Using Instructor-Implemented Interventions to Improve College-Student Time Management

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Abstract: Time management difficulties are prevalent among undergraduate students and very few practical and effective instructor-implemented interventions exist. This study empirically tested two multicomponent interventions targeting time management in undergraduates enrolled in introductory and upper-level psychology courses. Students in the Schedule and Goals intervention were taught about the usefulness and importance of time management and shown how to use scheduling and goal setting strategies. Students in the Schedule Only intervention were only shown how to use the scheduling strategy. Students in both interventions also submitted either a weekly schedule and time management goals (Schedule and Goals) or only a weekly schedule (Schedule Only) on their course Learning Management System for 8 weeks. No significant post-intervention differences in time management behavior were found between the intervention conditions. However, students in the introductory course experienced a significant increase in post-intervention time management behavior. Post-intervention time management behavior was also positively correlated with final course grades. Results support the use of instructor-implemented interventions to improve college student time management.

Keywords: Time management, self-regulated learning, college teaching, instructor-implemented interventions

Academic time management refers to the collection of behavioral skills students use to budget their time efficiently to organize their study load and achieve their educational goals (Lay & Schouwenburg, 1993). Time management skills are associated with positive academic outcomes, including higher course grades and GPA (Balduf, 2009; Adams & Blair, 2019), developing better study habits (Krause & Coates, 2008), and reducing procrastination (Wolters, Won, & Hussain, 2017). Additionally, students with better time management skills report less academic stress and anxiety (Hafner et al., 2013), greater perceived control over their time and activities (Classens et al., 2004; Hafner et al., 2013), and an improved quality of life beyond the academic setting (Wang et al., 2011). Time management skills are particularly important for online students, as online courses require more self-directed learning. Indeed, time management skills were identified as a dominant predictor of academic achievement in online courses (Lee, 2002); however, online students often struggle to manage their time effectively (Levy & Ramim, 2012).

Time management is a multidimensional process of self-regulated learning, which includes three distinct phases (Zimmerman, 2008). The first phase is *forethought*, which includes setting goals, planning, and anticipating outcomes. For example, students may set performance goals for homework and studying (Bembenutty, 2009) or plan their time use through daily lists (Britton & Tesser, 1991). The second phase is *performance*, which includes using task strategies and monitoring learning. Students that use organized learning strategies and are aware of how they learn best are better able to self-regulate their learning (Bembenutty, 2007). The final phase is *self-reflection*, which includes evaluating the effectiveness of the strategies using self-monitored outcomes. For instance, students may adjust their goals and planning based on performance feedback.

These self-regulated learning skills are critical for success in college and for learning how to balance academics with life activities (Huie et al., 2014). Indeed, many students report struggling with
time management due to difficulties with self-regulating both their academics and external lives (Van der Meer et al., 2010). Additionally, recent research found both first-generation and non-first-generation college students scored low on assessments of time management skill use (Adams & Blair, 2019; Antonelli et al., 2020), which prompted the recommendation that students be explicitly and consistently exposed to activities that help with time management (Adams & Blair, 2019). Further, others have acknowledged that time management is a serious problem for many students and that universities should play a more active role in helping students learn about time management (Van der Meer et al., 2010).

**Time Management Interventions**

Even though students are frequently encouraged by instructors to use effective time management strategies, research evaluating the effectiveness of time management interventions in academic settings is limited. Thus far, only three known studies have examined the impact of time management interventions on college students. Stevens et al. (2018) developed a brief OTMP (organizing, time management, and planning) skills intervention for at-risk freshmen to prevent academic failure. Freshmen in the intervention group attended three seminars (outside of their classes) focusing on OTMP skills, including tips for successful scheduling, task completion strategies, and how to prioritize tasks. The intervention group experienced inattention severity improvements and reported less impairment in a variety of domains (life skills, family, self-concept, and social). However, post-intervention OTMP skill use did not differ between control and intervention groups, suggesting any effects of the skill training were not long-lasting.

Additionally, Hafner et al. (2013) designed a short-term (2 hour) time management training program administered to university freshmen at the beginning of the semester. Students received training in scheduling and prioritizing, goal setting and monitoring, and mental simulation as a method of goal achievement. Two weeks after the training program, students in the training group reported greater perceived control of time and less perceived stress compared to an active control group. Findings from this study support the use of time management interventions within an academic setting, however it is unclear how long the effects remained stable given the brief nature of the intervention. Additionally, the intervention did not assess whether the training led to increased post-intervention time management skill use, so conclusions about how the intervention impacted students’ time management behavior could not be made. In a follow-up study, Hafner et al. (2015) used a similar time management training program with undergraduate students but extended the post-intervention data collection to four weeks following the training. As with their prior intervention study, students’ perceived control of time increased and perceived stress decreased after the training, but conclusions about the impact of the intervention on students’ time management behavior could not be drawn.

