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RESEARCH ARTICLE

Implementing Time Management and Goal setting Procedure in a University Research-Methods Class: Psychological and Academic Outcomes

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Abstract

Goal setting and time management have long been celebrated as foundational requirements for high level accomplishment across many domains. The first problem addressed in the present study is whether time management and goal setting can be taught and applied successfully in a large academic class in a relatively short period of time. The second is whether such teaching and application results in significant improvement in the personal and educational outcomes of university students. Students in a large research methods class at a public university in the southeastern United States (N = 145) volunteered to participate in a 10-week study. The study employed a within-subjects design in which participants participated in a baseline phase where they kept track of educational outcomes week by week for five weeks. Following the university spring break, principles of goal setting and time management principles were provided to the students in two class periods.Then for five additional weeks (the experimental phase) educational outcomes were Measured when students implemented the goal setting and time management procedures. Results found that students improved significantly in the experimental phase by reporting greater efficiency, more confidence, experiencing less guilt, experiencing a greater sense of internal order, they were less distracted, enjoyed greater clarity, understood material better, stayed ahead of the game more consistently, enjoyed more outside activities, had better life balance, put in more hours of study, and had better focus. Results are discussed and implications for applying these procedures are explored.

Keywords: Time Management, Goal Setting, Academic Outcomes, Psychological Outcomes, Baseline-Experimental Design.

1. Introduction

Accomplishment of important goals is intrinsic to human experience. Equally intrinsic is the study of how to achieve those important goals. In antiquity or in modern times humans have asked, how can I best find a marriage partner? Run a successful business? Become a lawyer? Perform well academically? These four examples can be extended to millions of others.Gradually, two mechanisms have risen to the top as foundational to achievement of important goals: *Setting the goal* (e.g., George, Stansal et al., 2011; Kalun, et al., 2024; Handoko et al., 2019; Kharkheli & Morchiladze, 2021; Boni well & Os in, 2015), and *managing appropriate activities over time* (e.g., Bonanno et al, 2023; Britton & Tesser, 1991; Handoko et al., 2019; Garg, 2024). The phrase "time management" is a misnomer. Time moves forward at a stable rate; it is management of events with in time that determines success. Never the less, we will continue to employ the phrase "time management" in this paper, as it appears to be the generally accepted term in both popular and academic literature. The importance of

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goal setting, has been celebrated through out human history from Solomon, "Without a vision the people perish," (Proverbs 29:18) to Steven Covery (2011) "begin with the end in mind." Consistent application of activities over time has an equally rich history. From the Greek legend of how to lift1500 lb. (700 kg): "lift a bull calf each day from the day of its birth until it is an adult," to modern organizations such as Franklin Covery Inc. whose entire identity revolves around effective management of events over time.

In the research world many studies have verified that those who set clear goals and possess excellent time-management skills are more successful. For instance, in a study of university students using a time-diary approach (George, Stansal, et al., 2011), time-management skills and clear goals were the greatest predictors of success across both academic and personal domains. Kalun and colleagues (2024) with a sample of under graduates found that those who managed time more successfully experienced better academic success and a greater sense of well-being. In longitudinal research, Britton and Tesser (1991) found that the impact of time management skills on GPA was four times greater than the impact of academic aptitude. Handoko and colleagues (2019) with a sample of university under graduates found goal setting and time management to predict completion of important academic tasks. And this is just a sampling of an extensive literature.

Time management and goal setting are two aspects of the same dynamic (e.g. Fitsimmons, 2008; Strickland & Galimba, 2001; Kharkheli & Morchiladze, 2021; Kalun, et al., 2024) The primary function of managing time is the accomplishment of desired goals. With out goals as an objective, scheduling the timing of events becomes irrelevant. Goals don't necessarily need to be associated with traditional "accomplishments". One may manage events because they feel more secure with a plan (goal: feeling of security), or one may manage events to increase enjoyment (If I do A, B, and C, then (goal) I can enjoy a game of golf), or, in the more traditional sense, if one manages time more effectively it is more likely that they will achieve desired academic or work-related goals.

