutoring cases during a three-year period and found that females see fewer tutors overall but utilize tutors more regularly, race was not a factor in tutor use, and student-athletes from revenue sports see more tutors than student-athletes from non-revenue sports. Learning Center personnel, advisors, and other stakeholders of college athletics can use this information to assist in tutor coordination and academic programming.

Research investigating tutoring effectiveness is clear. Whether it is face-to-face, with a trained tutor, or collaborating with a peer, tutoring is an effective means of obtaining information (Cooper, 2010; Chi, Roy, & Hausmann, 2008; Johnson & Johnson, 1992). This success applies to college students as a whole, but research investigating tutoring patterns of specific student sub-groups is limited. Specifically, there is virtually no empirical data published on the tutoring patterns of collegiate student-athletes. The information that does exist on student-athlete tutoring is largely anecdotal with an emphasis on explaining the organizational structure of tutoring programs, rather than the patterns or outcome effectiveness of a program (Curry, 2002; Davidson & Peyton, 2007; Masin, 1996; Zahm, 1985). Put another way, there is evidence that collegiate student-athletes across the country have access to a wide variety of tutoring support as part of extensive student-athlete advising programs, but no empirical data collected on how tutors are utilized. Any information that exists, especially for individual student-athletes, is largely

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confidential and unlikely to be released due to the Federal Education Right to Privacy Act (FERPA).

In light of the limited literature regarding student-athletes, assessing tutoring patterns of this unique group is warranted for two reasons. First, student-athletes, particularly at the highest levels of basketball and football, have distinctive demands by nature of their participation in intercollegiate athletics. For example, the amount of time and energy put forth by student-athletes is staggering. They spend 35-40 hours a week in physically demanding practices, competitions, film review, weight training, injury rehabilitation, media responsibilities, and community service (Simons, Bosworth, Fujita, & Jensen, 2007). Understanding how student-athletes organize their time, especially with regard to their academic and tutoring pursuits, can allow coaches and administration to better schedule academic support services to meet these unique needs. This is expressly important when a student-athlete must miss class due to competitions, and may rely on a tutor to help catch up on missed material. In these cases, if tutors can be given more specific information on this population during tutor training, they can more efficiently meet the student athlete's needs. Furthermore, understanding from which departments and disciplines tutors are required can help bridge the gap between athletic and academic personnel, thus leading to a more streamlined programming approach.

Second, student-athletes at National Collegiate Athletic Association (NCAA) institutions often utilize tutoring to help meet specific academic requirements above and beyond the average student in order to remain athletically eligible (NCAA, 2012). There are specific GPA and progress towards degree standards that are assessed every semester and reported to individual athletic compliance offices, as well as the NCAA. If student-athletes do not meet the required standards, they are declared academically ineligible. Given the investment a NCAA Division I university provides in the form of athletic scholarships, as well as the publicity often received by highly recognizable student-athletes, it is in the best interest of both the student and the institution that the student-athlete remain academically eligible. Obtaining tutoring data, in combination with demographic and athletic information (e.g., gender, sport type, etc.) will reveal patterns which can be used by tutor coordinators to better accommodate this unique student sub-group and help ensure their academic eligibility.

With these considerations in mind, the academic performance of student-athletes is a major concern to administrators, coaches, parents, and other stakeholders. Assessing tutoring patterns of this highly visible student sub-group will aid in a better understanding of how to improve tutoring programs and academic performance. Given the relative importance of student-athlete academic performance (e.g., eligibility), and the unique demands

placed on the time and energy of student-athletes, being as educated and efficient as possible with tutoring services is critical. By identifying patterns in tutoring, especially as they relate to specific demographic characteristics, stakeholders can better develop specific plans to assist student-athletes in their academic endeavors. Therefore, the purpose of this research was to explore and describe the tutoring patterns of student-athletes at a Football Bowl Subdivision (FBS) institution.

Method

Using the aforementioned information as a guide, the following three research questions and six corresponding hypotheses were created:

RQ 1: Are there differences in student-athlete tutoring patterns based on demographic characteristics?

H1: Patterns exist based on differences in demographic characteristics.

RQ 2: Are there significant differences in tutor use based on demographic categories?

H2: Males will utilize tutors significantly more than females.

H3: African American student-athletes will utilize tutors significantly less than student-athletes from other races.

H4: Freshmen and sophomores will utilize tutors significantly more than upperclass student-athletes.

H5: Revenue sports will utilize tutors significantly more than non-revenue sports.

RQ 3: Are there significant relationships between student-athlete tutoring characteristics?

H6: There will be significant relationships among all tutoring characteristics

Setting

The research took place at a Learning Center of a large Midwestern university (Approximately 20,000 total students and classified as *high research activity* by the Carnegie Foundation). This Learning Center provides free group and individual tutoring to all students at the university, as well as coordinates testing for disabled students. Student-athletes utilize tutors from the Learning Center in the same way as non-athletes. There are no independent tutors hired by the athletic department. The university is a member of NCAA Division 1 FBS and has 19 varsity athletic teams with approximately 420 student-athletes at any given time.

Operational Definitions

The following variables and their corresponding definitions were examined in this study.

Gender = male or female

Race = Caucasian, African American, Hispanic, other, or unknown

Academic Level = The academic classification of students based on credit hours earned. The four categories are freshman, sophomore, junior, and senior.

Sport = Due to the large amount of teams, as well as the distinction between revenue versus nonrevenue sports, sports were collapsed into six different categories. The revenue sports of football, men's basketball, and women's basketball were their own categories. Baseball was also its own category considering it has traditionally been one of the three weakest academic performing sports with football and men's basketball (Christianson, 2012). The remaining two categories were men's other (i.e., golf, swimming and diving, tennis, volleyball) and women's other (i.e., track and field, field hockey, golf, gymnastics, soccer, softball, swimming and diving, tennis, volleyball).

Semester = fall (August through December) or spring (January through May)

Course = With over 1000 individual courses available, the researchers collapsed courses into seven categories; 1) math, 2) English/writing, 3) science (e.g., biology, chemistry, physics, astronomy, geology), 4) social sciences (e.g., psychology, political science, history, health, anthropology, geography, religious studies, philosophy), 5) business (e.g., marketing, accounting, economics, information systems), 6) arts (e.g., art history, theatre, music, foreign language), 7) and study skills (involved tutors working on generalized study skills without a specific course).

Visits = the number of times the student-athlete saw a tutor for a specific course.

GPA Accum. = overall grade point average

GPA Semester = grade point average for all classes during the semester in which tutoring was sought

Grade = grade point number reflecting the letter grade earned for each course in which tutoring was sought (i.e., A = 4.0, A- = 3.667, B+ = 3.333, etc.).

Major = Major is the designation for the college from which a major is associated. For example, a student that is majoring in accounting was classified as COB (College of Business). There were nine major designations; 1) undecided, 2) College of Applied Science and Technology (CAST), 3)

College of Architecture and Planning (CAP), 4) College of Business (COB), 5) College of Communication, Information, and Media (CCIM), 6) College of Fine Arts (CFA), 7) College of Science and Humanities (CSH), 8) Teacher's College (TC), 9) General Studies.

Procedures

Upon approval from the Institutional Review Board, the researchers identified when student-athletes received tutoring services at least one time for an individual course during three consecutive academic years (2009-10 through 2011-12). A total of 1,297 individual course tutoring experiences were gathered during the six semesters (did not include summer). If a student-athlete needed a tutor for more than one course, each course was coded as its own tutoring experience. Tutoring data was gathered from the electronic records kept by the Learning Center. The data contained all relevant information about tutoring sessions including course subjects, frequency of visitations, type of tutoring, GPA information, etc. Those records were then combined with the demographic and athletic information (e.g., gender, race, sport) to create a comprehensive picture of tutoring services for student-athletes

Due to the confidential nature of individual academic data, safeguards were taken to ensure no individual participants were identifiable by the raw data. Information was collapsed and analyzed only in large groups (e.g., years, sports, courses). No single individuals are discussed, and only groups that are large enough to eliminate any possible identification of the participants are discussed. Collapsing the data into these larger and more generalized data sets over a three-year time span ensured no student-athletes were identifiable by any of the variables utilized in this study.

Data analysis included first identifying frequencies and measures of central tendency for demographic data (e.g., means, standard deviation) to address hypothesis one. Using the demographic data as the basis for further review, hypotheses two was tested using an independent samples t-test to determine if gender differences existed with regard to tutor use. Hypotheses three through five were tested using a one way analysis of variance (ANOVA) to determine if race, class level, and sport type exhibited differences in tutor use. Finally, hypothesis five was tested using Pearson Product Moment correlation coefficient to determine if any significant relationships existed among the variables under investigation in this study. Alpha levels were set at .05.

Results

To address the first research question and hypothesis, demographic characteristics were examined in relationship to the tutoring variables. Table 1 provides descriptive information for both gender and race related to the variables examined in this study. Noteworthy results for gender included more males (n = 691) sought tutors than females (n = 605). Females tended to see more tutors for science (n = 189) than males (n = 89), and recorded higher cumulative, semester, and course grades than males for all academic disciplines. For race, Caucasian student-athletes saw the most tutors (n = 770), followed by African American student-athletes (n = 418) and other (n = 37).

Table 1

Student-Athlete Tutoring Characteristics by Gender and Race

	Male	Female	Caucasian	African American	Hispanic	Other	Unknown
SEMESTER							
Fall	353	350	455	198	22	13	15
Spring	338	255	315	220	19	17	22
COURSE TYPE							
Math	120	86	119	68	9	4	6
English	63	34	42	40	6	3	6
Science	89	189	202	53	11	5	7
Social Science	282	203	265	186	9	14	11
Business	70	39	62	36	5	2	4
Arts	45	32	50	24	1	1	1
Study Skills	22	22	30	11	0	1	2
VISITS (MEAN)	3.74	4.28	4.03	3.99	3.58	3.67	4
GPA (MEAN)							
Cumulative	2.64	3.07	2.97	2.56	2.92	3.1	3.02
Semester	2.52	3.01	2.90	2.45	2.87	2.93	2.83
Course	3.10	3.25	3.26	2.92	3.2	3.53	3.76
MAJOR							
Undecided	62	17	44	28	1	1	5
CAST	173	187	212	113	12	17	6
CAP	2	0	1	0	0	0	1
COB	130	54	109	50	18	2	5
CCIM	93	54	67	73	4	2	5
CFA	1	3	4	0	0	0	0
CSH	174	203	243	115	6	6	7
TC	11	65	58	8	0	2	8
General Studies	45	22	32	31	0	0	4
TOTAL	691	605	770	418	41	30	37

Table 2 displays tutoring characteristics by academic level. Of particular note is that the total number of tutors decreases for each increase in academic level whereby freshmen (n = 512) saw the most tutors and seniors (n = 111) saw the least. However, the mean number of visits demonstrated a somewhat opposite pattern whereby juniors (M = 4.25) and seniors (M = 4.14) saw tutors more times on average than did freshman (M = 3.94) and sophomores (M = 3.90). Additionally, freshmen saw more than double the amount of tutors in the fall of their first year (n = 367) than during the spring (n = 145).

Table 2

Student-Athlete Tutoring Characteristics by Academic Level

	Freshman	Sophomore	Junior	Senior
SEMESTER				
Fall	367	181	104	51
Spring	145	272	116	60
COURSE TYPE				
Math	83	76	36	11
English	66	24	3	4
Science	86	103	66	23
Social Science	221	161	60	43
Business	16	44	34	15
Arts	28	32	12	5
Study Skills	12	13	9	10
VISITS (MEAN)	3.94	3.90	4.25	4.14
GPA (MEAN)				
Cumulative	2.84	2.86	2.85	2.74
Semester	2.80	2.72	2.75	2.67
Course	3.21	3.09	3.07	3.52
MAJOR				
Undecided	64	7	0	8
CAST	150	142	49	19
CAP	0	0	0	2
COB	85	59	27	13
CCIM	26	64	45	12
CFA	3	0	0	1
CSH	148	147	57	25
TC	36	21	11	8
General Studies	0	13	31	23
TOTAL	512	453	220	111

Table 3 provides descriptive information for tutoring information cross tabulated with the six sport categories. For all sports, most tutoring occurred for social science courses (n = 166), and most students held a major in CSH, which houses such courses. GPA tended to be highest for the *women other* category, and females in general had more tutoring visits throughout the semester after a tutor was obtained. However, for courses where tutoring was sought, men's basketball had the highest final grades (slightly higher than an A-). Additionally, the overall GPA for men's basketball and football were the two lowest, indicating that in courses where tutoring occurred, results were achieved.

