Journal for Research and Practice in College Teaching 2025, Volume 10, Issue 1
http://journals.uc.edu

Effectiveness of an Online Psychology Career Course on Undergraduates' Career Decision Self-Efficacy, Self-Perceived Career Knowledge and Career-Related Knowledge

Valérie Bruchon Scott Todd M. Manson

Indiana University Southeast

Abstract

Many universities have established career courses in psychology, with such goals as increasing students' knowledge of career opportunities, alleviating anxiety about and increasing students' confidence in the career decision-making process, and helping students learn to identify and articulate their competencies related to the workforce and/or graduate programs. The purpose of the current study was to evaluate the effectiveness of a structured career course in psychology/neuroscience recently moved to the online modality and extended to a full semester. One hundred and seventy-eight students enrolled in a career planning course required for undergraduate psychology and neuroscience majors completed assessments at the beginning and end of the semester. Results showed students' career decision self-efficacy and self-perceived knowledge of career opportunities increased significantly from the beginning to the end of the course. Additionally, students displayed significantly more accurate career related knowledge at the end compared to the beginning of the semester. Gender differences were found, with women scoring lower than men on career decision self-efficacy and self-perceived knowledge of career opportunities at the beginning of the semester; these differences disappeared by the end of the semester. The results of this study provide further support for the effectiveness of career courses, the online modality, and the need for additional universities, as well as majors, to incorporate career courses in their curriculum.

Key words: Online career course, Psychology career course, Career decision self-efficacy, Career self-perceived knowledge, Career related knowledge, Gender.

Effectiveness of an Online Psychology Career Course on Undergraduates' Career Decision Self-Efficacy, Self-Perceived Career Knowledge and Career-Related Knowledge

According to a recent report from the Georgetown University Center on Education and the Workforce (2023), close to 68 percent of all jobs require some postsecondary education and/or training and this number is expected to rise to 72 percent by 2031. Recognizing the knowledge, skills, and abilities (KSAs) desired by employers is critically important, especially for college graduates entering the workforce directly upon graduation. Landrum and Harrold (2003), as well as Miller and Carducci (2015) found a significant overlap between students and employers when comparing their perception of the most important KSAs for new hires (7 of the top 10 were similar). Even though psychology majors seem aware of the KSAs desired by potential employers, they have difficulty recognizing the transferability of skills across domains (courses to disciplines, college to work, job to job, etc.). While they acknowledge communication, interpersonal, and problem-solving skills are desirable workplace attributes, they need direct scaffolding to connect the dots and grasp that specific academic tasks are tied to acquiring skills essential for entry into the workforce (Appleby, 2018; Pisarik & Whelchel, 2018).

Over the years, research has shown students struggle in their ability to articulate the competencies acquired either through classroom learning or extracurricular activities (DuRose & Stebleton, 2016; Kinash et al., 2017). In order to promote career readiness (Alshare & Sewailem, 2018; Landrum et al., 2010; Nghia, 2017; Shah & Juavinett, 2022), students need guidance through the career decision-making process. This is especially critical as careers are becoming less defined and markets are more competitive (greater globalization, expected mobility, technological advances, and demographic changes). The guidance process requires empowering students to make meaningful choices and actively construct career paths (Grier-Reed et al., 2009), which is in line with the 'Personal and Professional Development' goal of APA's Guidelines for the Undergraduate Psychology Major (2023). Hence, universities have revisited career training to better

prepare students for transitioning into the workforce and enhancing their awareness of career options.

Many universities have established career courses in psychology, most for credit (1-4 hours) (Case et al., 2014; Osborn et al., 2020), with the number rising from 13% in the early 2000s (Green et al., 2008 in Phund et al., 2021) to about 40% (Miller et al., 2018b; Norcross et al., 2016; Phund et al., 2021; Reardon et al., 2024) into the 2020s. Most department-driven career planning courses often primarily focus on encouraging students to think critically about their majors (Fouad et al., 2016). As the workforce becomes more dynamic and fluid (evolving technology, evolving job markets, increasing number and variety of career opportunities, new work modalities, etc.), the swelling number of options tends to be overwhelming for students who report experiencing anxiety regarding making career-related decisions (Esters, 2008).