Another body of literature suggests that the out comes of time management extend well beyond the domain of goal accomplishment to include psychological and personal benefits. For instance, several studies (Boniwell & Os in, 2015; Kalun et al., 2024; Garg, 2024) found time management to be associated with a greater sense of psychological wellbeing. Classes and colleagues (2007) found time management to be associated with a perceived sense of control, job satisfaction, better physical health, and lower levels of stress. Bonanno and colleagues (2023) in a study of mindfulness and time-management skills found both to be highly correlated with greater flexibility, and lower levels of stress, anxiety and depression. Then Misra and McKean (2000) found that time management not only reduces stress but allows more time for enjoyment of other activities.

Then educators wrestle with logistics of how to teach students in limited time to set goals and acquire time-management skills. For instance, the excellent results of the Bonanno research (2023, cited above) involved eight weeks of training. Is it possible to teach excellent goal setting and time management skills in a much shorter period of time (such as one or two class periods) that improves goal setting and time management skills to the extent that significant benefit in both academic accomplishment and personal psychological benefit occur?

These questions provide the context for the present study. The study involved a baseline-intervention approach. Specifically students,who volunteered to participate from a large research methods class at a public university in Alabama, were subjects for this study. For each of five consecutive weeks in this class, students answered questions about attendance in class, study time, personal habits and 18 personal and academic outcomes. Following the university spring break, in two class periods, the research team provided instructionsto students to implement goal setting and time management practices for the next five weeks. Analyses of data then focused on significant changes from the baseline to the experimental phase.

2. Methods

First, this study is based on an archival data set. Data were collected during the Spring semester, 2024, from students in a research methods class at a large Alabama public university. The study was IRB approved and was conducted according to IRB protocol. The researchers have provided all the details of the study to the current authors.

A total of 145 students participated. Since participation in this study was one of two options for class credit, those who participated did so voluntarily. Gender break down included 122 women (84%) and 23 men (16%). All 145 were university students, most of them in their 3rd or 4th year of their program.The mean GPA of this group was 3.51 (SD = .46, range

= 2.2 - 4.0). No other demographic information was acquired.

Please contact the corresponding author to access the data or survey materials

2.1 Materials and Procedures

Recall from the introduction that there are two equally important questions posed by this research: (a) In limited time (2 class periods in this case) is it possible for instruction to be presented that results in the participants'ability to create effective goal setting and time management procedures, and (b) do these interventions make a significant difference in improvement across the outcome variables. Because the procedure is central to the research, this section goes into greater detail than usual on logistics.

For this base line-experimental phase within-subjects study, three different forms were completed. One form was completed and turned in weekly during the base line phase (the first 5 weeks), then two additional forms were completed and turned in weekly during the experimental phase (the final 5 weeks).

The three charts are:

- The *Educational Outcomes Charts.* These charts occur in both the Base line phase and in the Experimental phase and record the amount of time per week spent in five activities (time in class, time studying, and time exercising, in devotions, working). This is followed by 18 items ("educational outcomes") that indicate how much they experienced certain outcomes such as feelings of stress, anxiety, guilt, confidence and so forth. The two forms of the Educational Outcome charts (baseline and experimental) were very similar with only a couple of differences described later. These charts were turned in a total of 10 times: five times during the Baseline phase and five times during the Experimental phase. This chart is displayed in Figure 1.
- The *Time-Management chart.* The time-management chart was designed to organize their time and activities and occurred only during the final five weeks (the Experimental phase). This is the chart where participants recorded when they planned to perform designated activities. This chart was turned in weekly a total of five times and is displayed in Figure 2.
- *The Goals chart*. This chart occurred only during the five weeks of the Experimental phase. It was actually not a separate chart but was on the reverse side of the Time-Management chart and the reverse side of the Educational Outcomes chart. This chart was used in the planning phase to identify their goals for the coming week, and again (for reference) when they recorded the *actual* amount of time in the Educational Outcomes chart at the end of the week; see Figure 3.