Table 3

Student-Athlete Tutoring Characteristics by Sport

	Football	Men's Basketball	Baseball	Women's Basketball	Men Other	Women Other
SEMESTER						
Fall	182	35	57	31	79	319
Spring	198	53	40	30	47	225
COURSE TYPE						
Math	61	19	17	7	23	79
English	40	6	7	5	10	29
Science	39	10	9	8	31	181
Social Science	166	34	48	30	34	173
Business	39	7	10	6	14	33
Arts	23	7	4	2	11	30
Study Skills	12	5	2	3	3	19
VISITS (MEAN)	3.83	3.60	3.05	3.87	4.13	4.33
GPA (MEAN)						
Cumulative	2.57	2.53	2.82	2.81	2.79	3.10
Semester	2.43	2.42	2.68	2.67	2.76	3.05
Course	2.96	3.50	2.90	3.16	3.43	3.26
MAJOR						
Undecided	40	1	6	5	15	12
CAST	68	40	20	23	45	164
CAP	0	0	0	0	2	0
COB	63	7	32	0	28	54
CCIM	77	7	7	13	2	41
CFA	0	0	1	0	0	3
CSH	102	15	27	11	30	192
TC	9	0	0	5	2	60
General Studies	21	18	4	4	2	18
TOTAL	380	88	97	61	126	544

After identifying general trends among the demographic categories, the researchers addressed the second research question by testing hypotheses two through five. An independent samples t-test was conducted to evaluate the hypothesis that males use tutors more than females. The test was significant, $t(1294) = -2.39$, $p = .02$, but the results were counter to the research hypothesis. Males ($M = 3.74$, $SD = 3.94$) utilized their tutors significantly less than females ($M = 4.28$, $SD = 4.2$).

Hypothesis three predicted African American student-athletes would utilize tutors significantly less than other student-athletes from different races. A one-way ANOVA revealed no significant differences between races regarding the amount of tutoring visits, $F(4, 1291) = .17$, $p = .96$. This result did not support hypothesis three, and indicated that each race utilized tutors to the same degree.

To test hypothesis four, a one-way ANOVA was conducted to determine if differences existed between tutor uses based on academic levels. Results were similar to those from hypothesis three which revealed no significant differences in the number of times tutors were seen in a semester, $F(3, 1292) = .44$, $p = .73$. In other words, after securing a tutor, freshmen saw that tutor on average the same number of times as seniors. This result failed to confirm hypothesis four.

Hypothesis five was tested using a one-way ANOVA to determine if the different categories of sport examined in the current study differed in their amount of tutor use. Results indicated sport approached significance, but was not significant, $F(5, 1290) = 2.12$, $p = .06$. However, Levene's statistic indicated the assumption of equal variances was violated, prompting the used of the Welch statistic which did indicate significance, $p = .01$. Tamhane post hoc analysis revealed significance differences ($p < .01$) between the sport of baseball ($M = 3.05$, $SD = 2.88$) and women's other sports ($M = 4.33$, $SD = 4.31$). No other significant differences among sports were found.

The third research question and final hypothesis was designed to test any significant relationships between the variables investigated in this study. Table 4 demonstrates the results of a Pearson Correlation Coefficient calculated for all variables. A total of 23 relationships out of a possible 55 were significant at the $p < .01$ level, while six relationships were significant at the $p < .05$ level. Twenty three of the significant relationships demonstrated relatively weak coloration coefficients below .3, while six relationships demonstrated moderate relationships as indicated by a .3 or better.

Table 4

Pearson Correlations for Student-Athlete tutoring Variables

	Semester	Course	GPA Accum.	GPA Semester	Visits	Grade	Major	Race	Academic Level	Gender
Course	.03	-								
GPA Accum.	-.05	-.05	-							
GPA Semester	-.12**	-.04	.88**	-						
Visits	-.06*	-.11**	-.07*	-.08**	-					
Grade	-.09**	.19**	.23**	.25**	-.04	-				
Major	.02	.04	-.03	-.04	.04	.01	-			
Race	.10**	-.03	-.09**	-.12**	-.01	.01	-.04	-		
Academic Level	.20**	.11**	-.03	-.05	.02	.02	.19**	.03	-	
Gender	-.07*	-.02	.36**	.34**	.07*	.04	.10**	.12**	<.01	-
Sport	-.11**	-.04	.38**	.37**	.06*	.06*	.05	-.14**	-.04	.84**

*p < .05. **p < .01.

Discussion

The results of this study demonstrate several important findings that correspond with the six hypotheses. Hypotheses one through five predicted a variety of patterns and differences based on demographic categories of gender, race, academic level, and sport. First, gender patterns revealed females saw fewer tutors overall and earned higher GPAs than males. This finding was anticipated given that females have been consistently found to outperform males in the areas of GPA (Johnson, Wessel, & Pierce, 2010), graduation rates (Melendez, 2006; NCAA Research Staff, 2012), and Academic Progress Rates (Christianson, 2012). These gender patterns were further supported by findings for hypothesis two, which demonstrated that females utilize tutors significantly more than males after securing a tutor. In other words, females tend to see fewer tutors overall, but attend more tutoring sessions after committing to the use of a tutor. This finding may indicate that males are not as committed to tutor use after securing a tutor. One possible explanation might be that because female student-athletes are generally more successful academically, they have a higher level of self-motivation to pursue tutor assistance. Perhaps some males attend tutoring because of requirements from coaches or advisors rather than the desire to improve their understanding of a subject. Although this study cannot confirm the tutoring motivations of male and female student-athletes, it is clear that females utilize their tutors more than males, and generate higher GPAs and marks in the classes for which they sought tutoring.

The results for the demographic category of race indicated that nearly twice as many Caucasian student-athletes registered with tutors than did African-American student-athletes or student-athletes from other races. These results were anticipated given the similar distribution of race among the student-athletes at the university. However, hypothesis three was not confirmed, indicating that after securing a tutor African-American student-athletes did not utilize those tutors less than student-athletes from other races. The prediction that African-American student-athletes would utilize tutors at a lower level was grounded in previous literature identifying African-American student-athletes as more at-risk in terms of GPA (Johnson, et al., 2010), graduation rates (NCAA Research Staff, 2012), attrition rates (Johnson, Wessel, & Pierce, in press), and Academic Progress Rate (Christianson, 2012). In other words, because African-American student-athletes tended to produce lower academic outcomes than other races, it was predicted fewer tutors would be utilized. The finding that there were not significant differences in the amount of tutor utilization suggests that student-athletes from all

races attended tutoring sessions the same amount (approximately 4 tutor visits) after securing the tutor. However, as demonstrated by the correlation analysis in hypothesis six, there was a significant relationship between race and GPA (semester and accumulative), indicating African-American student-athletes earned lower GPAs than other races. These findings are important for advisors and other stakeholders as they indicate that similar tutor usage results in different GPA for student-athletes of different races. This finding supports literature which suggests many minority students, particularly student-athletes, are academically underprepared when entering college (Hoberman, 2000; Young, Johnson, Hawthorne, & Pugh, 2011).

For academic level, results indicated the total number of tutors drastically declines as academic levels increase. That is, freshmen see the most tutors while seniors see the least. This is logical considering the total number of student-athletes for each grade level decreases each year, which guarantees there will always be more freshmen than senior student-athletes. This gradual loss of student-athletes resembles a normal amount of attrition demonstrated by all college students whereby 40% of students that begin college drop out before completing their degree (Astin & Oseguera,2004), and 75% of those students drop out within the first two years of entering college (Tinto, 1993). Additional athlete-specific factors such as limited playing time, inability to travel home due to practices and competitions, and a demanding physical routine may also contribute to decreased retention (Johnson et al., in press). When mean number of visits are investigated however, there were no significant differences between academic levels, thus indicating that all grade levels attend the same amount of tutoring sessions after securing a tutor. This is a curious finding as hypothesis four predicted freshmen and sophomores would utilize tutors more due to the relative newness of the college experience and potential need to become acclimated to college level work. Perhaps students who seek tutors are the most likely to remain in college through to graduation. Or, perhaps freshmen and sophomores do need tutors due to acclimation, but upperclassmen need tutors because they are entering the more difficult courses in their chosen majors. Understanding the motivation regarding tutoring for specific grade level should be a natural extension of these findings for future research.

Hypothesis five predicted revenue sports would utilize significantly more tutors than non-revenue sports. This hypothesis was created because revenue sports at the NCAA Division I level (i.e., football and basketball) have been linked to poor GPAs (Johnson et al., 2010), graduation rates (NCAA Research Staff, 2012), and Academic Progress Rates (Christianson, 2012), thus causing a prediction for more tutor needs. The results revealed that overall, other

women's sports saw more total tutors than any other sport group in this study, which is logical considering the group had the most individual student-athletes. However, when one examines the proportionality of the tutoring patterns, it is important to note that men's basketball utilized more tutors per capita than any other sport group with an average of more than one tutor per player per semester. No other sport group saw this many tutors relative to the number of players on the team(s). However, when the number of mean visits was examined, there was only one significant difference between the highest number of mean visits (other women's sports) and lowest number of mean visits (baseball). In other words, none of the sport groups differed on the amount of visits after securing a tutor, except that baseball saw their tutor significantly fewer times than other women's sports. This was not completely unexpected as baseball has been found to be the most at-risk sport after football and men's basketball (Christianson, 2012). The fact that football and men's basketball utilized tutors the same way as all other sport groups did not support the hypothesis that they would utilize tutors more, but was encouraging because they did not utilize tutors less.

The final hypothesis predicted relationships between all the variables in this study. The results revealed only six relationships that could be considered moderately strong, with 17 significant relationships that would be considered weak (Andrew, Pedersen, & McEvoy, 2011). Some of these strong relationships were expected and are logical. For example, the strong correlation between semester GPA and accumulative GPA makes sense because semester GPAs are used to calculate accumulative GPA. The more noteworthy relationships in this study support findings from previous literature (as well as the hypotheses in this study) which suggest that after securing a tutor females utilize tutors more frequently than males, and female sports in general utilize more tutors than male sports, thus reinforcing a stronger focus on academic pursuits (Johnson et al., 2010, in press; Johnson, Wessel, & Pierce, 2012; NCAA Research Staff, 2012). It should also be noted that the relationships between GPA and the demographic variables in this case confirm results from previous literature. For example, the significant correlations for semester and accumulative GPA based on race, gender, and sport confirm that African American student-athletes tend to have lower GPAs than student-athletes from other races, male student-athletes tend to have lower GPAs than female student-athletes, and student-athletes in revenue sports tend to have lower GPAs than student-athletes in non-revenue sports (Johnson et al., 2010).

Conclusion

The current study produced two important findings. First, this study confirmed conclusions from previous literature regarding academic outcomes. Specifically, this study reinforced that female student-athletes, Caucasian student-athletes, and student-athletes in non-revenue sports earn significantly higher semester and cumulative GPAs than male student-athletes, minority student-athletes, and student-athletes in revenue sports, respectively. Second, and more specific to the research questions posed, the current study fills an important gap in the literature regarding the tutoring behaviors of student-athletes. Among the most noteworthy findings were that females see fewer tutors overall, but utilize tutors more when they secure them; race is not a factor in tutor use; the earlier in a student-athlete's college career the more tutors are secured, but no differences exist in the amount of usage after securing a tutor; and revenue sports see more tutors per capita than non-revenue sports, but difference in tutor use after securing a tutor was only found between baseball and other women's sports.

