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The Unspoken Talk: An Interpretative Phenomenological Analysis of Undergraduate Students' Self-Talk and how it Influences their Academic Experience

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Abstract

Objectives: Self talk, which is defined as internal dialogue for the purpose of interpreting one's feelings, regulating and changing evaluations of those feelings, and providing oneself with instructions, reinforcement, and criticisms based on those evaluations, is a phenomenon that is a topic researched across many fields of psychology for a variety of reasons. The purpose of the current study is to help fill the gaps in current literature by conducting a qualitative study using interpretative phenomenological analysis (IPA) in order to answer the following research question: how does self-talk among undergraduate university students influence or affect their academic experience? **Method:** Participants were asked to provide rich and thorough descriptions of their experiences with self-talk during semi-structured interviews that were then transcribed and analyzed using IPA thematic analysis. **Results:** Results unveiled commonalities across all transcripts depicted through the emergence of four superordinate themes: (1) the purposes of self-talk, (2) the factors that influence self-talk in university, (3) the cyclical nature of self-talk, and (4) the effect of self-talk in university. **Conclusion and Implications:** Through the emergence of four common superordinate themes, the results remained consistent with current literature and suggest that the use of undergraduate students' self-talk in university does affect their academic experience to a degree. The results also suggest that areas for future research should center on the cyclical nature of self-talk as well as the ability of students to make connections between their self-talk and its influence on their academic experiences in order to encourage meta-learning.

Keywords: self-talk, academic experience, interpretative phenomenological analysis

Self-talk has been researched across many fields of psychology, particularly occupational psychology, positive psychology, sports and exercise psychology, and educational psychology for the purpose of determining the role self-talk plays in job and career performance, life satisfaction and happiness, sports performance, and academic performance. The problem with current literature is that researchers are preoccupied with the types of self-talk with regard to their categorization and effects as opposed to the experiences associated with self-talk as a phenomenon in and of itself. There is a need to understand the concept of self-talk and its purpose by, first, developing an understanding of the distinct reasons why individuals use self-talk, what their specific thoughts are, and how it personally contributes to their life and affects their experiences. The current study seeks to answer the following research question: how does self-talk amongst undergraduate university students influence or affect their academic experience? For the purpose of this study, self-talk is defined as internal dialogue for the purpose of interpreting one's feelings, regulating and changing evaluations of those feelings, and providing oneself with instructions, reinforcements, and criticisms based on those evaluations. Academic experience is defined as an individual's perceived opinions of their academic career, including lecture and post-lecture experience, grades and performance outcomes, academic self-confidence and self-concept, and personal opinions of professors, programs, and the overall institution.

Literature Review

In an effort to develop a thorough understanding of self-talk, its functions, and how it is able to influence different situations, current research that has been conducted on the concept of self-talk needs to be examined. Three hypotheses have been asserted in order to provide an understanding

for the underlying processes of self-talk. The first hypothesis asserts that the evaluative processes involved in self-talk fluctuates along a single continuum composed of one dimension with positive and negative factions where stimuli are processed and evaluated along one continuum and categorized according to the bipolar dimension of either positive or negative (Calvete & Cardeñoso, 2002). The second hypothesis states that the positive and negative stimuli being evaluated through self-talk have individual and distinct motivational systems, where positive and negative are two dimensions that function independently of each other (Calvete & Cardeñoso, 2002). Lastly, the third hypothesis, known as the control process model of behaviour, proposes that individuals establish goals based on specific values and evaluate their behaviour according to the goals they set for themselves where individuals can make either positive or negative evaluations in terms of how they view their behaviour in reference to their goal (Hatzigeorgiadis & Stuart, 2008).

These processes give way to the two functions of self-talk: instructional self-talk and motivational self-talk where the former is used to provide guidance during a task (Carvajal & Sánchez, 2016) and the latter functions to provide encouragement (Carvajal & Sánchez, 2016). Hardy, Marklan, & Oliver (2010) conducted a study to examine the effect that these functions, referred to as controlling self-talk and informational self-talk respectively, had on the post-lecture experience in students. Results of the study determined that informational self-talk was associated with a positive post-lecture effect and a reduction in state anxiety whereas controlling self-talk was associated with a negative post-lecture effect and an increase in state anxiety (Hardy et al., 2010). Thus, asserting that the underlying functions of self-talk do have the ability to affect an individual's experiences.