2.2 The Baseline Educational Outcomes Chart

Each participant was issued either a hard-copy form or accessed the same form online through a Black board link. Students were allowed to turn in the hard-copy form (in class the following week) or to submit an identical form online. Approximately 90% of participants completed the entire process online. On the Educational Outcomes chart, the participants first entered their identification number then responded to five time-related questions: How much time did you spend (a) attending classes (across all enrolled classes), (b) studying for classes, (c) exercising, (d) time in devotions or other church-related activities, and (e) time working.Then participants responded to 18 Educational Outcome questions scored on 7-point Likert Scales. For example, one of the items dealt with efficiency while studying. The statement was, "Efficiency while studying" and was scored on a 7-point scale with anchors of (1) *low efficiency* to (7) *high efficiency*. Each of the 18 items were presented in the same way; the anchors varied based on the nature of the question asked. Across all 18, a "1" represented little of the quality; a "7" represented a great deal of that quality. The items covered in this rated section follow; the scale is occasionally included if there is any ambiguity: (a) sense of personal order, (b) amount of procrastination, (c) sense of stress (physical), (d) level of anxiety (mental/emotional), (e) quality of diet [1=*miserable*, 7=*excellent*], (f) Understanding of material, (g) sleep pattern [1=*random*, 7=*as planned*], (h) quality of focus in class, (i) level of confidence with material, (j) sense of life balance, (k) efficiency while studying, (l) level of distraction, (m) time for enjoyed activities, (n) time with family/friends, (o) sense of clarity, (p) level of guilt when not studying, and (q) get ahead of obligations [1=*behind*, 4=*current*, 7=*ahead*]. In case there was any ambiguity in the minds of participants, the backside of the hard-copy and the second page of the online form provided explanation of everything along with examples. Figure 1 displays the Educational Outcomes chart.

Student code:_____ Rating of Outcomes: E-O Chart #2 April 1 - 5

Item		M Apr 1	T Apr 2	W Apr 3	Th Apr 4	F Apr 5	Week end	rating	
Class #1	Attend							# hours	
	Study hr							# hours	
Class #2	Attend							# hours	
	Study hr							# hours	
Class #3	Attend							# hours	
	Study hr							# hours	
Class #4	Attend							# hours	
	Study hr							# hours	
Class #5	Attend							# hours	
	Study hr							# hours	
Class #6	Attend							# hours	
	Study hr							# hours	
1. Exercise	hours							# hours	
2. Devotions/prayer/meetings	hours							# hours	
3. Time working (for money)	hours							# hours	
4. Other									
5. Other									
6. Other									
7. Other									
8. Sense of personal order	7-pt scale						X	1=chaos	7=ordered
9. Amount of procrastination	7-pt scale						X	1=none	7=lots
10. Sense of stress (physical)	7-pt scale						X	1=low	7=high
11. Level of anxiety (mental)	7-pt scale						X	1=low	7=high
12. Quality of diet	7-pt scale						X	1=miserable	7=excellent
13. Understanding of material	7-pt scale						X	1=poor	7=excellent
14. Sleep pattern	7-pt scale						X	1=random	7=as planned
15. Quality of focus in class	7-pt scale						X	1=poor focus	7=excellent focus
16. Level of confidence w material	7-pt scale						X	1=low	7=high
17. Sense of life balance	7-pt scale						X	1=out of balance!	7=balanced!
18. Efficiency while studying	7-pt scale						X	1=low efficiency	7=high
19. Level of distraction	7-pt scale						X	1=no distraction	7=lots
20. Level of motivation	7-pt scale						X	1=none	7=highly motivated
21. Time for enjoyed activities	7-pt scale						X	1=none	7=plenty
22. Time with friends/family	7-pt scale						X	1=none	7=plenty
23. Sense of clarity	7-pt scale						X	1=confused	7=high clarity
24. Level guilt when not studying	7-pt scale						X	1=none	7=lots
25. Get ahead of obligations	7-pt scale						X	1=behind	4=current 7=ahead

Figure 1. *The Educational Outcomes chart*

As mentioned previously, participants filled in this chart, answering each question, for the five school days, M-F. Then the chart was either uploaded or turned in (hard copy) in class the following week. This continued for five consecutive weeks, February 5 – March 8, 2024. All 145 participants kept record for all five weeks. Those who did not were dropped from the study.

The Experimental form. As with the Baseline form, each participant was issued either a hard-copy form or accessed the same form from a Blackboard Link. Contrasting with the baseline phase, almost all students completed and submitted forms online for the Experimental phase; hard-copy submission was rare (but allowed).

Following the conclusion of the baseline phase on March 8, the university did not meet for one week to accommodate spring break. No record-keeping took place during the spring break or in the week that followed. During the week following spring break (March 18 – 22, 2024) students were instructed on how to complete the chart that was used to manage their time/activities and how to set goals for the coming week. More detail on this will be included later; right now, we're just establishing the sequence of events. Then the experimental phase ran for five consecutive weeks from March 25 through April 26, 2024.