From a practical standpoint, the results of this study can be used by advising, academic support, and tutoring personnel to create services and policies that best accommodate student-athletes. For example, knowing that student-athletes who are male, African-American, freshman, and in revenue sports do not utilize tutors more than their peers, but have significantly lower GPAs, validates more tutor use and intervention on the part of stakeholders. Some strategies that could be implemented for student-athletes with these characteristics include securing the most experienced tutors and increased communication among the coach, athlete, and tutoring coordinator. Additionally, at-risk student-athletes may be counseled into participating in weekly sessions after they are given information found in the current study. Furthermore, the practical use of this study as an initial baseline for future student-athlete tutoring research is apparent.

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The Relationship between Supplemental Instruction Leader Learning Style and Study Session

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Abstract

This qualitative study examined the learning styles of supplemental instruction (SI) leaders at a large, public university to determine whether or not leader learning styles influenced the way they designed out-of-class study sessions for students. No consistent pattern emerged among the themes; however, the results attributed out-of-class study session design to both the incorporation of personal learning style preferences as identified through the Kolb Learning Style Inventory (2007) and training conducted by the institution. Implications for future research include the need for continued study as to how and if supplemental instruction leader learning style influences out-of-class study session design.

Learning assistance programs have developed over the past four decades to become a commonly utilized program for enhancing academic support at institutions of higher education (Arendale, 2004). Although tutoring as a means of academic support has existed almost since the inception of higher education, the move to a comprehensive model of learning centers is relatively new. While specific programs and services differ from institution to institution, the overall goal of support for the student population remains central to the mission of the learning center (Dean, 2006; MacDonald, 2004). One academic support program that many institutions of higher education provide for their student population is supplemental instruction (SI) (Hurley, Jacobs, & Gilbert, 2006).

SI programs are staffed by student peers identified as SI leaders. These leaders are taught specific, prescribed methods for assisting fellow students as part of SI training. It then becomes the responsibility of SI leaders to adapt these methods into their respective out-of-class study sessions. In planning the study sessions, the SI leaders should articulate clearly the objective of the

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session and move toward the creation of a session agenda (Hurley, Jacobs, & Gilbert, 2006). The basic recommendation for an effective study session is to include one or two learning strategies within the session design (Hurley et al., 2006).

Purpose of the Study

The purpose of this study was to examine the learning styles of SI leaders at a major state university to determine whether or not their personal learning styles influence the way they design and develop out-of-class study sessions. The study is qualitative in nature to provide in-depth data from a specific site offering SI (Creswell, 2009).

Significance of the Study

SI programs have been found to have a positive impact on the persistence and retention of students in barrier courses at the collegiate level (Ogden, Thompson, Russell, & Simons, 2003). Through this present study, effective training programs may be developed for the SI leader in relation to their experience as both a leader and developing student. This study may also benefit indirectly the student attendee through the improvement of the overall support program. Pascarella and Terenzini (2005) noted that more studies on the benefits of SI are needed to further the evidence of effectiveness of this style of academic intervention. The study is limited, however, by the fact that SI, by definition, is only offered in courses with a high risk of failure (Hurley, Jacobs, & Gilbert, 2006). This fact limits the scope of the study in the sense that not every course qualifies for SI, limiting potential SI leaders to individuals who not only have specific qualities, but who are also knowledgeable in a few, specific course content areas.

Review of the Literature

Developed in 1973 by Deanna Martin at the University of Missouri at Kansas City, the program of SI was designed to increase retention of students in high-risk courses (Hurley, Jacobs, & Gilbert, 2006). Additionally, the program was created to improve student performance within the classroom in terms of improved course grades, participation, and overall improvement of study strategies (Hurley et al., 2006). SI has been identified as having multiple theoretical foundations including that of constructivism (McGuire, 2006). The program was designed as a means of reviewing course content and study strategies from multiple perspectives, thus reinforcing

constructivist epistemology (Schunk, 2008). Through the move from a teacher-centered to a learner-centered approach to higher education, a goal of SI is to improve student learning outcomes and teach the students the skills of analysis, synthesis, and evaluation (McGuire, 2006).

SI targets courses deemed "barrier" or historically difficult (Hurley, Patterson, & Wilcox, 2006). These courses undoubtedly lead to decreased persistence among enrolled students. Furthermore, many of the targeted courses are required, and a student must complete them in order to graduate. Traditionally, much of the implementation of a SI program focuses on "barrier" courses or historically difficult courses at the freshman and sophomore level of college.

Peer support while attending college can affect grade point average and have an influence in the academic success of the student (Dennis, Phinney, & Chuateco, 2005). Within SI programs, students are supported by a peer SI leader who assists the student develop academically by facilitating study sessions (McGuire, 2006). Peer support is not only important to the student who is attending the SI session, but is also an important developmental component of the SI leader (Stout & McDaniel, 2006).

A key and integral component to the SI program is the design and facilitation of study sessions (Hurley, Jacobs, & Gilbert, 2006; University of Missouri-Kansas City, 2006). In addition to attending class with enrolled students, the SI leader designs and facilitates a minimum of three out-of-class study sessions per week. Specific recommendations for course development are given to the SI leader during the training process facilitated by the SI program coordinator. The SI leader must identify multiple modes of content delivery and facilitation (Hurley, et al., 2006). In general, session plans should include specific objectives of the session as well as the processes the SI leader plans to use in order to best facilitate the study session.

The SI experience itself has been shown to have a developmental impact on the student leader. Lockie and Van Lanen (2008) identified six themes in their qualitative study addressing the experiences of SI leaders. Of note is Lockie and Van Lanen's (2008) identification of a central theme of developed appreciation of diverse learning needs of individual students. Within this theme, the researchers noted that SI leaders understood that individual students learn differently, so they approached study session design with this concept in mind. Lockie and Van Lanen also noted that SI leaders learned that different students have different anxiety levels and deal with stress in a variety of ways. SI leaders mitigated this anxiety by approaching the subject matter from different perspectives. The appreciation of different ways of learning by the SI leader appears to assist the student in learning during the

study sessions by allowing the student to focus on the concept or problem at hand without having to focus on how he or she learns and processes information. Yildirim, Acar, Bull, and Sevinc (2008) contradict Claxton and Murrell's (1987) finding that more consideration of student learning styles is necessary in order for institutions of higher education to become more effective in teaching and the dissemination of information to the collegiate population. Claxton and Murell argued that although research on matching or mismatching of learning styles on the academic achievement of students has not been definitively answered, it may still be important to consider learning style when approaching course design. In line with Claxton and Murrell, Stice (1987) argues that learning is enhanced when multiple learning styles are utilized in the teaching process. Stice holds that more students will become more engaged in the learning process and retain more information when individual learning styles are taken in to consideration.

Theoretical Frame

Kolb's (1981) learning theory provides the theoretical framework for this study because it takes into consideration many of the tenets of constructivist epistemology and relates to learning styles. Kolb's (1984) learning styles form a practical application of experiential learning theory that will allow for the study of how learning styles may impact SI session design. In sum, Kolb provides the most comprehensive basis upon which to frame the present study due to the foundational principles that complement SI and its proposition as they apply to the phenomenon of study session design.

Methodology

Consistent with qualitative research tradition, this study is a basic, interpretive qualitative study focused on whether the learning style of an SI leader influences the development and design of out-of-class study sessions (Merriam, 2002). For this study, the population was 37 SI leaders currently employed by an academic support office at a large, state university as of the fall 2010 semester. Participants for the study were purposefully sampled from the population (Merriam, 2002; Creswell, 2009). Participation was sought from SI leaders when the study was introduced to the population at an ongoing training session. A total of 24 individuals expressed interest in participating in the study. Of the 24 individuals, 20 completed all parts of the study.

All SI leaders regardless of demographic variables or course discipline who have served in their position for a minimum of one semester were

eligible to participate in the study. This criterion was necessary in order to complete the study so that the SI leader will have had the opportunity to design and conduct out-of-class study sessions in the past.

Data Collection

Data collection for this study was based around a three-step process to allow for triangulation of the data (Patton, 1990). First, participants completed the Kolb Learning Style Inventory (2007). Second, participants sat for a semi-structured interview and completed a demographic questionnaire. The third step was document analysis of participants' session planning notes.

Prior to beginning the interview process, all participants were given participant numbers to insure anonymity. Subsequently, the participant number was converted in to a random name to allow for better flow in reporting results. Participants completed the Kolb Learning Style Inventory (2007) prior to being interviewed. Each inventory was scored, but results were not shared with the participant until the conclusion of the interview. The intention of not disclosing results of the inventory until after the interview was to limit interview answer bias of the participants. In addition, results of the inventory were not reviewed in connection with the interview process. In other words, interview questions were not influenced by inventory results that indicated a particular learning style.

Based on the results of the Kolb Learning Style Inventory (2007), participants were found to have one of four possible learning styles. A person with an assimilating style may be less interested in person-to-person interaction and more interested in understanding theoretical concepts (Kolb, 2007). A second possible learning style is the converging style. These individuals are characterized by being solution and task oriented with a preference for working on a task as opposed to working within social situations (Kolb, 2007). The third learning style is the diverging style. These individuals may prefer working in groups and listening to others (Kolb, 2007). Finally, the fourth learning style is the accommodating style. Individuals with an accommodating style may enjoy a challenge and prefer to do field work with others (Kolb, 2007).

The second component to data collection was conducting semi-structured, individual interviews with participants. All interviews were conducted on the same day as the completion of the inventory, and all were recorded and transcribed. At the beginning of each interview the participant answered a short pen-and-paper demographic questionnaire. All questions for the interview were asked in a sequential order allowing for discussion to

further explore specific responses. Kolb's experiential learning theory was utilized as a basis for developing questions (Kolb & Kolb, 2005).

The final process of data collection was analysis of SI leader session-planning documents. Each session was reviewed for key words and processes used by the SI leader.

Data Analysis

With a goal of understanding the relationship between learning styles of SI leaders, as determined by the Kolb Learning Style Inventory (2007), and their approach to study session design, analysis of the data began as soon as data were collected. All interviews were transcribed and coded for common ideas and similar thoughts presented by the participants. Data from the session planning documents were reviewed and triangulated with interview transcriptions and results of the Kolb Learning Style Inventory (2007) for clarity and consistency in participant response (Merriam, 2002; Patton, 1990). Consistent with qualitative research tradition, triangulation of multiple data sources allowed the emergence of themes based on repetition within the data and consistent responses from the participants (Merriam, 2002; Patton 1990).

Results

The age of participants ranged from 20 years old to 31 years old with an average participant age of 22.25 years old. Nine participants reported their gender as male, while 11 participants reported their gender as female. Of the 20 participants, one participant indicated a race or ethnicity of Asian, two participants indicated African American, 16 participants indicated white, and one participant indicated both American Indian /Alaska Native and white. Further, two participants indicated they are of Hispanic, Latino, or Spanish origin while the remaining 18 indicated they are not of this origin. A total of 17 participants indicated their marital status as single, and three participants indicated they were married.

Senior was the most commonly reported classification among participants with 17 indicating senior as their classification. Two participants indicated junior as their classification with one indicating sophomore. No participants reported being a freshman or graduate student.

Eleven participants reported math as the subject they provide support for, while five reported political science, two reported history, one reported biology and one reported music theory.

Learning Style Inventory

All four learning styles included within the Kolb Learning Style Inventory (2007) were present within the study. Based on the results of the Kolb Learning Style Inventory and learning style categories developed by Kolb (1981), ten participants were found to have an assimilating style, five had a converging learning style, three had a diverging learning style, and two had an accommodating learning style.