Given the widespread prevalence of time management difficulties among college students (Thibodeaux et al., 2017) and the scarcity of interventions focusing on college student time management, more research is needed examining time management interventions in academic settings. The current study seeks to address this gap by testing the effectiveness of instructor-implemented time management interventions in undergraduate psychology courses. There are several advantages to utilizing instructor-implemented interventions that take place within the context of a course. Instructor-implemented interventions do not require students to attend additional seminars or participate in specialized therapeutic intervention programs. The existing college student time management interventions (Hafner et al., 2013; Hafner et al., 2015; Stevens et al., 2018) all involved students opting in to receive time management training outside of their courses.

Additionally, instructor-based intervention programs are designed to target all students, which is particularly beneficial given the prevalence of time management difficulties and procrastination in
college students (Thibodeaux et al., 2017; Zaks & Hen, 2018). Further, existing time management interventions have been brief and have not allowed students to practice skills over a longer time period. Findings from a “nudging” project aimed at improving college student achievement through brief online and text-messaging interventions revealed the interventions did not translate into significant academic benefits for the students. Instead, most students reported wanting additional coaching beyond what was offered through the brief “nudging” program. The researchers concluded that programs offering more comprehensive and intensive support are necessary to help students succeed. Taken together, these findings suggest that longer-lasting, instructor-implemented interventions may be necessary for improving college students’ time management behavior.

The Current Study

The recently proposed knowledge, belief, commitment, and planning (KBCP) provisional framework (McDaniel & Einstein, 2020) served as a theoretical guidepost for the interventions in the current study. The framework was developed to encourage learning strategy training and promote sustained use of learning strategies among students. Although time management is not a learning strategy specifically identified within this framework, it is a component of self-regulated learning (Pintrich, 2000), and like learning strategies, it may benefit from a multidimensional intervention. The KBCP framework suggests four critical components are needed for learning strategy training: 1) Knowledge of the target strategy and how it is used, which is typically accomplished through direct instruction on how to use the strategy; 2) Belief that the target strategy works, which is achieved by providing demonstrations of the strategy’s effectiveness; 3) Commitment to using the strategy by increasing students’ perceived value, interest, or motivation to use the strategy; and 4) Planning how the strategy is going to be applied and used within learning contexts.

McDaniel and Einstein (2020) also provided a sample KBCP strategy training protocol, which highlights how each framework component could be implemented in a learning strategy training intervention. The current study adapted this sample protocol when developing the time management interventions. Specifically, as outlined by the KBCP framework, the current study’s interventions involved the following components:

A. Knowledge of Time Management Strategies. Video lectures provided descriptions of time management strategies and information about how the strategies are used.

B. Belief That the Time Management Strategies Work. Video lectures provided demonstrations of the effectiveness of the time management strategies.

C. Commitment to Using the Time Management Strategies Via Utility-Value Information. Video lectures provided information about the value and importance of time management strategies to increase students’ motivation to use the strategies.

D. Planning for Time Management Strategy Use. Students were given experience with planning for strategy use by submitting weekly time management assignments using the strategies. One of the time management strategies (goal setting) also required implementation intentions, which facilitate planning by making students think about where, when, and how their goals will be achieved (Gollwitzer, 1999).

In the current study, students completed a pre-intervention time management behavior measure and then were randomly assigned to one of two time management intervention conditions: The Schedule and Goals intervention, which focused on the strategies of scheduling and goal setting, or the Schedule Only intervention, which focused only on the strategy of scheduling. Since goal setting typically facilitates successful time management and is a prerequisite for scheduling (Oettingen et al.,...
2015), it was anticipated that students in the Schedule and Goals intervention would show a greater increase in post-intervention time management behavior compared to students in the Schedule Only intervention. The current study chose to test two interventions rather than using a true control group (or neutral intervention) due to the context in which the interventions were used. Given these were instructor-implemented interventions administered within courses, it would have been difficult to develop a comparable neutral intervention that made sense to use and assign in the courses. Additionally, the authors worried there might be pushback from students assigned to a control group, should they realize they were not receiving the potential benefits from the time management intervention.