Many psychology majors face the additional challenge of vaguely articulating their vocational goal as 'seeking a helping career' (Collisson et al., 2021; Kokkinos et al., 2024), as well as lacking confidence in their ability to apply their learning experiences to specific jobs. This sense of inadequacy has been shown to not only limit the range of career options but the success with which desired career options are achieved (Barak, 2001). Psychology majors' misconstrued beliefs about the applicability of their KSAs to the workforce and narrow perceptions of potential careers, tend to, despite the popularity of this major, lead to complaints about the value of majoring in psychology (Halonen & Dunn, 2018). Career courses must assist in erasing these misconceptions by clearly balancing the presentation of post-graduation paths, either workforce or graduate school, without preferential treatment of one over the other. Career courses must clearly stress that, with a bachelor's degree, psychology students are well qualified for many entry-level positions, thus well prepared to enter the workforce.

While many students articulate their career objective as 'wanting to help others', their grasp of the span of career possibilities is often very limited (Collisson & Eck, 2022; Landrum, 2018; Stamm, 2020). Consequently, as suggested by Thomas and Daniel (2004), it is important for career courses to focus on broader career alternatives. It is rec-

ommended courses start with helping professions traditionally associated with psychology (social work, substance abuse counselor, mental health counseling, school counselor, school teacher, etc.), moving toward more medically related careers (physical therapy, occupational therapy, speech therapy, physician assistant, dentist, etc.), and then stepping into psychology-related careers in the business world (marketing, human resources, management, sport coach, parole officer, etc.).

In addition to raising awareness regarding career options, research has shown career courses have several additional benefits (Phund et al., 2021), such as alleviating students' anxiety about their educational and career choices (Liu et al., 2023), equipping them to face academic and workplace challenges, and positively impacting their career decision process. Miller et al. (2018a) showed career courses effectively help students navigate the career decision-making process, enhance their confidence in the career decision-making process, and ascertain their occupational choices. Additionally, Thomas and McDaniel (2004) demonstrated career courses benefited psychology students by increasing self-perceived knowledge of career options for their major, improving confidence in their ability to make career decisions, and promoting actual career knowledge and debunking of misconceptions. Similarly, Fouad and colleagues (2009) showed a college career course for undergraduate students from a large Midwestern urban university decreased students' career decision-making difficulties and increased their career self-efficacy. More recently, Stebleton et al. (2020) also demonstrated a career planning course helped students articulate career competencies and helped them articulate the value of their education to potential employers.

One important benefit of career courses is the enhancement of career decision self-efficacy (Komarraju et al., 2014; Northington, 2017), students' beliefs that they can successfully complete tasks necessary in making career decisions (Betz et al., 1996). Students with higher levels of career decision self-efficacy (CDSE) report feeling more prepared for getting a job in their chosen field and have greater knowledge about that job (Strapp et al., 2018). CDSE is positively correlated to career maturity (choosing a career path based on one's strengths; Mohan & Sahu, 2019) and career adaptability (Stead et al., 2022).

Another recent change in psychology curricula is the increase in the number of online courses (Brinthaupt, 2010). In 2021, about 53% of college degree seekers took some classes online and 65% of online learners identify as women (Hamilton & Beagle, 2024). According to Forbes (2024) for fall 2022, approximately 54% of college students enrolled in distance education courses, this is a substantial increase compared to the pre-pandemic era. Additionally, about 26% of students enrolled exclusively in distance education courses, citing flexibility and accessibility as their primary motivator. Hence, online learning has established itself as a constant in the post-secondary education landscape.

Research into the effectiveness of online career courses in psychology remains limited. Munley (2022), Nooshin et al., (2020), and Pordelan et al. (2020) found online career courses were equally effective as face-to-face courses in increasing CDSE, both for undergraduate and graduate students. The purpose of our study was to evaluate the effectiveness of a structured career course in psychology/neuroscience recently moved to the online modality and extended to a full semester. In addition to assessing the effectiveness of the course by examining whether it significantly increased students' scores on CDSE, determining whether the course broadened students' perception of career options available to them was critical. Hence students' self-perceived levels of knowledge of career opportunities in their major and actual career-related knowledge/ability to pinpoint career misconceptions (Thomas & McDaniel, 2004) were also measured.

This study's hypotheses were as follows:

H1: Students' career decision self-efficacy (CDSE) will significantly increase from the semester's beginning (pre) to the end (post).

H2: Students' self-perceived knowledge of career opportunities (PMCIS) will significantly improve from pre to post.