Researchers have added to this knowledge by extending the research to self-talk and self-change. Howard (2006) conducted a study on positive emotional attractors (PEAs) and negative emotional attractors (NEAs), where the former can be considered positive self-talk and the latter negative self-talk, in order to examine their role in the intentional change theory (ICT). This study determined that PEAs and NEAs influence intentional change by affecting intrinsic and extrinsic motivation where positive emotions help an individual to recover from negative emotional experiences and increase resilience, and negative emotions influence an individual's real self by calling attention to situations that call for self-improvement (Howard, 2006).

Hatzigeorgiadis & Stuart (2008) confirmed this affect in a study where pre-competition anxiety, goal-performance discrepancies in athletes, and negative self-talk during performance were tested in order to examine the relationship between pre-competition anxiety and negative self-talk and pre-competition anxiety and goal-performance discrepancies. Results of this study determined that athletes who viewed their pre-competition anxiety as facilitative experienced less negative self-talk than those who viewed it as debilitating (Hatzigeorgiadis & Stuart, 2008).

Carvajal & Sánchez (2016) further tested the effect of positive and negative self-talk through performance outcomes by examining the relationship between university students' self-talk and their academic performance. Results of this study also confirmed that students who engaged in negative self-talk obtained poorer academic results when compared to students who engaged in more positive self-talk, and students who, both, engaged in negative self-talk and expected negative results obtained poor results (Carvajal & Sánchez, 2016).

However, in order to properly examine self-talk as a means of self-change through instruction and behaviour evaluations, it is necessary to also determine the extent of an individual's

awareness of their own self-talk. One of the purposes in a study by Naglieri & Winsler (2003) was to explore age-related changes in awareness of self-talk among children. Participants were given a problem-solving task, while being monitored for their task-solving strategies, and later asked to report their strategies (Naglieri & Winsler, 2003). Results determined that 60% of children and adolescents used either an overt, partially covert, or fully covert form of verbal mediation strategy during the task (Naglieri & Winsler, 2003). However, despite the amount of observed verbal mediation strategies, only about 10% of children who used overt verbal strategies reported that they talked to themselves out loud during the task, while awareness of covert speech increased with age where older children possessed more awareness than younger children (Naglieri & Winsler, 2003). This study brings into question the connection between awareness and content within an individual's use of self-talk and its ability to motivate self-change.

In addition to self-talk as a form of self-change, researchers have examined the concept of self-talk and change through the influence of outside sources. Social judgment theory, put forth by Sherif & Hovland (1961), "suggests that we readily accept ideas that are closer to our already formed attitude (latitude of acceptance), but in case we hear something contrary to our attitude, we repel it even more (it falls in our latitude of rejection)" (as cited in Saleem, 2014, p. 87). This asserts that individuals become further entrenched in their original belief system when they are presented with opinions that fall inside their latitude of rejection (Saleem, 2014). However, Campbell (1989) disproved a portion of this theory by demonstrating that the opposite is true when an individual receives negative opinions or thoughts from people they consider important (as cited in Saleem, 2014); instead of rejecting negative comments that fall in their latitude of rejection they accept them.

In order to properly examine how undergraduate university students' self-talk influences or affects their academic experience, Lev Vygotsky's theory of verbal self-regulation will be considered throughout the study. Lev Vygotsky asserted that language was a tool developed by humans in order to communicate their thoughts (Saleem, 2014) where he named two types of language: social speech and private speech. In the former, individuals communicate their thoughts with others and in the latter individuals speak to themselves (Carvajal & Sánchez, 2016; Hardy, 2006). Private speech was then classified as either overt self-talk or covert self-talk where the former is external talk and the latter is internal talk (Carvajal & Sánchez, 2016; Hardy, 2006). It is important to compare the current research study to Vygotsky's theory of verbal self-regulation to understand why students are using self-talk, if students use self-talk as a form of self-regulation as asserted by Vygotsky and, if so, what forms of self-regulation they are using.

Methods

Ethical clearance to conduct this study was obtained from the Humber Research Ethics Board. The sample consisted of five undergraduate students at the University of Guelph-Humber. Participants' gender, academic program of study, and ethnicity were not included as discriminating characteristics for this study. However, participants needed to have lived experience with self-talk in an academic setting and be able to thoroughly describe that experience in order to be selected for the study.