The interventions in the current study were administered over an 8-week time period, as prior research has primarily utilized only brief interventions (Hafner et al., 2013; Hafner et al., 2015; Stevens et al., 2018), and either did not lead to post-intervention time management behavior change (Stevens et al., 2018) or post-intervention behavior change was not measured (Hafner et al., 2013; Hafner et al., 2015). Additionally, the longer intervention duration gave students more opportunities to use the time management strategies, which could promote greater post-intervention strategy use (McDaniel & Einstein, 2020). In addition to predicting students in the Schedule and Goals intervention would report greater post-intervention time management behavior, the following predictions were made:

A. Due to the added benefits of goal setting for time management, students in the Schedule and Goals intervention would show greater differences between their pre-intervention and post-intervention time management behavior.

B. Since a utility-value intervention is part of the KBCP framework (McDaniel & Einstein, 2020) on which the current study’s interventions are based, one of the intervention conditions (Schedule and Goals) included information to increase the perceived utility value of time management strategies (e.g., the benefits and importance of strategy use). Utility-value interventions have led to greater student interest, motivation, and persistence in tasks (Hulleman & Harackiewicz, 2009; Hecht et al., 2019) and improved course performance (Canning et al., 2018). Therefore, students in the utility-value intervention condition should report greater utility value for time management strategies and possibly earn higher final course grades.

C. Given the relationship between time management skills and academic performance (Lee, 2002), it was predicted that students in both intervention conditions reporting greater post-intervention time management behavior will earn higher final course grades.

Method

Participants

The current study involved one section of Introduction to Psychology (PSYC 111) and one section of Introduction to Personality (PSYC 360) during the Fall 2020 semester at a midsized, Midwestern public university. Both courses are typically face-to-face courses but were taught asynchronously online due to the COVID-19 pandemic. All 287 students in both courses were eligible to participate, but a total of 142 students (94 students in PSYC 111 and 48 students in PSYC 360) completed the activities related to this study (i.e., the pre-intervention questionnaire, the post-video quiz, and the post-intervention questionnaire; see Materials and Measures for details). Of these 142 students, 39 reported they were men and 103 reported they were women. Students ranged in age from 18 - 28 years ($M = 19.35$ years, $SD = 1.59$ years). With respect to class level, 78 students were freshmen (54.9%),

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17 were sophomores (12%), 34 were juniors (23.9%), and 13 were seniors (9.2%). Finally, 22 students reported first-generation student status (15.5%). Racial or ethnic identity data was not collected, but the public university where the study was conducted is a predominantly White institution. Prior to data collection, the authors obtained approval from the institutional review board and an exempt protocol was granted.

Materials and Measures

Pre-intervention measures. To assess students’ pre-intervention time management behavior, the Time Management Behavior Scale (α = .74; Macan et al., 1990; Macan, 1994) was used, which asks respondents to rate the frequency with which they engage in time management behaviors and the extent to which they feel in control of their time, using a 5-point scale ranging from seldom true of me to very often true of me. The scale includes four factors: goal setting and prioritizing, mechanics of time management (e.g., making lists, scheduling, and planning), preference for organization, and perceived control of time. The validity of the scale has been established through its use in research examining time management in adult and college student populations (Macan et al., 2010).

Interventions. Two interventions were tested in the current study. The Schedule and Goals intervention condition (N = 70) included a series of video lectures that were designed to enhance the utility value of time management and provide descriptions of how to use time management strategies. Specifically, the videos discussed the importance of time management for academic achievement (e.g., higher course grades, meeting course deadlines, reduced cramming, greater course retention, and reduced test anxiety), personal well-being and mental health (e.g., reduced stress and anxiety), and post-college workplace readiness (e.g., developing core workplace competencies such as organizational skills and planning). The videos also described how to use commonly recommended time management strategies, including scheduling and prioritizing and setting goals supported by implementation intentions. Students were instructed about how to create a weekly schedule and prioritize tasks in order of importance, as well as how to set time management-related goals using the SMART criteria (Doran, 1981). Finally, students learned about the importance of supplementing goals with implementation intentions (Gollwitzer, 1999).

For the Schedule Only intervention condition (N = 72), video lectures only included information about creating a schedule and prioritizing tasks in order of importance. No information about utility value or setting goals with implementation intentions was included. The Schedule Only condition served as a comparison intervention to determine whether the utility value information and goal setting would be more advantageous for time management behavior compared to only scheduling and prioritizing.

After viewing the intervention videos, students in both conditions answered an essay prompt that varied by condition. The purpose of the essay was for students to actively engage with the intervention video lectures. For the Schedule and Goals condition, students answered the question, “Based on what you watched in the video lectures, describe the benefits and importance of using time management strategies. Then describe the requirements for the weekly time management assignments you will submit for the course.” For the Schedule Only condition, students answered the question, “Based on what you watched in the video lectures, describe the requirements for the weekly time management assignments you will submit for the course.”