H3: Students will display more accurate career-related knowledge and fewer misconceptions (PMCIQ) at the end of the semester compared to the beginning of the semester.

Some research on career courses and self-efficacy has examined gender differences on academic self-efficacy and career self-efficacy, with mixed results. Some studies have found higher levels of academic self-efficacy among males, particularly in STEM fields (Huang, 2013; Reisberg et al., 2010; Robinson et al., 2022). Amani (2016) found males scored significantly higher on career decision self-efficacy, but other studies have found no significant gender differences in career decision self-efficacy (Cahyawulan & Fazny, 2022; Chung, 2002; Reisberg et al., 2010; Taylor & Betz, 1983). In addition to the hypotheses stated, the current study will examine gender differences as a research question with no stated hypotheses, as previous findings were inconclusive.

Method

Participants

This study included 178 students enrolled during the 2021-2022 academic year in various sections of a required career planning course for undergraduate psychology and neuroscience students at a midwestern public university. Of these individuals, 164 (137 women, 27 men) completed the Career Decision Self-Efficacy Short-Form (CDSE-SF), 94 (80 women, 14 men) completed the Psychology Majors Career Information Survey (PCMIS), and 94 (78 women, 16 men) completed the Psychology Majors Career Information Quiz (PCMIQ). Only students for whom pre and post data were available were included. Other than self-identified gender, no other demographic characteristics, such as age and race, were collected. The study received IRB approval (IRB#18506).

Materials and Procedure

The career planning course (P199) was originally designed as an in-person course lasting six weeks. The online revision is a fully online, asynchronous course across a regular semester of 16 weeks. The course was moved online in response to COVID-19. The decision to keep offering the course in this modality was based on the structure of the course which made it a perfect fit for an online asynchronous modality. Each section

enrolls up to 20 students; three sections are offered in the fall and the spring semester. The course was designed using the Canvas learning management system. The Canvas shell received Quality Matters certification in 2021; the course is highly structured (due dates, timely feedback, time to assimilate and reflect on the content) and aims to engage students to actively practice marketable skills. Students are required to select at least two career paths and build their answers to assignments based on these self-selected career options. The course is comprised of a total of eight modules with assignments such as utilizing career search engines, identifying important KSAs, acquiring these skills during one's undergraduate education, and researching potential graduate programs. Students practice skills through producing a Kaltura video, generating narrated PowerPoints, designing and critiquing résumés, and writing comprehensive reports. This course requires students to actively interact with each other and faculty via discussions and reports. Students also complete self-assessments designed to raise career awareness and broaden skills focused on recognition and understanding**.**

Three scales (CDSE-SF, PMCIS, PMCIQ) were completed at the beginning (pre) and end of the semester (post). The three scales were used to assess the effectiveness of the course:

1) Students' career decision self-efficacy was assessed using the CDSE-SF Scale (Betz et al., 1996). The CDSE-SF measures levels of confidence in one's ability to successfully engage in the career choice process and thus assesses self-efficacy expectations in regard to career decision making. The CDSE-SF is a 25-item scale where students rate their confidence in their ability to complete various career-related tasks on a 5-point Likert scale ranging from 1=No confidence to 5=Complete confidence. The higher the score, the higher the career decision self-efficacy.

The CDSE-SF is based on Crites' (1973, 1976) five career choice competencies model of career maturity, hence producing five 5-item subscales (Bell, 2002; Betz & Luzzo, 1996): Self-Appraisal (confidence in accurately evaluating one's abilities to decipher job opportu-

nities and fit regarding career-relevant abilities, values, and interests), Occupational Information (knowledge about university programs, occupations, and labor markets), Goal Selection (setting priorities in order to manage one's professional goals and advancement), Planning (establishing career plans and identifying career paths), and Problem Solving (handling career challenges, identifying and solving career-related problems, and figure out coping strategies).

Numerous studies examined the psychometric properties of the CDSE-SF (Amani, 2016) and confirmed its high internal consistency (.97 as per Nilsson et al., 2002), a Cronbach's alpha of .93 (Chung, 2002), a Cronbach's alpha coefficient of internal consistency of .94 (Reisberg et al., 2010) and an internal consistency of r = .83 test-retest reliability (Amani, 2016). Betz and Luzzo (1996) pointed out that the internal consistency reliability of the short form ranged from .73 (Self-Appraisal) to .83 (Goal Selection) for the 5-item subscales and yielded an alpha of .94 for the 25-item total score. Additionally, there were no significant gender differences in the CDSE-SF norming sample (Bell, 2002).