Participants were asked to attend two separate interviews. The first round of interviews gave participants the opportunity to develop rapport with the researcher and provide consent via informed consent form where it was outlined that all information provided by the participants

would be kept confidential, that participants were free to withdraw from the study at any time without repercussions, and were encouraged to ask questions. The second round of interviews were semi-structured, data collection interviews that focused on the individuals' experiences with self-talk, how they use self-talk, factors that influence their use of self-talk, and how they feel their use of self-talk affects their academic experience. After completing the second round of interviewing for all five participants, the last interview recording had to be discarded, as the data provided during the interview was not useable for the purpose of this study.

Data analysis was completed using a thematic analysis. Each transcript underwent four individual read throughs: the first was done to familiarize the researcher with each transcript and note first impressions, the second read through allowed for the researcher to begin to notice patterns in each individual transcript, the third read through grouped the patterns into emerging themes in each transcript, and the fourth read through was used to establish connections across emerging themes and develop subordinate themes. Thirteen subordinate themes were formed based on evidence provided in at least three quarters (75%) of the transcripts and categorized, respectively, into one of four superordinate themes.

Results

In the final stage of analysis, thirteen subordinate themes were created from the thematic analysis based on evidence provided in at least three quarters (75%) of the transcripts and categorized, respectively, into one of four superordinate themes. The breakdown of themes is as follows:

1. The Purposes of Self-Talk
 - a. Self-Talk for the Purpose of Motivation and Encouragement

- b. Self-Talk for the Purpose of Reassurance
 - c. Self-Talk as it is Used for Self-Criticism
 - d. Self-Talk as it Encourages Self-Development
2. The Factors that Influence Self-Talk in University
 - a. The Influence of Known and Unknown Expectations on Self-Talk
 - b. The Influence of Social Comparison with Peers
 3. The Cyclical Nature of Self-Talk
 - a. The Effect of Outside Influences on Self-Talk
 - b. The Effect of Self-Talk on Mood
 - c. The Effect of Mood and Self-Talk on Experience
 4. The Effect of Self-Talk in University
 - a. Understanding of the Effect of Self-Talk on Overall University Experience
 - b. Understanding of the Effect of Self-Talk on Lecture and Course Experience
 - c. Understanding of the Effect of Self-Talk on Evaluation Experience
 - d. Understanding of Self-Talk as it is Used to Better Experience

The Purposes of Self-Talk All participants discussed deriving meaning from their self-talk through associating it with a specific purpose including: (1) motivation and encouragement, (2) reassurance, (3) self-criticism, and (4) encouraging self-development. Participants revealed that one of the purposes for their self-talk was, generally, to provide themselves with motivation and encouragement in dreary situations:

Heather: Um ... well ... it was sort of like, before you go into a game, or like a sports match or whatever, and you just keep telling yourself, “you got this, you got this,” and you go in sort of pumped. Um, so that was sort of how I was feeling, like I felt okay I can actually get this and it was even more after the first, it was the assignment first so,

after the assignment after the mark I was like, “okay you can actually definitely do this, just work harder for the final.”

Similarly, participants used their self-talk as a form of reassurance, alongside motivation and encouragement, in disappointing situations:

Melanie: Yeah it's very like reassuring kind of like I have to reassure myself constantly like, “we still do have some volunteer experience,” like it's not like I have nothing like, “we still have this we are still building on this we're gonna be okay.”

Contrary to motivation, encouragement, and reassurance, participants also described using self-talk as a form of self-criticism to modify their behavior:

Lisa: ...And also, and just if I'm like doing something, like with homework or just if I'm like procrastinating I'll be like, “ugh you're so stupid, like why did you like wait until this long to do it.” I'm usually a pretty like pessimistic person, so I'll always um beat myself up for things.

The last theme that emerged from the purposes of self-talk involved the use of self-talk for the purpose of encouraging self-development:

Jessica: Well, when I grew into the person I am now sort of, like I know you're always growing into the person you are but like more so, I realized that there was no point in being negative about myself all the time because that is just going to get worse in the long run. So I started to learn how to be positive towards myself and stop caring what others think as much. So now like instead of listening to how other people feel about their exam I'm just like, “I feel fine, like I know that I'm going to do okay, like I studied and I did all that I can do and I don't have any regrets about the way I've studied.”