Emergent Themes from Individual Interviews

Four themes emerged from triangulation of all data: (a) leader personal experience incorporated into study session design, (b) the sense of leader impact on student learning, (c) the leader's need to incorporate varied activities into study session design, and (d) the importance of students taking ownership of their learning.

During the individual interviews, 17 participants reported drawing on personal experience and personal history to assist in the planning of study sessions. Additionally, participants reported incorporating personal learning processes into how he or she designs his or her study sessions. For example, Everett, a 22 year-old white male with an accommodating learning style, explained how he always completes "to do" lists that move into functional outlines breaking overarching concepts into smaller, more manageable pieces within his personal life. Everett utilized this approach, as did other SI leaders, in session planning and design. Multiple participants noted within their interviews that they do what seems "natural" to them in terms of their own personal learning experiences. Kerry, a 22 year-old white female with a converging learning style, organized her personal notes and used these notes as the foundation of her session design. Six SI leaders mentioned another functional way they incorporated personal experience into study session design was by relating to the personal struggles of the student and incorporating this frustration within the study session activities.

A different way of explaining this process is when a SI leader is considering how to approach a certain concept within his or her session, he or she will step in to the students' point of view and look at a problem through their eyes. Then the SI leader will draw from personal experience to develop a study session. For example, Oliver, a 21 year-old white male with an assimilating learning style, stated that he tries to change his perspective to begin "looking at it from a student studying standpoint as opposed to an SI standpoint." Oliver also stated that he uses this technique in order to draw

upon how he would feel as a student if he were taking the class and had a problem or issue with a small concept.

Personal history was also indicated as a method for designing study sessions. Helen, a 21 year-old white female with a converging learning style, spoke about learning how to teach others from her mother who is a teacher and taught Helen how to study. Quinn, a 20 year-old white male with a diverging learning style, believed experience from secondary school science courses taught him how to approach designing study sessions. Paul, a 26 year-old white male with an assimilating learning style, believed his approach to designing study sessions is "probably how I would have taught myself."

A second emergent theme was SI leader impact on student learning within the study session. Most participants reported feeling a sense of satisfaction and self-worth when they knew a student learned a new concept or understood a difficult problem. For example, Mary, a 22 year-old, white female with a diverging learning style, noted that the "light bulb moments" are what makes her most proud within a study session. Additionally, Tom, a 21 year-old white male with an assimilating learning style, stated that "it always makes me happy when they'll come up and they'll tell me that a concept just clicked with them or they did really well on a test." Having an influential and positive effect on student test grades also plays a role within a SI leader's process of designing his or her session. Albeit indirectly, multiple participants described the notion of satisfaction when their planning and session design helped a student achieve a satisfactory test grade. Steve commented that he felt pride when a student translated what they learned within his session into a good test grade.

Other participants reported a sense of satisfaction when they build student confidence in the subject matter. Carla stated that she was most concerned with the student's ability to grasp the material and ultimately her ability to build confidence within the student. This comment was echoed by Nancy, a 21 year-old white female with an assimilating learning style. Nancy noted that most of her students left the study session feeling more confident.

Within the theme of having a sense of impact on student learning is the creation of a comfortable, welcoming environment. Ivy, a 20 year-old white female with an assimilating learning style, believed that through the creation of a comfortable learning environment, students learn better. Ivy believed that this comfortable environment is evidenced in the fact that students talk with her outside of class and outside of the study sessions and are generally "friendly" with her.

The third theme to emerge from the individual interviews was the recognition by participants of the need to incorporate different elements

and activities into study session design. This was coupled with the fact that while they believe this incorporation is necessary, they still do not often include new and different elements within session activities. Amy, a 31 year-old white female with a converging learning style, believed that she could improve group work activities within her study session, but she does not because she believes this action may "pit the students against each other." Amy relied heavily on large group participation. Fran, a 21 year-old female with an accommodating learning style, believed that she gets stuck with the "hands on" approach to her course—history—and did not believe she could change how the material was presented.

A fourth and final theme to emerge from the individual interviews is that participants believed that students must take responsibility for their own learning and that their role is to guide the student as opposed to transmitting information. Gavin, a 22 year-old white male with an assimilating learning style, believed that it is "really important for them [students] to help themselves." Mary took a slightly different approach to students learning on their own. She encouraged the students to explain what they know to each other; and she facilitates the discussion by letting the students develop their own explanations for political events. Helen utilizes this approach as well, but believes it is more about the students teaching each other as opposed to her lecturing or leading the discussion.

Discussion

Findings from the Kolb Learning Style Inventory

Once the individual interviews were completed, the results from the Kolb Learning Style Inventory (2007) were explained to each participant. Based on discussion of the results, individuals tended to agree with their results of the inventory. While all four learning styles were present in the study, the participant results from taking the Kolb Learning Style Inventory showed that the greatest number of study participants were of the assimilating style. This means they could be less interested in people and more interested in the theoretical (Kolb, 1981). These individuals, within their own learning, may prefer "lectures, readings, and exploring analytical models" (Kolb, 2007, p. 9). Participants included in the study who were of the assimilating learning style demonstrated aspects of this learning style in how they facilitated study sessions. More importantly, the participants who were of the assimilating learning style incorporated different aspects into their study sessions not traditionally associated with how they learn. All participants of

the assimilating learning style mentioned offering a variety of teaching styles depending on what topic is being covered. The second most reported learning style, according the results of the Kolb Learning Style Inventory (2007), was the converging style. This style is characterized by being very solution oriented and the preference to work with tasks as opposed to social situations (Kolb, 2007). In their own learning, individuals with the converging style may prefer experimentation, as well as, "simulations, laboratory assignments and practical applications" (p. 9). Participants with the converging learning style demonstrated the incorporation of this style within their study sessions through the implementation of systematic application of tasks for the learner. Breaking down concepts in to essential elements is one of the tenets of SI (McGuire, 2006). This form of presenting material, breaking concepts into smaller components, may be a result of training, but it nevertheless demonstrates an aspect of personal learning preferences being congruent with session facilitation.

The third most reported result of the Kolb Learning Style Inventory (2007) was the diverging style. Individuals with this learning style may enjoy brainstorming activities and gathering information. In their own learning, they may prefer working in groups and listening to others. Multiple SI leaders indicated they utilized an approach within study sessions where they created games for students.

The least reported result of the Kolb Learning Style Inventory (2007) was the accommodating style. Persons with the accommodating style may enjoy a challenge and in formal learning may prefer to work with others and do field work. The individual with an accommodating learning style may be good at setting goals. For example, an SI leader develops goals for his students and guides them toward the goal.

Emergent Themes

The four themes that emerged from the course of the study are consistent with experiential learning theory developed by Kolb (1981) and supported by participant results from the Kolb Learning Style Inventory (2007). The first theme brings forth the idea that a SI leader brings with him or her past experiences and a unique history when designing or planning out-of-class study sessions. This theme is consistent with one of the propositions of experiential leaning theory that an individual brings with him or her unique beliefs and ideas (Kolb & Kolb, 2005). SI leaders incorporate personal experience within session planning and design in many different ways. Some feel it is necessary to incorporate how they choose to organize their lives

into the way they design their sessions. Looking at problems from a student perspective as opposed to a SI leader perspective reinforces both the idea that SI leaders care about understanding what their students are going through within the classroom as well as the idea that SI leaders must still view these struggles through their own lens. The idea of a SI leader viewing problems from another perspective also reinforces experiential learning theory (Kolb & Kolb, 2005). Through thinking of another perspective of a problem, the SI leader is developing a mechanism that will allow for additional learning to occur.

The second emergent theme is connected with the impact a SI leader has on the learning of the student attending a study session. Feeling good about one's role was important to the participants within this study. The SI leader felt validated when a student verbally acknowledged progression with a course topic or course content. Some participants reflected on a student "getting it" within the session while other participants focused more on how the student performed on a test after attending review sessions.

The third emergent theme developed out of the idea that SI leaders know that they need to incorporate new and different activities within their sessions, but many fail to do so. There may be many different reasons for this failure such as content of a specific course.

Personal knowledge and personality also play a role within how a SI leader chooses to develop a session plan. Participants thought about different views and activities even though they failed to incorporate them. This phenomenon illustrates another proposition of experiential learning theory developed by Kolb and Kolb (2005). They found that such conflict must occur in order for learning to take place. Conflict in this case is internal, within the SI leader. The leader encounters a learning theory that they do not fully understand, and they wrestle with its application.

The fourth and final theme to emerge from the study is that SI leaders believe students are responsible for their own learning. Aligning with constructivist principles, Kolb and Kolb (2005) based experiential learning theory on the premise that learning is a process where the learner becomes responsible for knowledge creation and gain. Most SI leaders within this study explored this phenomenon when discussing the students who attend their sessions. The participants viewed their role as more of a guide, leaving the student in control of his or her own learning. This is in contrast to what is occurring within college classrooms in which the instructor provides the information to the learner in a lecture format, and the learner may just regurgitate the information on a test or recitation. Additionally, SI leaders who participated in this study incorporated study session activities that included opportunities for students to take responsibility for their own learning.

Conclusion

Study results indicated that SI leaders may incorporate personal learning style preferences within their study session design. Multiple participants indicated a conscious designing based on personal experience and preference. However, participants did recognize that students attending their study sessions exhibited preferred learning styles and that it was their role to accommodate those preferences

It should be noted, however, that evidence of SI leader learning style incorporated into session design may be attributed to departmental training of these leaders. Certain learning styles, notably accommodating and converging, may be more consistent with how the SI leader is trained to facilitate study sessions. In line with the converging learning style, SI leaders are trained to apply course content within the out-of-class study session (McGuire, 2006; Kolb, 2007). Additionally, an individual with an accommodating learning style may prefer to work in groups and set goals (Kolb, 2007). In training, the SI leaders are taught to encourage group work among participants and to set goals for the study session (McGuire, 2006).

Overall, personal learning style may have a small relationship with how a SI leader designs his or her study session, but equally important to the SI leader is the understanding of students' learning needs. Also, while the relationship may exist, other factors, such as training approaches, trial and error, and course faculty pedagogy appear to influence SI leaders as they design, plan, and facilitate their out-of-class study sessions.

Taking into consideration all of these learning style factors, a balance must be struck by the SI leader between utilizing personal experiences and preferences and training. Program administrators may benefit from discussing this balance with their respective SI leaders. The discussion could be framed around the SI leader's personal learning style and the learning styles of the students.

Future Research

Further research, perhaps a larger, quantitative study, should be conducted to determine if a relationship between learning style and study session design does indeed exist. This study could be conducted at a campus of differing size and with a different SI program emphasis.

Finally, it should be noted that while research addresses learning styles and academic support, continued studies of student learning and learning center programs could assist administrators in refining academic support

programs. Ultimately, student success is a core mission of higher education, and academic support services are critical to that success.

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Math Beliefs: Theory-Framed and Data-Driven Student Success

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Abstract

This study examined the incremental contribution of math anxiety and math beliefs, measured at the beginning of a college math course, to the prediction of student outcome in that course. The Math Belief Scale (MBS) was developed to measure math versions of the five elements of the Health Belief Model (Rosenstock et al., 1988) in addition to a sixth subscale for math anxiety. Math SAT and the MBS subscales were entered into a stepwise discriminant analysis with student course outcome (pass/fail) as the grouping variable. After Math SAT Score was entered, Perceived Susceptibility to Failure and Perceived Benefits of Action yet explained significant variance in course performance. Given that introductory math courses represent a common hurdle for student persistence, understanding predictors of success in these courses may aid college retention efforts.

KEYWORDS: Math Education, College Students, Attitudes, Beliefs, Retention

Introductory math courses appear in nearly all college curricula, and these courses have among the highest failure rates of all college courses (Pascal, 2011; Rask, 2010). The consequences of math failure during the first year of college can be significant. The majority of students who drop out cite academic difficulties as the reason, and the first-year GPA is one of the best predictors of student retention (McGratch & Braunstein, 1997). Success in entry level mathematics courses, in particular, has been shown to increase the likelihood of retention and graduation (Parker, 2005). Thus, great benefits may accrue from identifying easily measured factors related to performance in entry-level math courses and making those data available to learning assistance professionals.