2) The students also completed the Psychology Majors Career Information Survey (PMCIS; Thomas & McDaniel, 2004) which includes six items (1=Strongly disagree, 5=Strongly agree) and is designed to assess students' self-perceived knowledge of career opportunities in their major. A sample item is "I can identify several different fields of study that would allow me to do counseling/therapy, and I understand what each of these involves" (Thomas & McDaniel, 2004). Internal reliability of this scale is demonstrated with an alpha coefficient of .87 (Brucato & Neimeyer, 2011). Higher scores are associated with higher confidence in self-perceived knowledge of career opportunities for one's major.
3) Finally, the students completed an adapted version of the Psychology Majors Career Information Quiz (PMCIQ; Thomas & McDaniel, 2004) which is used to assess students' actual career-related knowledge and pinpoint career misconceptions. A sample item is "Any psychology/neuroscience major who graduates with a 4.0 GPA can automatically get into almost any graduate program."

The scale includes 15 items rated on a Likert scale (1=Confident it's false to 5=Confident it's true). Using a Likert scale allows discernment between students who are guessing the answers from those who are confident in their answers (Thomas & McDaniel, 2004). Lower scores are associated with more accurate knowledge and fewer misconceptions regarding careers and career planning steps. Only seven of the 15 items were included so as to be relevant to students majoring in psychology or neuroscience. Internal consistency for the whole scale is acceptable, with an alpha coefficient of .55 (Brucato & Neimeyer, 2011); the internal consistency remained similarly acceptable (.54) for the seven retained items.

Results

H1: A paired samples t-test showed that post CDSE-SF scores (M = 109.42, SD = 11.95) were significantly higher than pre scores *(*M = 96.61, SD = 15.03), $t(150) = -12.036$, $p<.001$, 1-tailed, $d = -.979$. Additionally, the pre-post for each of the five subscales (SA, OI, GS, PL, PS) were also statistically significant ($p < .001$). Thus, our results (Table 1) supported our first hypothesis, and the course achieved its objective of enhancing career decision self-efficacy.

Table 1

Descriptive statistics for CDES-SF, PMCIS, PMCIQ and Gender

		Pre		Post	
Scales		M	SD	M	SD
CDSE-SF		96.61	15.03	109.42	11.95
	Women	94.90	14.76	109.17	11.94
	Men	101.00	14.95	109.93	12.50
PMCIS		19.14	4.64	26.73	3.06
	Women	18.70	4.40	26.79	3.04
	Men	21.64	5.33	26.43	3.23
PMCIQ		19.72	4.28	18.00	4.89
	Women	19.71	4.22	18.18	5.05
	Men	19.81	5.19	17.13	4.08

H2: Based on the PMCIS scores, students reported significantly higher self-perceived knowledge of career opportunities for their major at the end of the semester (M = 26.73, SD = 3.06) compared to the beginning (M = 19.14, SD = 4.64), $t(93) = -17.283$, $p < .001$, 1-tailed, $d = -1.783$, thus supporting our second hypothesis (Table 1).

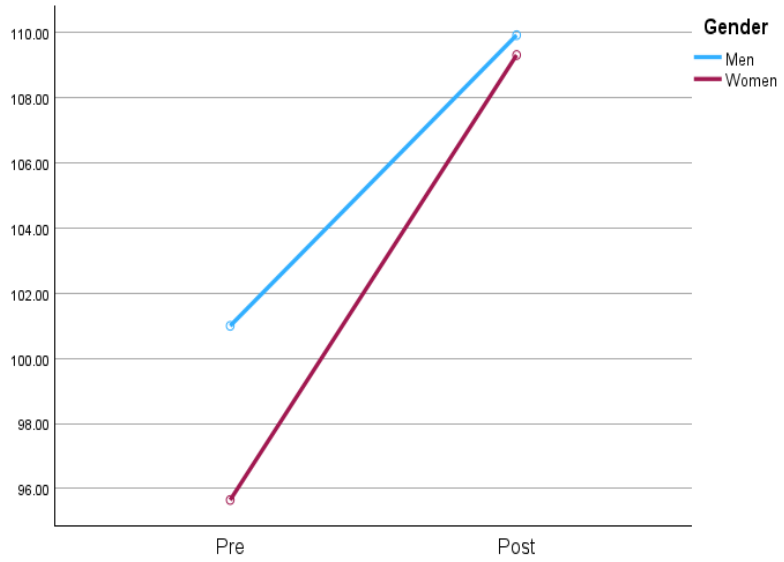
H3: On the PMCIQ, students demonstrated significantly lower scores at the end of the semester (M = 18, SD = 4.89) than at the beginning (M = 19.72, SD = 4.28), $t(93) = 4.097$, $p < .001$, 1-tailed, $d = .423$. As predicted, at the end of the semester students had a more accurate grasp of the career-related knowledge and associated course content information (Table 1).