The Factors that Influence Self-Talk in University Participants described that outside factors embedded in their academic environment had the ability to affect and change their self-talk. The influence that known and unknown expectations from professors and courses had on their self-talk was discussed among all participants:

Melanie: Yeah probably because, um, just the difference of like knowing what to expect and then knowing how to talk yourself through stuff now, instead in like first year, I was

still testing it kind of and trying to get a hang of it and now I feel more calm and I can manage everything, like they can throw an assignment at me and I'll be fine.

Participants also described social comparison with peers to have a significant influence on their self-talk:

Jessica: Uh yeah so sometimes other people like their studying habits will because I'm like, "am I not doing enough? Like I'm not studying at the degree they are, like they're like studying hours on hours on hours, am I not doing enough for myself? Am I like being a bad student?" but then I'm like I know that people have different studying styles and I shouldn't let that influence like my study styles and how I view myself.

The Cyclical Nature of Self-Talk In describing their use of self-talk and the factors that are able to influence it, participants' explanations of their experiences all revealed a similar cyclical pattern between their self-talk, the factors that are able to influence their self-talk, their mood, and their experiences. In the first phase, participants described how outside influences, such as professors, friends, and lecture material, were able to influence their self-talk, either positively or negatively:

Heather: So, when I got [a bad] mark it just reinforced that idea that I don't like this professor, I don't like this course, and I just kept talking to myself like, again, repeating that, I don't like this course, I don't like this course. So, uh that sort of influenced how I really looked at the class, and I just didn't attend like the next two classes. Um, so yeah, so it just really reinforced ... that negative self-talk really reinforced my behaviour in the sense that I just didn't really care anymore. But once that grade came back, and my perception of the professor changed, um for sure like now I actually look at it positively and did well on the second assignment.

The second phase in the cycle of self-talk examines how the change in self-talk, caused by outside influences in the previous phase, is able to affect the participants' moods:

Lisa: Yeah, I know sometimes I get really like, ... I don't know ... yeah like I said I'm kind of a pessimistic person, so I realized over the years if I keep thinking negative thoughts, if I let myself beat myself up, or just think like negatively, then it effects my mood and how I like treat people or how I talk. So now I have been using self-talking,

like trying to use it in a more positive way, because I think it definitely effects like how I reflect on the outside, like how I talk to people, how I react to things.

The final phase encompasses the effect that the combination of change in mood and self-talk has on experience:

Jessica: So in classes that I like I feel really positive in and like when I have the exam I'm like totally excited about this exam. Like sometimes I enjoy writing an exam just because I like the course so much, but sometimes if I don't like the course like say like philosophy or like math like, I'm really bad at understanding math, so when I'm in math like oh it's so hard to yeah it's really hard to be positive in math like I'm really negative about math.

The Effect of Self-Talk in University The fourth and final superordinate theme examines the effect that participants found their self-talk had on their university experience. From the data, four main subordinate themes emerged: (1) understanding the effect of self-talk on overall university experience, (2) understanding the effect of self-talk on course and lecture experience, (3) understanding the effect of self-talk on evaluation experience, and (4) understanding the effect of self-talk as it is used to better experience. Participants described how their self-talk played a role in influencing their overall academic experience:

Jessica: Um, so self-talk has definitely like ... um ... it's definitely improved my university experience a lot because it's been positive because I learned how to be really positive. Whereas in high school um I had a really negative experience, well not really negative, not in like the social aspect but in like the studying aspect, because of like how I negatively self-talked to myself.

Participants described how their self-talk reflected in their mood and how that attitude was able to influence their experience of the course:

Heather: ...So, for me, it was going into the course like I don't even like this and I'm not going to do well on it. So, when I got that mark it just reinforced that idea that I don't like this professor, I don't like this course, and I just kept talking to myself like, again, repeating that, I don't like this course, I don't like this course. So, uh that sort of influenced how I really looked at the class, and I just didn't attend like the next two

classes. Um, so yeah, so it just really reinforced ... that negative self-talk really reinforced my behaviour in the sense that I just didn't really care anymore.

Participants also described that anxious self-talk during an evaluation resulted in a poorer evaluation experience while motivational and encouraging self-talk during an evaluation resulted in a more positive evaluation:

Lisa: During exams honestly I like swear a lot. If it's really hard I'll be like, "what the f*** is this like" and then I'll just get really frustrated. That's usually how I am during exams, if it's really hard. If it's really easy, or it's not so difficult, I usually think more positive thoughts, or be like, "oh I can do this, like this is easy, I know what this is", kind of thing. Like I feel more like motivated to go through and I feel like all my studying has like kind of helped, and I feel more confident in that sense.