Students also submitted weekly time management required course assignments in their courses as part of both interventions for 8 weeks of the semester (weeks 3 – 10). The course requirements for the time management assignments varied by intervention condition. Students in the Schedule Only intervention submitted a weekly schedule, while students in the Schedule and Goals intervention...
submitted both a weekly schedule and three weekly time management goals supported with implementation intentions.

Post-intervention measures. The post-intervention questionnaire included the Time Management Behavior Scale (Macan et al., 1990; Macan, 1994) and a scale adapted from Hulleman et al. (2008) to report perceptions of the utility value of time management strategies (nine items; α = .91). Examples of items included “Time management strategies are relevant to my life” and “Learning how to manage time is valuable for everyone.” Students indicated their level of agreement with each item on a scale ranging from disagree strongly to agree strongly. There were also two open-ended questions regarding the perceived utility value (“How are time management strategies useful for you, now or in the future?”) and the potential costs of using time management strategies (“What are the costs or downsides of using time management strategies?”). Two of the authors coded these open-ended items using a content analysis in an inductive manner (similar to Barry et al., 2015). A research assistant was then given the codes and asked to code a subset of 50% of the responses. Interrater reliability between the author’s coding and the research assistant’s coding was k = .86.

Additionally, to measure the perceived effectiveness of the KBCP framework components, several additional questions about students’ perceptions of the interventions were created for the post-intervention questionnaire. Specifically, students in both conditions rated the impact of the strategy descriptions and demonstrations on their overall time management behavior, and students in the Schedule and Goals intervention rated the impact of the utility value information on their overall time management behavior. Students were further asked to rate the effectiveness of the time management strategies assigned to their condition (scheduling and goal setting or only scheduling). Finally, students estimated the frequency with which they followed their weekly schedules (both intervention conditions) or accomplished their weekly goals (Schedule Only). Demographic items were also included at the end of the post-intervention questionnaire.

Procedure

At the beginning of the Fall 2020 semester, students were invited to complete the pre-intervention questionnaire for bonus points in their courses. An alternative assignment was available for bonus points for students that chose not to complete the pre-intervention questionnaire. At the end of the first week of the semester, students were randomly assigned to either the Schedule and Goals or Intervention B condition through their course Learning Management System (Blackboard). During the second week of the course, students completed a Time Management Module for course credit (the module was required for all students in the courses). The module included the video lectures with content that varied by intervention condition, as well as a post-video essay.

During the third to tenth weeks of the course, students submitted the weekly time management assignments through their course Learning Management System (Blackboard). The time management assignments were due by 11:59 PM on Mondays to encourage students to have their scheduling and goal setting done at the beginning of the week. Students also received feedback on their assignments from the course instructors or teaching assistants. After the final time management assignment was submitted, students were invited to complete the post-intervention questionnaire for bonus points in their courses. An alternative assignment was available for bonus points for the students that chose not to complete the post-intervention questionnaire.
Results

Pre-Intervention Time Management Behavior

To determine if there were initial differences in time management behavior based on condition (Schedule and Goals or Schedule Only) or course (Introductory or Upper-Level), a two-way ANOVA was conducted. There were no significant initial differences in time management behavior based on condition ($F(1, 138) = .090, p = .764$) or course ($F(1, 138) = 3.162, p = .078$). Additionally, the condition by course interaction was nonsignificant ($F(1, 138) = .477, p = .491$).

Post-Intervention Time Management Behavior

To determine whether there were post-intervention differences in time management behavior based on condition (Schedule and Goals or Schedule Only) and course (Introductory or Upper-Level), a two-way ANOVA was conducted. Contrary to what was predicted, there were no significant differences in post-intervention time management behavior between the intervention conditions ($F(1, 138) = .227, p = .634$) or the courses ($F(1, 138) = .030, p = .864$). The condition by course interaction was nonsignificant as well ($F(1, 138) = 1.716, p = .192$).

Potential changes in time management behavior were also analyzed using a two-way repeated measures ANOVA, with intervention condition and course as the independent variables and pre-intervention and post-intervention time management scores as the dependent variable. The main effect of intervention condition was nonsignificant ($F(1, 138) = .984, p = .323$), but the main effect of course was significant ($F(1, 138) = 3.362, p = .049$). A post-hoc Tukey test revealed the Introductory Course students reported a significant change in pre-intervention to post-intervention time management behavior compared to students in PSYC 360 ($p = .050$). The condition by course interaction was nonsignificant ($F(1, 138) = .930, p = .336$). See Table 1 for pre- and post-intervention means and standard deviations by intervention condition and course.