Research Questions on Gender

CDSE-SF: An independent samples t-test on pre-CDSE scores showed women scoring lower (*M*=94.90, *SD*=14.76) than men (*M*=101, *SD*= 14.95) on career decision self-efficacy, *t*(161) = 1.956, *p* =.052, 2-tailed, *d* = .412; while this difference was not statically significant, the p value was close to reaching the threshold of statistical significance. Women scored significantly lower than men on the subscales of OI (*p* = .039) and PL (*p* = .034), but not for GS (*p* = .064) nor SA and PS (*p* > .05). On the CDSE post-test there was no significant gender difference, *t*(150) =.297, *p* > .05, 2-tailed, *d* = .063; this was also the case for each of the subscales (*p* > .05). These results, depicted in the figure below (Figure 1), imply that women benefited the most from the course in regard to developing their confidence in making career-related decisions.

Figure 1

Pre and Post CDSE-SF scores by gender.

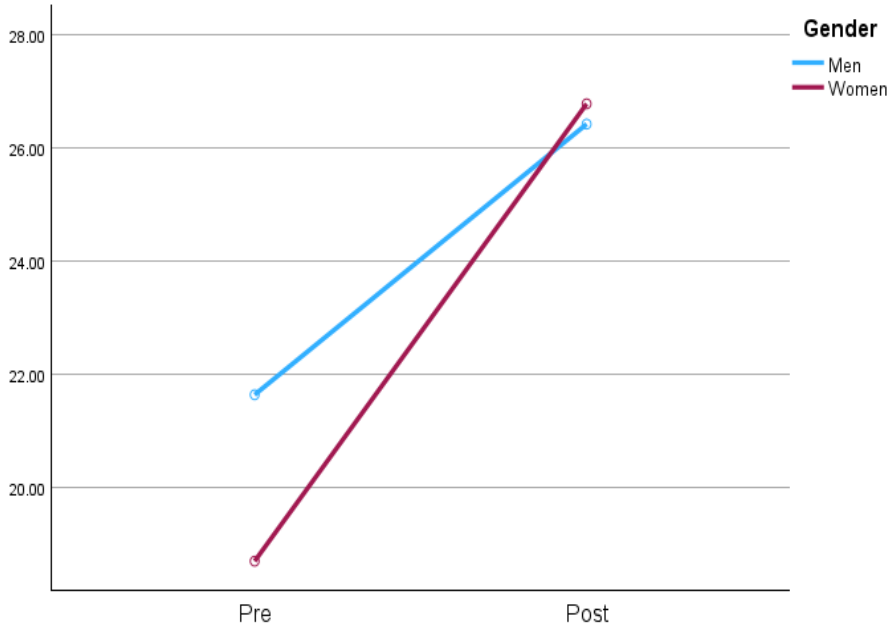


PMCIS: On the pre-PMCIS, women scored significantly lower (*M* = 18.70, *SD* = 4.40) than men (*M* = 21.64, *SD* = 5.33), *t*(92) = 2.234, p= .028, 2-tailed, *d* = .647 on

self-perceived knowledge of career opportunities. No significant gender difference was found on the post PMCIS, $t(92) = -.404$, $p > .05$, 2-tailed, $d = -.117$. These results can be seen in Figure 2.

Figure 2

Pre and Post PMCIS scores by gender.



PMCIQ: On this scale, no gender differences on either pre- or post- scores were found. Women and men scored similarly at the beginning of the semester, $t(92) = .091$, $p > .05$, $d = .025$, and at the end of the semester, $t(92) = -.783$, $p > .05$, $d = -.215$, on actual career-related knowledge.