Finally, all participants discussed using their self-talk to actively try and change or better a current experience:

Heather: Yeah, even if things aren't going well, positive self-talk, for sure, um convinces me otherwise, so my behaviour and all my actions would reflect on that and eventually it would actually, whatever is going wrong, would eventually become better.

Although participants alluded to the notion that their academic experiences were impacted by their self-talk to a degree, they seemed to struggle when asked to make overt and direct connections between their self-talk and its ability to influence their experience. This trend appeared to be influenced by previous theoretical exposure to the concept of self-talk. When asked to describe what role participants felt their self-talk played in their academic experience, participants who had been taught about the concept of self-talk through their courses were able to better explain the impact their self-talk has on their academic experience while students who came from backgrounds that do not focus on aspects of self-awareness were less able to overtly make that connection themselves.

In summary, after completing the data analysis, common themes across participant interview transcripts were categorized into four superordinate themes: the purposes of self-talk, the factors that influence self-talk in university, the cyclical nature of self-talk, and the effect of self-talk in university. The first superordinate theme focuses on defining how participants found meaning through their self-talk based on the functions they assigned to it and the purposes that they used it for. The second superordinate theme centers on examining the different outside factors embedded within the university setting that have the ability to influence or change the participants' self-talk. The third superordinate theme breaks down the concept of self-talk into a cyclical nature that is made up of different phases that examine the relationship between students' self-talk, their mood, outside influences, and their experience. Lastly, the fourth superordinate theme focuses on understanding how participants associated their self-talk with different aspects of their university experience and examining the connection between the two.

Discussion

This study set out to understand how undergraduate university students' self-talk is able to influence or affect their academic experience and was able to do so by identifying four superordinate themes: the purposes of self-talk, the factors that influence self-talk in university, the cyclical nature of self-talk, and the effect of self-talk in university. Such themes provide insight into an individual's lived experience with their self-talk through different perspectives of meaning that they attach to their self-talk. Valence, the content that is being described through an individual's self-talk, is one of the ways participants derived meaning from their self-talk. In using positive and negative self-talk for different purposes and in different situations, participants described evaluating their experiences based on a continuum of positive and

negative or based on their initial motivations (Calvete & Cardeñoso, 2002). In addition, participants also described using goals as a source of motivation and values as a form of behaviour regulation, as consistent with Hatzigeorgiadis & Stuart's (2008) control process model. Participants demonstrated this as they engaged in positive, motivating self-talk when they achieved close to an ideal grade on an evaluation or accomplished all their tasks for the day and in negative, criticizing self-talk when they were not able to reach their intended goals.

Accompanying the valence of self-talk is the purpose that participants attached to their self-talk and the functions that they used it for. Participants described using self-talk for motivation by providing themselves with motivation and encouragement in grudging situations, with reassurance to help themselves cope with disappointing experiences, and with instruction to keep them on task; consistent with the two functions of self-talk put forth by Carvajal & Sánchez (2016). However, on top of the two functions of motivation and instruction developed by Carvajal & Sánchez (2016), participants also explained using their self-talk for other functions as well, including providing themselves with self-criticism. Although some researchers mention the use of negative self-talk (Hatzigeorgiadis & Stuart, 2008) or informational self-talk (Hardy et al., 2010) as providing similar functions to self-criticism, none of the previous literature refers to the use of self-talk for the purpose of self-criticism as described by participants in the current study.

Another purpose of self-talk that was described to be used by participants is the use of self-talk for the purpose of encouraging self-development. Participants elaborated on how they were able to use their self-talk in order to promote continuous self-improvement. This finding remains consistent with current research on the theory of intentional change previously referenced in a study by Howard (2006) where individuals consciously decide to implement self-change, their

positive and negative emotions assist in the process by narrowing in on behaviours that need to be changed. Although participants did not outwardly describe themselves engaging in self-development through the process exemplified in the intentional change theory, the participants followed the basis of the theory as they took a look at themselves, compared their real self to their ideal self, and noted the areas of their self-talk that they would need to change in order to begin to reach that ideal self using their self-talk to engage in self-development.