Table 1. Pre- and Post-Intervention Time Management Behavior Scale Means and Standard Deviations.

| Course       | N  | Pre-Intervention M (SD) | Post-Intervention M (SD) |
|--------------|----|------------------------|--------------------------|
| PSYC 111     | 94 | 85.17 (14.86)          | 87.95* (17.79)           |
| PSYC 360     | 48 | 89.73 (12.65)          | 88.23 (13.55)            |

* $p < .05$

Utility Value and Time Management Behavior

To test for post-intervention utility value effects, a two-way ANOVA was conducted with intervention condition and course as the independent variables and perceived utility value of time management strategies as the dependent variable. Contrary to what was expected, there were no significant differences in perceived utility value based on intervention condition ($F(1, 138) = 2.473, p = .118$) or
course \( (F (1, 138) = .087, p = .768) \), indicating that students in both intervention conditions and both courses reported similar perceived utility value for time management strategies. The intervention condition by course interaction was nonsignificant as well \( (F (1, 138) = 1.362, p = .245) \).

For the open-ended questions, students were asked to report the benefits and importance (i.e., perceived value) of using time management strategies, as well as the perceived costs. When probed about the utility value of time management strategies, the most common response was that time management “promotes scheduling, prioritizing time, and planning ahead” \( (n = 43) \). This theme is reflected by students acknowledging that time management helped them plan, as noted by one student who expressed that time management, “help(s) me have a great idea on what I have to do for the week. Helps me really look forward on the week and have a plan.” Time management also alleviated scheduling conflicts, as noted by one student who said, “I never used a calendar before and would constantly find myself double/over booked, implementing a calendar has helped with this drastically.” The time management assignments further facilitated students’ ability to prioritize tasks. Specifically, one student shared that “The time management strategies are useful to me because it allows me to plan out my week and figure out what are my main priorities in assignments or even other events I have going on.”

Students also recognized that time management skills were expected of them in the future. For instance, a student reflects on their decision to go to physician’s assistant (PA) school, “If I do decide to go into pre pa, I need to be able to manage my time with school, work, and free time. Time management can influence someone’s mental and physical health.” Thus, time management seems to be perceived as important for future academic and occupational endeavors. Relatedly, students also seemed to believe that being able to schedule, prioritize, and plan would help them balance the demands of work, school, and life, “Time management strategies are useful to me now and in the future because as I continue throughout school, my workload will increase so it is important that I know how to use my time to accomplish tasks. In the future when I have a family and a job I will have to learn how to manage my time as well.”

Students further expressed that time management encourage working efficiently \( (n = 16) \), “Time management strategies are useful for me right now as well as in the future because they allow me to get my work done more efficiently and allow me to retain information better. In addition to this, they also allow me to have a better school-life balance.” In this regard, students perceived they were getting more out of their time by using time management strategies and felt a sense of achievement. This is also evidenced by one student who noted, “Time management strategies allow me to both focus on goals (both personal and school related) and implement steps to achieve those goals. In doing so, I get more done and I get more out of my tasks.” Relatedly, such structure can facilitate students to both organize and prioritize what needs to be done so tasks are approached in a more efficient matter. “The time management strategy I prefer is setting up a to-do list in order of due dates or priority level. This is very useful because it allows me to see everything I need to get done and when, which prevents me from forgetting about it and/or failing to complete it.”

Students also reported time management strategies to be valuable because they alleviated stress and anxiety \( (n = 16) \), particularly surrounding deadlines. One student noted, “I am able to lay out my time so I am not as stressed about meeting deadlines.” The relationship between time management and stress and anxiety may reflect the “concreteness” of seeing due dates and setting aside time to complete an assignment or to study. For instance, one student noted that “I found that my stress about upcoming assignments decreased when I had set aside time to complete them.” Another student also emphasized the benefits of “seeing” their workload concretely laid out, “Helps my anxiety relax when I write everything down and visually check what I’ve done.”

Relatedly, students found that time management strategies provided them with a game plan, sense of organization, and clarity that assisted with managing negative affect, “They help me know my weekly schedule every week, so I don’t have to go day by day. They also help me known when exams are coming up as well as big assignments. I am a very stressed person if I don’t know what’s going on or what is coming up so this helps calm my nerves and helps me relax.” Further, having a plan was noted as important to another student in
managing stress, “Time management strategies are very useful for me because if I do not plan my week out I feel very overwhelmed with the amount of tasks I have and I end up feeling like I will not have time to complete everything unless I map out my time”. Another student emphasized the organizational component of time management strategies as being helpful, “It also keeps you organized which lowers my stress during the week.” Thus, having clear expectations for the week enabled students to have some control over their daily schedules, and subsequently, less stress.