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Standardized college entrance exams are candidates for predicting college math grades. While SAT scores have shown moderate ability to predict first-year academic performance through zero-order correlations, much variance remains to be explained (Atkinson & Geiser, 2009). The math section of the SAT (SATM), for example, provides important clues about students' academic ability in mathematics, but SATM scores do not signal the types of compliance behaviors that make course success possible. That is, the SATM may identify who has the cognitive ability to complete a mathematics assignment, but the SATM might not predict which students actually follow through on that task. Additional individual differences and environmental factors are likely at play.

Researchers have examined various individual differences as predictors of academic success. Maudal, Butcher, and Mauger (1974) argued decades ago for the predictive power of personality data culled at the beginning of the students' first year, though the authors' use of the lengthy Minnesota Multiphasic Personality Inventory proved impractical for most institutions. Bannier (2007) found that low confidence and more years in college predicted student use of learning center assistance; the measurements were relevant and feasible, but not embedded in theory. Friedman and Mandel (2012) recently attempted unsuccessfully to establish the incremental validity of motivational variables (e.g., needs for achievement, affiliation, autonomy, and dominance) in the prediction of college student academic performance. Though this particular motivational model failed to produce predicted results, Friedman and Mandel were correct to look toward a theory-based path for identifying pre-course predictors of performance – measured early enough to allow learning assistance professionals to intervene. The current study sought a novel transposition of the Health Belief Model (Rosenstock, Strecher, & Becker, 1988) as a framework for understanding entry-level math behaviors.

The Health Belief Model (HBM; Rosenstock et al., 1988) applies social-cognitive theory to the prediction of health-promoting behavior. The model suggests that healthy behaviors result from an individual's desire to avoid illness as well as their evaluations of the costs and benefits associated with performing the healthy behavior. Specifically, the likelihood of engaging in healthy behavior is a function of five beliefs: the perceived likelihood of a negative outcome due to inaction (Susceptibility), the perceived severity of negative outcomes (Severity), the perceived benefits of engaging in healthy behaviors (Benefits), the perceived barriers to engaging in healthy behaviors (Barriers), and self-efficacy for engaging in healthy behaviors (Efficacy)

The HBM has successfully predicted compliance and outcomes among individuals facing complex medical regimens for illnesses like diabetes, HIV,

and sickle cell disease (Armitage & Conner, 2000; Painter, Borba, Hynes, Mays, & Glanz, 2008). The recurring conclusion from these studies is that objective ability to perform healthy behaviors does not fully predict actual behavior and outcome (just as educators devoted to learning assistance have similarly found that SAT scores do not fully predict classroom behavior and academic achievement). In a study of sickle cell patients, Teach, Lillis, & Grossi (1998) found that only 53 out of 123 patients produced urine samples that indicated compliance with penicillin prophylaxis -- though 83 had reported compliance and all were entirely capable of complying. Capability alone does not insure follow-through.

The HBM has been applied to the college population with successful prediction of a variety of health-related behaviors, including healthy eating behavior (Deshpande, Basil & Basil, 2009), healthy sexual behavior (e.g. condom use; Wright, Randall, & Grace-Hayes, 2012) and bicycle helmet use (Ross, Ross, Rahman, & Cataldo, 2010). The current study transposes the model from the medical to the educational setting and seeks cognitive predictors of college mathematics performance. Similar transpositions were successful, for example, with predicting recycling behavior (Lindsay & Strathman, 2007) and financial aid retention among college students (Daugherty et al., 2004).

Applied to college math performance (see Table 1), the model would suggest that students will take failure-preventing action when: they perceive themselves to be susceptible to failure (Susceptibility), they perceive the consequences of failure as serious (Severity), they expect their actions (e.g. attending class, studying, using math tutorials and math assistance lab) to be successful (Benefit), they perceive fewer impediments to action (Barriers) and believe they can overcome perceived barriers by enacting failure preventing actions (Efficacy). Each construct provides a window for understanding why student behavior does or does not occur, and the empirically validated concepts may ultimately provide windows for early intervention.

For the current study, we developed an HBM-inspired multidimensional scale to predict performance in an entry-level college mathematics course (the scale is provided in the appendix). In addition to the five types of math beliefs, an additional construct was included: native anxiety related to mathematics. Among the criticisms of the HBM is the absence of emotion (McCaul & Mullens, 2003); math anxiety is negatively correlated with academic performance, as it may inhibit failure-preventing action through the natural avoidance innervated by the negative emotional state (Bai, Wang, Pan, & Frey, 2009). The purpose of the current study was to examine whether math-related anxiety and math-related beliefs measured at the beginning of a college math

Table 1. *HBM Factors Mapped Onto Traditional Health Setting and New Academic Setting*

HBM Factor	Health Setting	Learning Assistance Setting
Susceptibility	Patient perceives self as vulnerable to a specific negative health outcome.	Student perceives self as vulnerable to academic failure in a specific course.
Severity	Patient believes the consequences of the specific negative health outcome to be serious.	Student believes the consequences of academic failure to be serious.
Benefit	Patient expects health-promoting behaviors to be effective in preventing the negative health outcome.	Student expects academic proactivity and learning assistance to be effective in preventing failure.
Barriers	Patient anticipates few impediments to enacting health-promoting behaviors.	Student anticipates few impediments to enacting proactivity and seeking learning assistance.
Efficacy	Patient is confident in own ability to perform health-promoting behaviors.	Student is confident in own ability to perform academic proactivity and gain learning assistance.

course predict student outcome above and beyond the predictive validity of the MSAT. Findings may influence the questions learning assistance professionals ask and the ways that interventions are focused.

Methods

The sample included 437 college students enrolled in an introductory college math course for non-math majors. On the first day of class, participants consented to complete self-report surveys and allow researchers to access academic data from the university (e.g., end of course performance and SAT scores). Eighty-six consenting students did not have SAT Scores on file with the university, resulting in a final sample of 351 students with a mean age of 18.5 years (SD = 1.3). Roughly consistent with the demographics of the university, 269 of the participants were female and 82 were male.

The Math Belief Scale (MBS) was developed as a multidimensional, self-report measure. Guided by the success of similar efforts to apply the HBM (Koch, Roberts, & Cannon, 2005; Lux & Petosa, 1994; Yarbrough & Braden, 2001) and employing modified versions of three items from the Mathematics Anxiety Scale-Revised (Bai et al., 2009), the interdisciplinary team of authors constructed the thirty-two item MBS. Participants respond to each item using a Likert scale to indicate level of agreement, scored from 1 ("Strongly Disagree") to 5 ("Strongly Agree").

Most of the MBS subscales demonstrated moderate to high internal consistency in the present study: three-item Math Anxiety subscale (.88), four-item Susceptibility subscale (.84), seven-item Benefit subscale (.74), six-item Barrier subscale (.70), six-item Efficacy subscale (.58), and six-item Severity subscale (.46). No items appeared to detract from reliability. Six reverse-coded items are spread through the MBS (see Appendix). Subscale scores are obtained by taking the average response after reverse-coding as needed.

Participants completed the MBS during the first class period. Per the participants' consent, academic data – MSAT and student outcome in the course (pass/fail) – were culled from the university's official database at the end of the semester.

Results

MSAT, Math Anxiety, and the five constructs drawn from the Health Belief Model were entered into a discriminant analysis as predictors, with Student Outcome (pass/fail) as the grouping variable. Predictors were

entered using the stepwise method. The analysis allowed for identification of which variables measured at the beginning of the semester improved upon (incremental validity) MSAT's prediction of students' outcomes in the course; such variables may be of particular interest, then, to learning assistance professionals.

The assumption of equal covariance was not violated ($M = 5.29$, $p = .51$). As expected, MSAT significantly predicted course outcome category (X^2 (1) = 55.87, $p < .001$; canonical correlation = .37). Students with stronger pre-course mathematical ability had lower risk of failure. Using only SATM in the analysis would have resulted in 70% of the cases being correctly classified by the discriminant function. Perceived Susceptibility to Failure (Susceptibility) and Perceived Benefits of Action (Benefit) also entered the prediction equation, providing significant incremental validity beyond SATM alone (X^2 (3) = 25.53, $p < .001$; canonical correlation = .43). Students who perceived themselves as more susceptible to failure were more likely to be in the failure category months later; students who perceived benefits to taking preventive action were less likely to be in the failure category months later. The belief variables appeared to help identify significantly more at-risk students with relatively few additional false-positives (72% accurate classification). No other belief variables entered the discriminant function, though Math Anxiety and Perceived Barriers to Action (Barrier) were significantly different between the two groups when univariate analyses were performed (see Table 2).

Table 2. *Descriptive Statistics, F Statistics, and Significant Beta Weights for Predictor Variables*

	Fail Group Mean (SD) $n = 129$	**Pass Group Mean (SD)** $n = 222$	**Univariate *F***	**Univariate *p***	**Standardized Discriminant Function Coefficients**
SATM	464.4 (65.2)	520.9 (70.2)	55.871	< .001	.876
Benefit	3.95 (.56)	4.05 (.50)	2.86	.09	.348
Susceptibility	2.42 (.76)	2.02 (.69)	25.18	.01	-.326
Math Anxiety	3.32 (1.10)	2.90 (1.09)	12.12	.001	-
Barrier	2.31 (.55)	2.16 (.52)	6.56	.01	-
Severity	4.10 (.86)	4.12 (.74)	.571	.45	-
Efficacy	3.81 (.52)	3.84 (.51)	.22	.64	-

Discussion

As expected, a set of pre-course beliefs based on the HBM significantly contributed to the prediction of student outcomes in an introductory college math course for non-math majors. In addition to the student's Math SAT Score, Perceived Susceptibility to Failure and Perceived Benefits of Action entered the prediction equation for Student Outcome (pass/fail). Perceived Barriers to Action and Math Anxiety were also significantly related to Student Outcome, but did not enter the prediction equation accounting for incremental variance. Math departments and learning assistance centers may benefit from taking into account the constructs measured by the new Math Beliefs Scale.

Perceiving potential benefits of action was negatively related to math failure. Students who believed there to be benefit in taking special academic action (e.g. attending math assistance lab, doing homework problems, studying) were more likely to pass the course.

Interestingly, the effect for Susceptibility was opposite the effect typically found in health belief research, but that result is not surprising in the academic context. In traditional health research, perceived susceptibility has often been found to innervate effective health-promoting actions, and good outcomes accrue. However, students who felt greater susceptibility to failure were, indeed, more likely to fail. It may be that college students have far more personal experience with various math outcomes (e.g., middle school and high school) than most people have with specific health outcomes. A sort of learned helplessness may occur with repeated exposure to poor outcomes in math courses, such that students who have often struggled are not motivated, but rather, discouraged by perceived susceptibility to failure. Perhaps the "look to the left, look to the right, one of you will not graduate" cliché is, indeed, ill advised. Engendering hope (see Charles Snyder's research; e.g., Cheavens, Michael, & Snyder, 2005) may be particularly important for learning assistance professionals.

Some limitations of this study should lead to cautious interpretation of results. Though the sample size provided adequate power, the sampling frame was limited to a single semester at a single university. It is not certain that these results can be generalized to other students in different circumstances. The MBS's subscales demonstrated acceptable internal consistency in this study, but work remains to establish fully the reliability and validity of each subscale; poor reliability could obscure relationships and exacerbate what some suggest are murky, overlapping constructs in the Health Belief Model.