With regard to social influences, along with other external influences, the current study yielded results different than results demonstrated in current literature. Although a study by Sherif & Hovland (1961) discusses social judgment theory with regard to receiving and accepting criticisms from outside influences (as cited in Saleem, 2014), participants referred to social judgment from a different perspective. Instead of referring to outward criticisms or judgments from peers or professors, participants described performing the judgment themselves, as they compared their study habits, grades, or job to that of their peers in order to provide themselves with motivation or provide a measure for themselves as to how they fared academically in comparison to those around them.

Lastly, although Lev Vygotsky initiated research on self-talk through the lens of developmental psychology, the current study remains consistent with his verbal theory of self-regulation by demonstrating how self-talk is used among undergraduate university students as a tool for self-regulation. As previously outlined, Vygotsky's verbal theory of self-regulation defines two types of speech: social speech and private speech where private speech can be classified as overt talk or covert talk (Carvajal & Sánchez, 2016; Hardy, 2006). In essence, as individuals develop through childhood, they use an evolving form of self-talk in order to help them regulate their

behaviour. Results of the current study are consistent with Vygotsky's verbal theory of self-regulation where participants described their use of covert, private speech as a form of self-regulation. Participants described engaging in their self-talk throughout multiple situations to regulate their mood, perceptions, behaviour, and their experiences.

Implications

Students that participated in this study were asked to reflect on past experiences of self-talk that, in most cases, extended back to their experiences with self-talk in high school and involved recall of specific thoughts and situations. Errors in memory need to be taken into consideration with regard to participants' ability to reiterate specific thoughts they had extending back over several years as well as their memories of their mood and descriptions of precise details in specific situations. Students that participated in the study were also all female, undergraduate students from the same campus, creating a possible bias in the results, as the sample size does not represent variety in its population.

Given that the nature of this study is qualitative, participants' descriptions and explanations are left up to interpretation by the researcher. This could create a misinterpretation or miscommunication in the meaning gathered from participants' recollections and experiences. Participants could have also fallen victim to response and social desirability bias in their responses and explanations of their experiences based on the definitions of self-talk and academic experience provided and the questions for thought sent to them prior to the semi-structured interviews. Interviewing some participants with previous theoretical exposure to self-talk also could have swayed the information received from these participants.

A final limitation of this study includes assumptions of the researcher. Although qualitative studies do not require outlined hypotheses, assumptions and goals regarding expected results of the study should be recognized and addressed throughout the entire research process. Researcher assumptions included the belief that negative self-talk would be more prominent than positive self-talk, that negative self-talk would lead to negative academic experiences, and that self-talk is influenced by perceptions of professors and classmates. In order to prevent initial assumptions from producing confirmation bias during the research process, IPA encourages a technique known as bracketing to allow the researcher to be aware of their biases and assumptions prior to the research process and consciously put them aside for the purpose of the study. Although the researcher practiced bracketing throughout the study, assumptions of the researcher remain a limitation of this study.

Although the current study has been able to fill gaps in literature surrounding self-talk through the use of a qualitative study focusing on individual experiences with the phenomenon, more extensive research needs to be conducted. Future studies should focus on understanding the cyclical nature of self-talk through a social psychology perspective. Although current literature discusses outside factors that are able to influence self-talk and the influence self-talk has on performance outcomes, the two topics need to be combined and expanded to include mood and experience in order to allow for research on the cyclical relationship between mood, self-talk, and outside influences and how they play a role in affecting academic experience.

A second area for future research should narrow in on students' abilities to make connections and associations between their self-talk and its ability to impact their academic experience. Diving into research centering on this topic through educational and cognitive psychology

perspectives will allow for additional research in connection with the role of self-talk in meta-learning. Given that meta-learning is a state of being aware of and taking control of one's own learning, and that university is an individualized institution that expects students to take control over their own learning, it is important to examine students' struggle to connect their self-talk to their academic experiences in order to research its possible contribution to meta-learning. Therefore, this study provides future researchers with a firm starting point to continue the research on the ability of students to influence their academic experiences through the use of their self-talk.

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Conflict of Interest: Courtney Rende declares that she has no conflict of interest.

Ethical Approval: All procedures followed were in accordance with the ethical standards of the responsible committee on human experimentation (institutional and national) and with the Helsinki Declaration of 1975, as revised in 2000.

Informed consent: Informed consent was obtained from all individual participants included in the study.

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