Reductions in stress and anxiety were also related to completing work on time \((n = 41)\). For example, one student noted that time management strategies “Helps me to get things done and relieve stress. I always want to ‘cross things off’ in my planner and writing them down pushes me to actually do this.” Thus, physically scheduling the time to engage in tasks may motivate students to get them done (for the satisfaction of crossing it off the list) and thus, encourages getting work done on time. Indeed, another student noted that “Time management strategies are useful for me in the sense that I am able to lay out a schedule that tells me what I need to complete in regard to school related tasks throughout the week in order to complete everything on time.” Similarly, students acknowledged that time management benefitted their ability to complete schoolwork, “This semester, I have a very full schedule, without time management strategies, I would struggle to get all of my work done on time,” and homework specifically, “They help me make sure I get all my homework done in time.”

Moreover, students reported that reduced procrastination was a significant benefit of using time management strategies \((n = 10)\). Students are often warned of the dangers of procrastination, so it is not surprising that reductions in this behavior were noted as a benefit. Students saw reduced procrastination as a benefit across a range of situations, from daily life tasks, “They are helpful by keeping track of not just assignments, but also small tasks as well, setting aside 10 minutes a day to put away clothes can be extremely helpful instead of procrastinating on it,” to academic work, “Writing all of my duties down in writing has helped me know exactly what and when I have to have things done. Although I still have a bit of a procrastinating problem, I do have less late assignments this way,” to one’s future career “They can really help with procrastination. In the future, I wish to become an OT and I realize that Occupational Therapists have stressful case loads so these strategies will really come in handy.” Thus, time management strategies such as creating a schedule that “help me not to procrastinate” might be perceived as particularly useful and beneficial to students’ academic self-image.

Notably, utility value information had a moderate impact on students’ time management behavior, suggesting that understanding perceived benefits and costs to time management could facilitate future buy in and behavioral change. The biggest perceived cost to time management strategies was the amount of time it took to implement the strategies \((n = 66)\). In regard to the time investment, some students felt stress from making a schedule when one “should” be working on something. In terms of viewing time management strategies as less important than other tasks, one student noted, “It takes awhile to make my weekly schedule, so while I could be doing more important things, I am just making a schedule,” and another student expressed feeling like “it wasted time” because they “could have been doing other stuff.” Relatedly, time management strategies could take up one’s time if they became a way to procrastinate in and of themselves, as expressed by one student who noted that it “takes time to make a schedule and this became a form of procrastination by waiting till I made my schedule for me to start actually working.” Thus, students may have difficulty understanding how the time investment in scheduling and goal setting may benefit them. However, some students did acknowledge that this downside was worth it, “There are not many downsides to time management. The only thing that I can think of is that it takes time to prepare a schedule, but I think that it is well worth the time.” Future interventions thus might benefit from emphasizing the ways in which time management strategies will save students time in the long run, as one student noted “sometimes it costs time to save time.”

Another frequently reported cost of time management strategy use was students’ difficulty sticking to their schedules \((n = 31)\). Some students acknowledged that the planning fallacy was at play.
when they sat down to complete scheduled tasks. For example, one student noted, “if you think you blocked in enough time to finish a task, but it ends up that you need more time to complete the task.” For other students, dealing with “unexpected” or “unanticipated” events coming up was a source of frustration. For instance, “you may not know the unexpected that can come up during the week and can’t plan for that,” and “Some unforeseen things can come up and shake up the layout of your weekly schedule.” Further, some students felt the weekly scheduled were inflexible (n = 12), which may have contributed to their inability to stick to their planned schedule. For example, one student reported, “not being able to go off of you schedule if something more important comes around” and feeling “confined” by detailing “every single aspect of your life.” As such, students might need further instructions on how to make schedules and set goals that are flexible and more accommodating to life’s demands. This may be especially so in the midst of a pandemic where there is inherently a lot of uncertainty, as this was also expressed by one student, “It is also very extreme to plan so much when the world we live in is so unpredictable.”

Students additionally seemed to emphasize an emotional and motivational aspect of failing to implement these strategies, which negatively impacted them. For example, “If you don’t meet your goals or follow your time management strategies, it can be often discouraging.” Another student also noted that, “If one puts too much on their schedule for one day or one week, and they don’t accomplish it all, it can make them feel worthless and unsuccessful.” Therefore, students may benefit from setting more realistic goals and building flexibility into their schedules so that time management strategies are viewed as facilitating their ability to prioritize important tasks instead of confining them.