Though variance remains to be explained and the precise specification of variables could shift in future research, these results affirm that simple, theory-based variables measured at the beginning of the semester may significantly aid in the identification of students who are most at risk for failure – above and beyond objective ability measures like the SAT. Future research is needed to explore the psychometric properties of the Math Belief Scale and to seek replication of results with new diverse samples. Furthermore, future steps include identifying specific, effective academic behaviors innervated by pre-course beliefs. Still, the current results suggest that learning assistance professionals may be well served by framing some of their interactions with students in terms of the factors shown in Table 2.

Academic ability, alone, cannot fully explain student course performance. Since nearly three-quarters of dropouts occur immediately after the first year (American Council on Education, 2013; Levitz, Noel & Richter, 1999), colleges need to find ways to identify at-risk students quickly and connect them with support resources efficiently (Pascarella & Terenzini, 2005). *Reacting*, even reacting rapidly, to poor performance may be too late (Yorke 2001). Assessing pre-course beliefs may aid learning assistance centers and instructors who seek to prevent failure in key courses.

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APPENDIX
Items on Each Subscale of the Math Belief Scale

Perceived Susceptibility to Failure

(2) I am certain that I will pass my current math class.*
(7) Math is tough enough that I think I might not pass my current math class.
(12) I am worried about how well I will be able to perform in my current math class.
(17) Succeeding in my current math class is not a sure thing with me.

Perceived Severity of Failure

(3) The thought of failing my current math class scares me.
(8) Failing my current math class would cause me big problems.
(13) I would be embarrassed to fail my current math class.
(18) Failing my math class this semester would not be a big problem for me, since I could retake the course later.*
(23) My family would be particularly upset if I get a low grade in my current math class.
(27) I really need to learn math, because I need to use it in the future.

Perceived Benefits of Action

(4) You either know math or you don't; studying every night doesn't make much of a difference.*
(9) Going to a professor's office greatly increases the chances of passing a tough course.
(14) Doing math homework every night will improve performance in my current math class.
(19) Attending group review sessions really helps with test performance.
(24) Some people don't think so, but I truly believe that completing all homework assignments on time is a key to success.
(25) Attending math class is not necessary if you understand the material.*
(29) Proper study techniques can make a huge difference in a math class.

Perceived Barriers to Action

(5) Math instructors speak a different language, and there is no point in trying to ask for help.
(10) Doing math problems every night takes too much time.
(15) No matter what they do, some people will just not do well in math.
(20) I feel perfectly comfortable asking for help in math.*
(28) I have other classes that are much more important to me than passing my current math class.
(32) Success in math class is almost completely a matter of natural ability.

Perceived Self-Efficacy

(6) I am the sort of person who can make a commitment to study and then follow through.
(11) I know how to approach professors for help.
(16) I am organized enough to keep track of all of the assignments, review sessions, and special resources associated with my current math class.
(21) I might not get every answer, but I can complete every math assignment on time.
(26) I know how to use campus resources effectively to help me learn math.
(30) Whenever I perform poorly on a math test, it is because of something I've done or not done in preparation.

Math Anxiety

(1) Math is one of my favorite subjects.*
(22) Math makes me feel uneasy.
(31) Math makes me feel confused.

* Reverse-Coded Items

Tutor Program Participation: Effects on GPA and Retention to the Second Year

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Abstract

While work of others has pointed to the positive association between peer tutoring and important outcomes such as grades and retention, it is important nonetheless to assess through local evaluation the effects of one's tutor program—in the present case, the University of Maine Tutor Program. Doing so both contributes to the extant literature as well as provides important institutional data regarding the efficacy of a program critical to the campus community. Based on the population of first-year full-time students who used the UMaine Tutor Program in the 2009-2010 academic year, the results of regression analyses showed modest effects on fall and spring GPA and a more robust effect on retention to the second year. The practical implications of this investigation, as well as its limitations, are considered in the discussion.

We present the results of an applied, nonexperimental investigation of the effects of participation in the University of Maine (UMaine) Tutor Program. We restricted our focus to first-year full-time students and three outcome variables: Fall-term GPA, spring-term GPA, and retention to the second year. While others have demonstrated the positive association between peer tutoring and important outcomes such as grades and retention (e.g., Cooper, 2010; Maxwell, 1997; Santee & Garavalia, 2006; Reinheimer, Grace-Odeleye, Francois, & Kusorgbor, 2010; Reinheimer & McKenzie, 2011; Weinsheimer, 1998), it is important nonetheless to conduct local evaluations that speak to the effectiveness of one's tutor program. In this sense, the present study serves both as a contribution to the literature—to the accumulation of evidence on this important topic—and as an example of how one institution approached the task of the local evaluation of its tutor program.

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We begin with a general description of UMaine Tutor Program, after which we turn to the conduct of the study itself.

The UMaine Tutor Program

The mission of the UMaine Tutor Program is to provide academic support for students by helping them develop their critical thinking skills and, in turn, achieve their academic goals. Colvin (2007) points to peer tutoring in higher education as a mechanism to influence "student learning, motivation, and empowerment" (p. 165), and this conviction underlies the Tutor Program's philosophy as a "learn how to learn" study-skills-based tutorial. Because the Tutor Program essentially asks students to *redefine* their study skills for college-level learning, the target population is primarily first-year students. Roughly 800–1000 students are served each academic year—nearly 10% of the undergraduate population at UMaine—representing more than 48 different lower-division courses and entailing over 10,000 hours of contact.

The Tutor Program involves small-group tutoring (four to six students), where tutees develop study skills and learning strategies that they then are to apply to other courses. Tutees learn how to "read" the text, take effective notes, prepare for exams, use self- and time-management skills, and break things down into smaller units—all in a collaborative small-group setting. To echo the sentiment of Schmelzer, Brozo, and Stahl (1985, p. 4), tutors "are trained to work themselves out of a job" through the inculcation in tutees of these targeted study skills and learning strategies.

The Tutor Program hires, trains, and supervises approximately 100 student staff members each year. Tutors sign a contract stating their responsibilities and obligations, to which they are held accountable. The 12 hours of training a tutor receives as part of the Tutor Program's College Reading and Learning Association certification covers a variety of tutoring issues, including the necessary facilitation skills for small-group tutoring. Tutors have many resources available to them, such as archived materials and activities, subject-area discussions with other tutors, and meetings with course instructors.

All tutoring takes place in classrooms on campus. The tutoring process begins at the intake appointment, during which a student staff member meets with the tutee and assigns the student to a tutor group. During this appointment, questions are asked about the course(s) in which the student is having difficulty, which is documented and given to the tutor to prepare for the "first meeting."

Each tutee meets individually with the assigned tutor prior to joining a group. In this first meeting, to which the tutee brings any textbooks and notes, the tutor assesses the student's strengths and weaknesses with the

course material. Guided by the First Meeting Questionnaire, the tutor asks such questions as How do you take notes and read the text? Where do you study, and for how long? What resources do you use on campus? How do you prepare for exams? What study skills do you feel you need to work on? When the questionnaire is completed, the tutor and tutee discuss ways in which the former will help the latter develop successful study skills and learning strategies. Also, the tutor and tutee review the latter's contract delineating the tutee's responsibilities and obligations. For example, students who consistently arrive unprepared or late to tutoring sessions may lose tutoring privileges; and if they miss three sessions, their tutoring privileges are discontinued altogether. This first meeting sets the tone for tutoring and, further, clarifies that the tutor's role is not to re-teach the material to tutees, but, rather, to ask questions and guide them to find the answers themselves by using their notes, texts, learning strategies, others in the group, and so on (e.g., see Cleveland, 2008).

Once the tutor groups begin to meet, tutors use the First Meeting Questionnaire to evaluate their sessions to ensure that all the goals they set with tutees are being met. Tutors turn in a biweekly progress report evaluating the issues tutees had with the course material, and they also discuss what study skills and learning strategies were used to help students understand the material in each session. Progress reports include updates on group communication, preparedness, test grades, and future goals the group has established.

After four weeks of tutoring (eight hours), tutees are emailed an evaluation form comprising such questions as Does your tutor have a good understanding of the course material? How well does your tutor communicate? Is your tutor prepared for sessions? What study skills are most helpful? Would you have dropped/failed without the help of a tutor? This feedback is kept confidential and is used to evaluate tutors.

Although many tutees remain in tutoring from their assignment date to the end of the semester, sometimes tutees will discontinue tutoring for a variety of reasons. For example, a student may decide to officially withdraw from the course for which tutoring was initially sought. Other reasons for discontinuing tutoring are that tutees cannot devote the needed time to tutoring, they have missed the maximum number of tutoring sessions, or they are doing better in the course and consequently believe continued tutoring is unnecessary.

Method

Two general research questions guided this investigation of first-time full-time (FTFT) undergraduate students at UMaine:

1. Does Tutor Program participation have an effect on term GPA? We focused on term GPA rather than, say, performance in the specific course for which tutoring was sought because the generalized components of tutoring (e.g., note taking, study strategies, preparing for exams) arguably should benefit the tutee in other classes as well. In this light, the more general measure (term GPA) is preferable.

2. Does Tutor Program participation have an effect on retention to the second year?

Sample

The results reported below are based on all FTFT students for the 2009-2010 academic year who had valid values on the variables these analyses entailed. Depending on the analysis, there were a maximum of 414 tutees—students who sought tutoring through the Tutor Program during the academic year—and a maximum of 1,199 non-tutees.

Analyses

We employed regression analysis to address both research questions. All equations included a 50-point admissions-profile rating as a statistical control. Higher ratings on this scale correspond to stronger academic profiles, as determined by the UMaine Office of Admissions personnel, with respect to such considerations as high school grades, class rank, SAT scores, and coursework rigor. Ordinary least-squares regression was employed where term GPA was the dependent variable and logistic regression for predicting retention (a dichotomous variable). These analyses are described in more detail below.

Table 1

Hours of Tutoring Received by Tutor Program Participants

Tutee group	*n*	*M*	*SD*	range
Fall tutoring only	246	9.77	5.21	.50–22.00
Both fall and spring tutoring	65	24.35	8.53	7.75–42.75
Spring tutoring only	103	11.51	5.52	.50–21.50
All tutees	414	12.49	7.85	.50–42.75

Results

Tutor Program Participants

We begin with a description of the Tutor Program participants. As Table 1 shows, 246 of these 414 FTFT tutees received tutoring only in the fall, 65 received tutoring in both fall and spring, and 103 received tutoring only in the spring. (These students came from 37 different sending courses.) Tutees varied considerably in how much tutoring they experienced, receiving anywhere between half an hour and 43 hours of tutoring (M = 12.49, SD = 7.85).

Over half of these tutees were from either Foundations (an initial program for students who do not meet the admission requirements for their desired major), Nursing, or Explorations (a program for students who have not declared a major; Table 2). The majors represented in Table 2 differ considerably in the percentage of FTFT students in the major who received tutoring through the Tutor Program. For example, two thirds of the FTFT students in Foundations did, as did over half of those in Nursing and Biochemistry.

Table 2

Represented Majors Among Tutor Program Participants

Major	Number of Tutees	Total FTFT Students	% Tutored within Major	% of Present Sample (n = 414)
Foundations	136	209	65.1%	32.9%
Nursing	50	95	52.6%	12.1%
Explorations – Undeclared	40	190	21.1%	9.7%
Biology	15	76	19.7%	3.6%
Business Administration	13	47	27.7%	3.1%
Animal and Veterinary Sciences	12	26	46.2%	2.9%
Civil Engineering	10	54	18.5%	2.4%
Biochemistry	10	18	55.6%	2.4%
Mechanical Engineering Technology	9	28	32.1%	2.2%
Mechanical Engineering	9	66	13.6%	2.2%
Psychology	9	61	14.8%	2.2%
Athletic Training	8	20	40.0%	1.9%
Zoology	8	23	34.8%	1.9%
Construction Management Technology	7	27	25.9%	1.7%
Food Science & Human Nutrition	7	18	38.9%	1.7%
Marine Science	7	21	33.3%	1.7%

Note. Only majors represented by more than 5 students are listed.