Discussion

The effectiveness of an online semester-long career course for psychology and neuroscience majors was assessed and it was found students' career decision self-efficacy (CDSE) and self-perceived knowledge of career opportunities (PMCIS) increased significantly from the beginning to the end of the semester. Additionally, students displayed significantly more accurate career related knowledge and fewer misconceptions (PMCIQ) at the end compared to the beginning of the semester. Hence, the course was effective in meeting its objectives. These results corroborate previous findings from face-to-face career courses (Cahyawulan & Fazny, 2022; Fouad et al., 2009; Miller et al., 2018a; Ozlem, 2019; Reddan, 2015; Stebleton et al., 2020) and support the comparable effectiveness of online career courses (Kim, 2022; Munley, 2022; Nooshin et al., 2020; Pordelan et al., 2020).

Additionally, we explored the role gender plays in career decision self-efficacy, self-perceived career-related knowledge and actual career-related knowledge. At the beginning of the semester women reported lower CDSE and significantly lower self-perceived career-related knowledge, a concept closely related to self-efficacy. This finding supports Amani's (2016) but runs contrary to those of other researchers regarding CDSE (Cahyawulan & Fazny, 2022; Chung, 2002; Mohan & Sahu, 2019; Reisberg et al., 2010). These differences disappeared by the end of the semester, suggesting women greatly benefited from this course. Interestingly and unlike the other two measures, there were no significant gender differences in actual career-related knowledge at the beginning or the end of the semester. In light of the small proportion of men, in comparison to women, in our sample, some caution must be noted in terms of generalizability of these findings across all disciplines. However, the National Science Foundation (NSF) reported that, in 2018, 78% of undergraduate students in psychology were women. Hence, our results are likely reflective of gender differences in our discipline based on its demographics.

Continued studies on CDSE remain important as higher self-efficacy, as it pertains to career decision-making, carries long-term benefits beyond the classroom, such as setting challenging career goals, overcoming career obstacles, pushing through difficulties via career adaptive behaviors (Cahyawulan & Fazny, 2022; Stead et al., 2022),

and being employable (Zhou et al., 2023). CDSE has shown to not only promote career inquisitiveness/exploration, career confidence, and career adaptability, but to also foster career optimism (Liu et al., 2023). This is a worthwhile added benefit in times where mental health well-being has emerged as a legitimate concern in higher education.

Research should continue to examine the role of gender in CDSE and self-perceived career-related knowledge. Perhaps gender plays a larger role in some fields (e.g., STEM) than others (Huang, 2013; Reisberg et al., 2010; Robinson et al., 2022). Based on our findings with a sample of primarily psychology students and a high number of women, we suggest implementing career courses in other women dominated majors (e.g., behavioral and social sciences, humanities, fine-performance arts) as this group uniquely benefited from the course. Addressing these inaccurate self-perceptions in a career course is even more important for women, who tend to experience more career barriers than men at various points of their careers (Fouad et al., 2023; Grier-Reed & Skaar, 2010). We believe the gender differences reported in the CDSE-SF and PMCIS reflect such self-perceptions, while the lack of gender difference on the PMCIQ demonstrates it is really a matter of inaccurate perception and not of actual knowledge. Therefore, a career course is a prime vehicle to redirect perceptions toward aligning them with actual knowledge.

Further research should also focus on additional methods of examining the effectiveness of career courses, perhaps via qualitative analysis of students' self-reflections on pre-post changes in order to promote career readiness as self-reflection has been shown to positively predict career adaptability (Agoes Salim et al., 2023; Ran et al., 2023). Self-reflection enhances self-monitoring, promotes analysis of past achievements, and shapes subsequent actions (Sharma, 2021).

Career courses have become an integral part of the college curriculum in most universities and have gained recognition as a necessary step in preparing students to recognize how the skills gained through their college education can transfer into those sought after by employers and graduate programs. The results of this study provide further support for the effectiveness of career courses, the online modality, and the need for additional universities, as well as majors, to incorporate career courses in their curriculum.

Acknowledgements

The authors wish to thank Robin Morgan, Ph.D. for her support in obtaining P199 QM certification and feedback on earlier versions of this article.

Correspondence about this article should be addressed to Valérie B. Scott, Indiana University Southeast, Psychology department, 4201 Grant Line Road, New Albany, IN 47150. Email: vbscott@iu.edu

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