Despite not being required to purchase any materials, some students viewed purchasing a planner as a cost (n = 4), noting, “The only cost is to buy a planner that works for you.” As such, some students perceived costs as being materials related instead of more abstract. Other downsides to time management strategy use did not fall into any given category (n = 18). These responses generally tended to be difficult to interpret (e.g., “I will be in the medical field, and time is a very important thing in surgery”), thoughts that were not fully fleshed out (e.g., “Focus too much on time managing and then it does not allow for proper skills”) or were irrelevant to the question asked (e.g., “I usually just write down what homework I have to do on what days”). Further, many students noted no costs or downsides to time management (n = 28) and these expressions were generally straightforward and concise (e.g., “none,” “can’t think of any,” “none that I can think of.”). Finally, some students took the opportunity to re-iterate their positive perceptions of time management, “I feel there are only positives to time management strategies. It keeps your life in order and helps you get done everything you need to get done,” and “I don’t see any downsides. All I had to do was spend ten minutes on Sunday creating a schedule, which gave me so much more control and consciousness over how I used my time.”

Perceived Effectiveness of the Intervention Components

The post-intervention questionnaire included items related to students’ perceptions of the effectiveness of the intervention components. Ratings of the utility value information and strategy descriptions and demonstrations were given on a 4-point scale ranging from has not impacted to has highly impacted overall time management behavior. Students in the Schedule and Goals intervention reported the utility value information moderately impacted their overall time management behavior (M = 2.07, SD = .86), and students in both interventions reported the strategy descriptions and demonstrations also moderately impacted their overall time management behavior (M = 2.11, SD = .91). Ratings of the effectiveness of scheduling and goal setting were made on a 5-point scale ranging from not effective to very effective. Creating a schedule (in both interventions) was rated as being more effective at helping students manage their time (M = 3.42, SD = .87) compared to goal setting, which students in the Schedule and Goals intervention rated as being moderately effective at helping them manage their time (M = 2.34, SD = 1.30).
Additionally, students in both interventions were asked to indicate how frequently they followed their weekly schedules during the intervention, using a 5-point scale ranging from never to always. Students in the Schedule and Goals intervention were also asked to indicate how frequently they accomplished their weekly goals. The average frequency rating was higher for schedule following \( (M = 2.82, SD = .96) \) than for accomplishing goals \( (M = 2.58, SD = .95) \).

**Time Management Behavior, Utility Value, and Final Course Grades**

A Pearson product correlation was conducted to examine whether students’ post-intervention time management behavior correlated with their final course grades. A significant positive correlation was found between post-intervention time management and final course grades \( (r(142) = .239, p = .004) \), indicating that students reporting more post-intervention time management behaviors earned higher final course grades. A Pearson product correlation was also conducted to examine whether perceived utility value was associated with final course grades. A positive correlation was found but was nonsignificant \( (r(142) = .141, p = .095) \).

**Discussion**

The purpose of the current study was to test the effectiveness of instructor-implemented interventions on college students’ time management. The interventions included teaching students how to use recommended time management strategies (scheduling, prioritizing, and goal setting), explaining the importance of using time management strategies for personal well-being, academic success, and career skill development (utility value), and having students put the strategies to use in weekly course assignments.

Overall, the study’s hypotheses were partially supported. Compared to only scheduling and prioritizing, the goal setting combined with scheduling and prioritizing did not lead to greater post-intervention time management behavior, contrary to what was expected. This may be the result of difficulties some students had with goal setting. For example, some students did not submit implementation intentions with their goals, some submitted goals that were not specific, or did not submit goals relevant to time management, despite being instructed to do so. As a result, it was likely more difficult to experience the time management benefits associated with goal setting.

Similarly, students perceived the goal setting to be less effective at helping them manage their time compared to creating a schedule. Students also reported accomplishing their weekly goals less frequently than following their weekly schedules, speaking again to the preference students seemed to have for scheduling over goal setting. These findings likely reflect additional limitations with the goal setting intervention. Two well-established moderators of goal achievement that were not addressed in the goal setting intervention materials are commitment and feedback (Locke & Latham, 2002). More specifically, difficult goals demand greater goal commitment, as they require more effort and are associated with lower chances of success (Klein et al., 1999). Students may have been setting goals that were too difficult to achieve or they may not have been committed to achieving their goals. Additionally, goals are more effective if they are accompanied with progress-related feedback (Bandura & Cervone, 1983). Since goal setting has been identified as a key component of time management (Van Eerde, 2003), future interventions utilizing goal setting should include mechanisms for building students’ commitment to their goals, as well as monitoring progress toward their goal achievement.