One might reasonably expect that FTFT students who feel in need of a tutor would be generally less prepared for the demands of college coursework than those who have not sought tutoring services. The aforementioned admissions-profile rating provides evidence of this: $M_{\text{tutees}} = 27.71$ ($SD = 8.23$) and $M_{\text{non-tutees}} = 32.26$ ($SD = 8.12$), a difference corresponding to an effect size of $d = -.56$. On average, then, the admissions-profile rating of these 414 tutees was over half a standard deviation lower than that of non-tutees. It is because of this tutee disadvantage at the outset that we used the admissions-profile rating as a statistical control in the regression analyses below.

We now turn to the effects of Tutor Program participation on fall and spring GPA and, in turn, retention to fall semester of the second year.

Tutoring Effect on Fall GPA

For the fall GPA analysis, we focused on any FTFT student who received tutoring in the fall (i.e., spring-only tutees were excluded). We then compared their average fall GPA with that of their non-tutored counterparts, holding constant the admissions-profile rating. In a sense, we statistically made tutees and non-tutees comparable with respect to their initial academic profile and then determined whether there was a net effect of Tutor Program participation on fall GPA. We did this using ordinary least-squares regression, where we regressed fall GPA on a dichotomous participation variable (1 = tutee, 0 = non-tutee) and the admissions-profile rating. But participating in a tutor program is not either/or; rather, tutees participate to some degree. And as noted in Table 1, participation varied markedly among these FTFT students. In acknowledgment of the vast range of tutoring hours among program participants, we therefore followed up with a second regression analysis where we replaced the dichotomous participation variable with the hours of tutoring one received (a variable for which non-tutees were assigned zero).

Tutor Program participation.

As the top half of Table 3 shows, the Tutor Program participation dichotomy had a statistically significant effect on fall GPA ($b = .171$, $p < .001$). That is, whether or not one participated in the Tutor Program seemed to matter in terms of fall GPA. But while positive, this effect was small. The unstandardized regression coefficient of .171 is the regression-adjusted difference between tutees and non-tutees in fall GPA after controlling for

Table 3

Regressing Term GPA on Admissions-profile Rating and Tutoring in the Fall (Measured by Either Tutor Program Participation *or* Hours of Tutoring Received*)*

	Dependent variable					
	Fall GPA (n = 1,510)			Spring GPA (n = 1,316)		
	b	*SE*	*p*	*b*	*SE*	*p*
Tutor Program participation[a]						
Admissions-profile rating	.046	.003	.002	.049	.003	< .001
Tutor Program participation	.171	.056	< .001	.162	.062	.009
Intercept	1.153	.091		1.058	.094	
Hours of tutoring received[b]						
Admissions-profile rating	.047	.003	< .001	.049	.003	< .001
Hours of tutoring received	.022	.005	< .001	.019	.005	.001
Intercept	1.123	.088		1.047	.091	

Note. There were 311 tutees and 1,199 non-tutees in the analysis of fall GPA; in the analysis of spring GPA, 224 and 1,092, respectively.
[a]Tutor Program participation is a dichotomous variable, where 1 = tutees and 0 = non-tutees. The unstandardized regression coefficient, *b*, associated with this variable is equivalent to the mean difference between tutees and non-tutees in term GPA, adjusted for any difference on the admissions-profile rating. For fall GPA, adjusted R^2 = .16, $F(2, 1507) = 146.70$, $p < .001$; for spring GPA, adjusted R^2 = .20, $F(2, 1313) = 160.44$, $p < .001$. [b]Hours of tutoring received is a continuous variable capturing all fall activity, with zero assigned to non-tutees. For fall GPA, adjusted R^2 = .17, $F(2, 1507) = 154.81$, $p < .001$; for spring GPA, adjusted R^2 = .20, $F(2, 1313) = 163.78$, $p < .001$

the influence of the admissions-profile rating. With the familiar 4-point GPA scale in mind, then, the fall GPA of tutees was less than a fifth of a grade point higher (+.171) than that of non-tutees after accounting for the initial difference between the two groups on the admissions-profile rating. Thus, once the influence of the admissions-profile rating was partialled out, there was a small, albeit statistically significant, difference in fall GPA in favor of

Tutor Program participants.

We used the regression coefficients from this analysis to calculate an adjusted fall GPA mean separately for tutees and for non-tutees, having set the admissions-profile rating equal to the mean. These adjusted means appear in the top half of Table 4 under *Adjusted term GPA*, where one sees the difference favoring tutees: 2.79 for tutees compared with 2.59 for non-tutees. By definition, the difference between these adjusted means is equal to the unstandardized regression coefficient reported in Table 3 for the participation dichotomy (b = .171).

Table 4

Means and Standard Deviations for Tutor Program Participation and Term GPA

		Admissions-profile rating		Term GPA		Adjusted term GPA	
Group	*n*	*M*	*SD*	*M*	*SD*	*M*	Difference
				Fall			
Tutees	311	26.57	7.98	2.55	.78	2.76	.17**
Non-Tutees	1,199	32.26	8.12	2.64	.96	2.59	
				Spring			
Tutees	224	26.20	8.19	2.50	.84	2.77	. 16*
Non-Tutees	1,092	32.72	8.10	2.66	.92	2.61	

Note. GPA statistics are based on students who received tutoring in the fall and who have valid values for both the admissions-profile rating and fall GPA. Spring GPA statistics are based on students who received tutoring only in the fall (in order to test for carryover effects of tutoring) and who have valid values for both the admissions-profile rating and spring GPA. Adjusted GPA is the regression-adjusted mean GPA based on the coefficients reported in Table 3 (Tutor Program participation), with the difference between the adjusted means equaling the corresponding regression coefficient in Table 3 (.17 and .16, respectively).

*p < .009. **p < .001.

Hours of tutoring received.

Given the statistically significant effect of the dichotomous participation variable on fall GPA, one should not be surprised to find that hours of tutoring similarly demonstrated statistical significance in this regard. Simply put, more hours of tutoring translated into a higher GPA at the end of the semester. As the lower half of Table 3 shows, fall GPA increased .022 of a grade point (on average) with each additional hour of tutoring, holding constant the admissions-profile rating. Other things equal, for example, this effect corresponds to an increase of .22 grade points with 10 hours of tutoring—about a fifth of a grade point on the familiar 4-point scale. But again, this is a small effect.

Carryover Tutoring Effect on Spring GPA

To determine whether the obtained effect of fall Tutor Program participation on fall GPA carried over to the spring, we conducted similar analyses using spring GPA as the dependent variable. In this case, we focused on fall-only tutees (to truly assess carryover) and compared their average spring GPA with that of non-tutees, statistically controlling for the admissions-profile rating. We also conducted the comparable analysis using hours of tutoring received, again setting this variable to zero for non-tutees.

Tutor Program participation.

As can be seen in the right half of Table 3, Tutor Program participation in the fall indeed had a statistically significant carryover effect on spring GPA ($b = .162, p = .009$). In fact, this effect is comparable to that observed on the fall GPA measure, which is notable insofar as the latter is far more proximal to the tutoring experience. The adjusted spring GPA means are shown in Table 4. Like the difference in adjusted fall GPA, the spring GPA difference is modest in any practical sense: .16 of a grade point.

Hours of tutoring received.

The hours of tutoring one received in the fall similarly had a statistically significant effect on spring GPA: $b = .019, p = .001$ (Table 3). With the admissions-profile rating held constant, then, spring GPA increased .019 of a grade point (on average) with each additional hour of tutoring—roughly one fifth of a grade point, for example, with 10 hours of tutoring.

Tutoring Effect on Retention

Were Tutor Program participants more likely than nonparticipants to return for their fall semester of the second year? As noted above, this was our second research question. Using logistic regression, we regressed the dichotomous retention variable (1 = returned, 0 = did not return) on the dichotomous participation variable (1 = tutee, 0 = non-tutee) and the admissions-profile rating. In a second equation, the dichotomous retention variable was replaced by total tutoring hours received in the academic year. These retention analyses included all tutees regardless of semester, and, as before, tutoring hours was set to zero for non-tutees.

Table 5

*Regressing Retention on Admissions-profile Rating and Tutoring (*n = *1,613)*

	b	*SE*	*p*	odds ratio
Tutor Program participation[a]				
Admissions-profile rating	.073	.008	< .001	1.08
Tutor Program participation	.606	.155	< .001	1.83
Intercept	-.983	.254		
Hours of tutoring received[b]				
Admissions-profile rating	.071	.008	< .001	1.07
Hours of tutoring received	.051	.012	< .001	1.05
Intercept	-.926	.246		

Note. All tutees (including spring-only) were included in this analyses. There were 414 tutees 1,199 non-tutees in the analysis of fall GPA and, respectively, 224 and 1,092 in the analysis of spring GPA.

[a]Tutor Program participation is a dichotomous variable, where 1 = tutees and 0 = non-tutees. R^2 = .08 (Nagelkerke), Model $\chi^2 = 88.57, p < .001$. [b]Hours of tutoring received is a continuous variable capturing fall activity, with 0 assigned to non-tutees. R^2 = .09 (Nagelkerke), Model $\chi^2 = 94.53, p < .001$.

Tutor Program participation demonstrated a statistically significant effect on retention, $b = .073$, $p < .001$ (Table 5). In short, retention was higher among tutees than non-tutees. The corresponding odds ratio (1.83) means that, among these FTFT students and with the admissions-profile rating taken into consideration, the odds of a Tutor Program participant returning in fall semester of the second year were almost twice the odds of a nonparticipant doing so.

We subsequently derived a predicted retention rate for each group by first stimating $\hat{g}$ for each participant, where $\hat{g} = -.983 + .073$(admissions-profile rating) + .073(Tutor Program participation) and with the academic-profile rating set to its mean. Using the expression, $e^{\hat{g}}/(1+e^{\hat{g}})$, we then calculated the participant's predicted probability of returning the following fall and, in turn, determined the mean predicted probability—the predicted retention rate, if you will—for tutees and for non-tutees. Echoing the odds ratio, there was a net advantage in the retention rate of tutees compared with that of non-tutees: 87% versus 78%.

Not surprisingly, tutoring hours had a statistically significant effect on retention as well, $b = .071$, $p < .001$ (Table 5). Irrespective of admissions-profile rating, then, retention to the second year was more likely with each additional hour of tutoring. Using the three coefficients for this regression equation, we determined in successive calculations the predicted retention rates associated with 0, 2, 4, 6, . . . , 20 hours of tutoring, and we did so at the 25th, 50th, and 75th percentile of the admissions-profile rating (Figure 1).

The middle line in Figure 1 shows the predicted retention rate as a function of tutoring hours for the student falling at the median on the admissions-profile rating—the "average" student in this regard. This middle line shows that the predicted retention rate increases with additional hours of tutoring, from roughly 78% (0 hours) to 91% (20 hours). Predicted retention rates are higher for the student falling at the 75th percentile on the admissions-profile rating (top line)—from roughly 82% (0 hours) to 94% (20 hours)—and lower for the student falling at the 25th percentile on the admissions-profile rating (bottom line)—from roughly 70% (0 hours) to 87% (20 hours).

Irrespective of one's admission profile, then, retention was more likely with additional hours of tutoring. That these predicted retention rates differ depending on the targeted percentile of the admissions-profile rating is to be expected, for relationships of this kind are well established (e.g., Mattern & Patterson, 2007; Reason, 2009).