Despite post-intervention time management behavior not differing between intervention conditions, students in the introductory course reported significantly greater pre- to post-intervention time management behavior change compared to students in the upper-level course. This suggests the lower-level students appeared to benefit more from the interventions in terms of increasing their time management behavior. Given that younger college students tend to struggle more with time
management and procrastination (Kim & Seo, 2015), it is not surprising the introductory course students reported greater changes in time management behavior.

The current study used the KBCP provisional framework (McDaniel & Einstein, 2020) as a theoretical guidepost for developing the interventions. Overall, the framework offered a useful basis for time management interventions, but some of the components were perceived to be more effective than others. Students in both intervention conditions reported the Knowledge and Beliefs components (i.e., strategy descriptions and demonstrations) moderately impacted their time management behavior. Students in the Schedule and Goals intervention similarly reported the Commitment component (utility value information) moderately impacted their time management behavior. Additionally, the perceived utility value of time management strategies did not differ between the intervention conditions—both groups had equally high perceptions of the utility value of time management strategies, despite the Schedule Only intervention not receiving the utility value information. This was not expected and suggests that utility value information may not be a necessary component to motivate students to use time management strategies.

Instead, what students appear to need the most is the opportunity to engage in the strategies. Indeed, students perceived the Planning component (engaging in the scheduling and goal setting) to be most effective in helping them manage their time. This is not surprising given that knowledge and beliefs about effective learning strategies, along with motivation to use the strategies, does not always lead to strategy use. Students also need to plan for how they will use the strategies and follow through on those plans (McDaniel & Einstein, 2020). The weekly time management assignments encouraged strategy use follow-through and held students more accountable for using the strategies. Similar benefits associated with increased accountability have been demonstrated with students’ preparedness for Classroom Response System (CRS) questions. When CRS question responses were made part of students’ overall grades, students reported better question preparedness and received higher exam scores, likely due to the increased accountability (Jones et al., 2013). Relatedly, a number of students in the current study requested the option to continue submitting weekly time management assignments after the intervention ended—reflecting their desire to have an accountability mechanism in place to encourage them to keep using the strategies.

The interventions were also beneficial in terms of students’ academic performance, as final course grades were positively correlated with students’ post-intervention time management behavior. This is consistent with past research identifying time management as a significant predictor of academic achievement (Balduf, 2009). This is especially the case in online courses, where time management skills are critical for online learning success (Lee, 2002; Michinov et al., 2011). Findings from the current study suggest instructors (particularly in online courses) should consider building in accountability measures to encourage students to better manage their time and increase the chances of online course success. Given that the interventions are not discipline-specific, they would be practical to implement in any introductory-level course but should be introduced at the beginning of the semester for students to experience the greatest benefits. Further, since the addition of goal setting did not significantly improve time management behavior, having students submit weekly schedules may be enough on its own to lead to better student time management.

In addition to the limitations associated with the goal setting intervention, it is important to acknowledge the absence of a control group as a methodological limitation. The use of a control group was not feasible given the interventions were administered within the context of courses. Nevertheless, future research should seek to measure the effectiveness of longer-term college student time management interventions utilizing a control group (Hafner et al., 2015).
Conclusions

Findings from the current study provide support for using instructor-implemented interventions to improve college student time management. The interventions required relatively little investment of instructor time and resources, which is important given the increasing time demands being placed on faculty (Zaks & Hen, 2018). Teaching students about the benefits of time management strategies, describing how the strategies are used, and giving students opportunities to use the strategies as part of their coursework (either as required assignments or optional extra credit) may lead to improvements in time management behavior—particularly for students in lower-level introductory courses. Further, findings from the current study likely carry over to students from other academic disciplines beyond psychology. Given that prior intervention studies have utilized students from a variety of academic programs (Hafner et al., 2013; Stevens et al., 2018), and given the pervasiveness of time management difficulties within the college student population, it seems reasonable to conclude that students in other disciplines would benefit from instructor-implemented time management interventions.

Finally, students recognize the importance of using time management strategies for their personal well-being and academic success, despite often experiencing difficulties with self-regulated learning and time management strategy use (Brown, 1991; Huie et al., 2014). Students’ perceptions of the usefulness of time management strategies also appear to outweigh the costs associated with using the strategies. As students are spending increasingly more time on vocational and employment interests outside of their academics (Brint & Cantwell, 2010), they will continue to need tools to navigate the challenges associated with time management. The use of effective instructor-implemented time management interventions offers a practical solution.

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