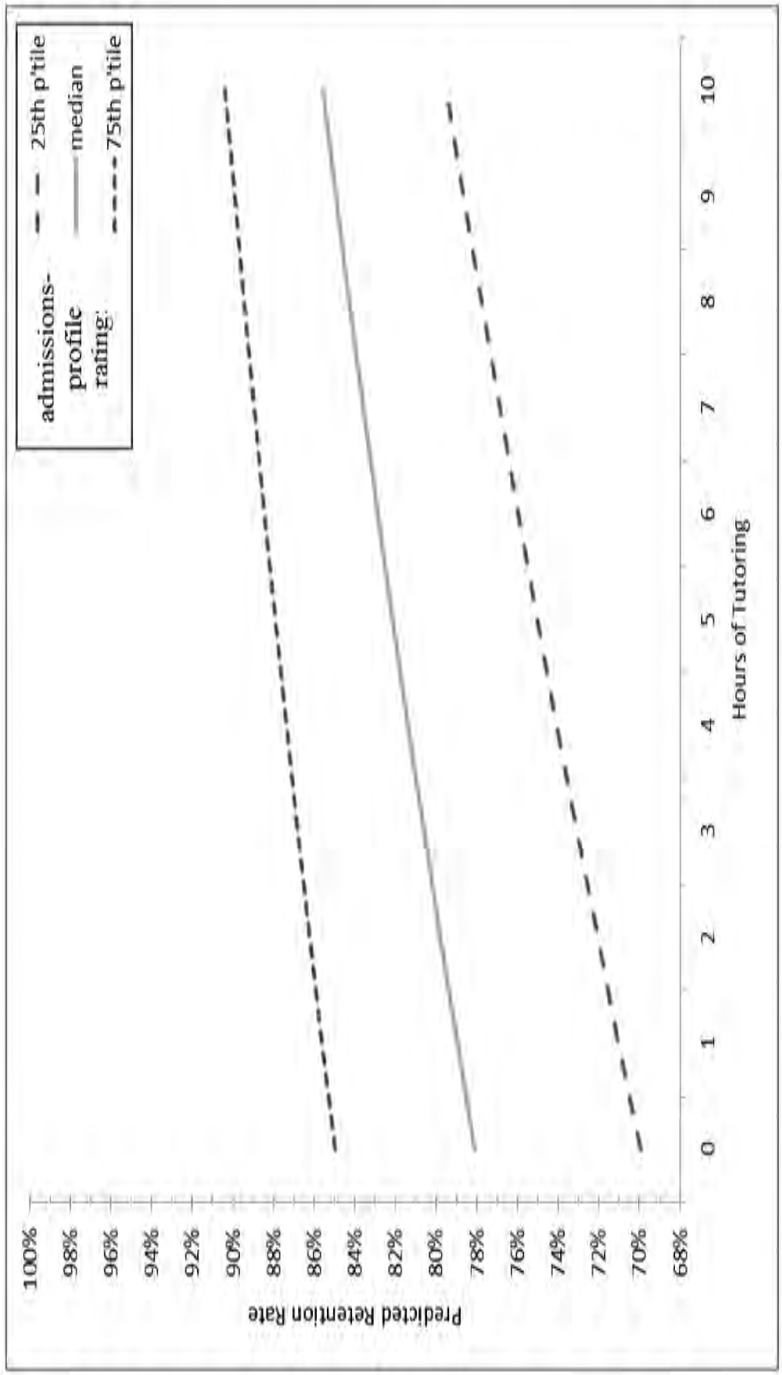

Figure 1. Predicted Retention Rate and Hours of Tutoring at Three Values of the Admissions-Profile Rating.

Discussion

The present study focused on first-year full-time undergraduates who matriculated at UMaine in fall 2009 and, in the case of tutees, received tutoring through the Tutor Program in the 2009-2010 academic year. The first principal finding was that although tutees were somewhat lower than non-tutees with respect to the admissions-profile rating, tutees finished the fall semester with a significantly higher term GPA. Further, this positive effect carried over to the spring semester, which tutees concluded with a significantly higher term GPA as well. Both findings were echoed in the results where the dichotomous participation variable had been replaced with the actual hours of tutoring received.

Statistical significance notwithstanding, however, these effects are modest in size: The adjusted GPA difference between tutees and non-tutees in both the fall and spring was less than one fifth of a grade point on the familiar 4-point scale. That said, and in view of tutees' initial disadvantage with respect to their admissions profile, a finding of *no* difference in subsequent GPA arguably would be suggestive of the program's success in this regard. In this sense, any reliable difference favoring tutees is noteworthy. Even a small one.

In contrast to these modest effects on term GPA, the second principal finding was that a rather robust association surfaced between Tutor Program participation and retention to fall semester of the second year: The retention rate was higher for tutees compared with non-tutees and, in a separate analysis, the predicted retention rate was shown to increase with tutoring hours (irrespective of one's admission profile). In the present era of tight budgets and, for many public universities, decreasing state appropriations, any demonstrable mechanism for improving student retention has strategic value. For example, at-risk students could be identified early on and encouraged to obtain tutoring services. Every additionally retained student is an additional successful student—good in its own right—and that many more tuition dollars for the institution. By pointing to a locally demonstrated link between its work and student retention, a tutoring office can frame its efficacy not only in terms of student improvement but also in terms of the proverbial bottom line. Although based on rough estimates tempered by statistical uncertainty, the translation of retention effects into additional revenue for the institution can be a compelling observation for a director to make when, say, preparing the annual report. In this light, the sorts of analyses conducted in the present study illustrate the conduct and importance of local evaluation—examining the effects of one's programs (even if such effects are well-established in the literature) and, in turn, using the results for local purposes, such as program

improvement and program justification.

Insofar as the higher retention among tutees is, in part, *because of* participation in the Tutor Program, our results unfortunately are silent on *how* participation translated into higher retention. One explanation lies in the content of tutoring: both the course-specific assistance and the more general assistance tutees received, which others have shown to be associated with retention (e.g., Reinheimer et al., 2010). Further, tutoring may have enhanced the tutee's sense of personal engagement in university life and perceptions of concern on the part of others, which arguably would facilitate retention as well (e.g., National Survey of Student Engagement, n.d.). Also, we did not address how the tutoring experience, or its effects, may have differed for the student struggling in, say, a chemistry course versus one in anthropology, majoring in one program versus another, having a high admissions-profile rating versus a low one, or having one tutor as compared with another. In short, *tutoring* was a veritable black box in our analyses. Subsequent investigations could throw needed light on such considerations.

Finally, because of the inherent difficulties associated with establishing a program's impact in the absence of random assignment of participants and nonparticipants (which would present both practical and ethical difficulties), the effects we reported above should be considered cautiously. In short, these tutees self-selected into the Tutor Program, and they no doubt differed from students who did not: their concern for grades, motivation to improve academically, and so on. There are ways to incorporate a motivational-control variable into one's research design (e.g., see Gattis, 2002), but we were unable to do so. Although our use of the academic-profile rating as a statistical control strengthened the internal validity of the present study considerably, the obtained effects nonetheless must be interpreted with this caveat in mind.

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Appendix
First Meeting Questionnaire (FMQ)

DIRECTIONS: This questionnaire is designed to both identify the issues your tutees are experiencing with college level learning and to help evaluate tutors. A thorough FMQ indicates how well a tutor utilizes their training to plan sessions accordingly by getting the tutees involved in the learning process. Return a photocopy of the completed form with your next payroll. All information is confidential.

Please note: All First Meetings must be conducted on an individual basis and in Dunn Hall.

Tutor Name: _____ Date: _____

Tutee Name: _____COURSE: _____

INSTRUCTOR: _____

1. GENERAL QUESTIONS

a. Has anything changed since you first requested a peer tutor? Have you dropped a class, got a job, etc.?

b. What other resources do you use to help you with this course? Do you use the professor's office hours, a study group, the math lab or lab TAs, the Internet or S-Cubed? Is there a First Class course folder, and do you use it?

c. How do you accomplish a reading assignment in your text? Do you read from beginning to end or break it up? Do you preview the assignment first?

d. How do you learn vocabulary terms and formulas or reinforce concepts for this course? Have you ever made flash cards, concept maps or used memorization strategies? Can you describe them for me?

e. When do you start the required homework for this course (if any), and what type of homework is it?

2. NOTES AND LECTURES

a. Let's look at your notebook for this class and describe what you do to keep course material organized. Where do you keep the syllabus and handouts? Is it in chronological order?

b. What problems (if any) have you experienced when taking notes for this class? (If no notes are taken, please explain why.)

3. EXAMS

a. When do you begin reviewing for exams and quizzes?

b. If you have not taken an exam yet in this course, how have you prepared in the past?

c. What type of exam does this course utilize? Circle all that apply: true/false, multiple choice, short answer, essay, problem-based or take home exam.

Check any problems you experience with this type of exam:
Do you _____have difficulty following instructions _____ misread the questions _____ rush through the answers given and miss key words or terms _____ have problems with multiple choice tests in general _____ feel like you hurry and then run out of time _____ have test anxiety, a learning disability or any other issues that may interfere?

Describe the issue(s) in detail here:

4. PLANNING

a. Based on our discussion, what four study skills or learning strategies are going to be most beneficial to help you with the difficulties you are experiencing with this course? (Tutors: Use this FMQ and the Study Skills list to determine which areas students need addressed in their sessions with you).

b. List the four study skills you chose below and then on the right, describe the activities in detail which address these study skills and learning strategies.

Study Skills/Learning Strategies	I will help you develop these skills by:

Pertinent Publishing Parameters

The Learning Assistance Review (*TLAR*), the national peer reviewed official publication of the National College Learning Center Association (NCLCA), publishes scholarly articles and reviews that address issues of interest to learning center professionals (including administrators, teaching staff, faculty, and tutors) who are interested in improving the learning skills of postsecondary students. Primary consideration will be given to articles about program design and evaluation, classroom-based research, the application of theory and research to practice, innovative teaching and tutoring strategies, student assessment, and other topics that bridge gaps within our diverse profession.

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Articles

- Topics: *TLAR* will accept manuscripts that address our purpose: to publish scholarly articles and reviews that address issues on program design and evaluation, classroom-based research, the application of theory and research to practice, innovative teaching and tutoring strategies, student assessment, etc.
- Types: *TLAR* will accept manuscripts for the following four of the article types outlined in the American Psychological Association Manual: empirical study and articles on review, theory, and methodology. Follow 6th edition APA manual (sections 1.01-1.04) for specific requirements and structure for each type; regardless, all manuscripts need a clear focus that draws a correlation between the study, review, theory, or methodology and learning assistance practices.

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- Idea Exchange: Discussion directly related to articles published in *TLAR*. Submissions are limited to fewer than 4 paragraphs and are to be constructive idea exchanges. In addition to the name, title, college, and contact information from the submitter, Idea

Exchange submissions are to include the details of the referenced article (Title, author, and volume/number, and academic semester/year). A submission form may be found online on the *TLAR* website.

- Further Research: Article submissions that have a stated direct link to prior published *TLAR* articles. These articles will be considered following the manuscript submission guidelines.

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Submission Guidelines

Submission packets must include:

- A cover page
- The original manuscript
- A masked manuscript for review
- One hard copy of these materials must be mailed to the address listed below.
- An electronic copy must be submitted to the e-mail address listed below.

- The title page must include the title of the manuscript (not to exceed 12 words); the name(s) and institutional affiliation(s) of all authors.
- The lead author should also provide work and home addresses, telephone numbers, fax, and e-mail information.
- All correspondence will be with the lead author, who is responsible for all communication with any additional author(s).
- The second page should be an abstract of the manuscript, maximum 100 words.
- To start the reviewing process, the lead author will be required to sign certificate of authorship and transfer of copyright agreement. If the manuscript is accepted for publication, all author(s) must sign an authorization agreement.
- Figures and tables must be black and white and according to APA style.

Please send your comments and/or article submissions to: MichaelFrizell@MissouriState.edu with a hard copy to Michael Frizell, Editor, The Learning Assistance Review (*TLAR*)

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(a) accept with minor revisions,
(b) revise and resubmit with only editor(s) review,
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(d) reject.

As part of the reviewing correspondence, authors will be electronically sent the reviewers' rankings and general comments on one document and all the reviewers' contextual markings on one manuscript. Manuscript author(s) must agree to be responsible for making required revisions and resubmitting the revised manuscript electronically by set deadlines. Manuscript author(s) must abide by editorial revision decisions.

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