The Educational Outcomes chart for the Experimental phase was identical to the Baseline form with the following exceptions:

- On the reverse side of this form, participants had identified their goals for the previous week. These

goals included goals for attendance and study time for each class and goals for exercising, devotions, and time working.

- Also on that reverse side, participants recorded goals in other areas of life (like time practicing, volunteering, shooting free throws). These goals, of course, were unique to each individual. Participants were also allowed to ignore this section completely.
- At the end of the week, the actual number of hours accomplished for each task are entered next to the planned number of hours. See figure 3.

2.3 The Time Management Chart

The Time-Management chart was used to record each participant's management of their time and activities. See Figure 2 for a duplicate of the chart used. The chart was titled "Scheduled Activities" and provided room at the top for participants to write their ID number. The chart included seven columns. The first labeled "time" the next five labeled Monday, Tuesday, Wednesday, Thursday, Friday with the actual date under each weekday. The final column was labeled "weekend" and allowed for additional time for missed activities during the week to be completed on the weekend. The horizontal axis included time in 30-minute segments starting from 5:00 am and continuing down to 12:00 pm. On the 7 x 36 matrix, students would identify when certain activities were planned by shading the appropriate squares. For example, if they had a 1:00 – 1:50 class on Monday, Wednesday, and Friday, they would shade in the squares for 1:00 – 1:30 and 1:30 – 2:00 on the three MWF days. A similar pattern would happen for study time or other planned activities. For instance, if they planned to study on MWF from 2:00 to 4:00, they would shade in the squares for 2:00-2:30, 2:30-3:00, 3:00-3:30, and 3:30-4:00 on their chart for the three MWF days.

Chart #2: **ID number _____,** **Scheduled Activities**

time	Monday April 1	Tuesday April 2	Wednesday April 3	Thursday April 4	Friday April 5	Weekend April 6/7
5:00 – 5:30						
5:30 – 6:00						
6:00 – 6:30						
6:30 – 7:00						
7:00 – 7:30						
7:30 – 8:00						
8:00 – 8:30						
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8:00 – 8:30						
8:30 – 9:00						
9:00 – 9:30						
9:30 – 10:00						
10:00 – 10:30						
10:30 – 11:00						
11:00 – 11:30						
11:30 – 12:00						

Figure 2. *Time Management chart*

Students were instructed to "keep it as simple as possible". For the 1:00-1:50 class, they were told to shade in the entire hour from 1:00 to 2:00, disregarding bits of transition time. Another aspect of simplicity was to include only items on the chart that they planned to measure and record. For instance, for a particular Monday, a student might record: 6:00-6:30 exercise; 7:00-7:30 devotions; 8:30-10:30 study for statistics; 11:00-12:00, statistics class; 1:00-2:00 Intro to Psych class. That accounts for only 5 of the 24 hours, but those 5 hours were the only hours that were to be recorded on their chart.

Goals. In addition to filling out this chart, on the reverse side, they would identify their time-related goals, cumulative for the entire week. For example, on the Monday used as an example in the previous paragraph (assuming the classes meet MWF and the exercise and devotions happen all five days) they would list:

- Exercise: 2.5 hours
- Devotions: 2.5 hours
- Study for statistics: 6 hours
- Attend statistics: 3 hours
- Attend Intro to Psych: 3 hours

Then they would include (in this goals chart) other activities, other study times, and other classes. An average chart might have about 11 listed goals. What follows is an example for 11 goals: attendance for 4 different classes, total study time in each day for those four classes, then other planned activities included exercise, work, and devotions.

Chart #2: Goals for the week of April 1 – 5
(please re-enter values from the Time-management chart)

		Goal: number of hours this week	**Actual** number of hours
Class #1: (write it in)	Attendance		
	Study time		
Class #2:	Attendance		
	Study time		
Class #3:	Attendance		
	Study time		
Class #4:	Attendance		
	Study time		
Class #5:	Attendance		
	Study time		
Class #6:	Attendance		
	Study time		
Work to earn money			
Devotions or time in any type of spiritual activity			
Exercise			
Other (specify)			
Other (specify)			
Other (specify)			
Other (specify)			

This column is a duplicate of goals You set at the start of this week

This column is the actual number of hours You spent on each activity this week

Figure 3. *The Goals chart*

To eliminate any ambiguity, students were provided with a graphic (See Figure 4) that showed exactly how material on the Goals chart would be recorded on the Time Management chart.

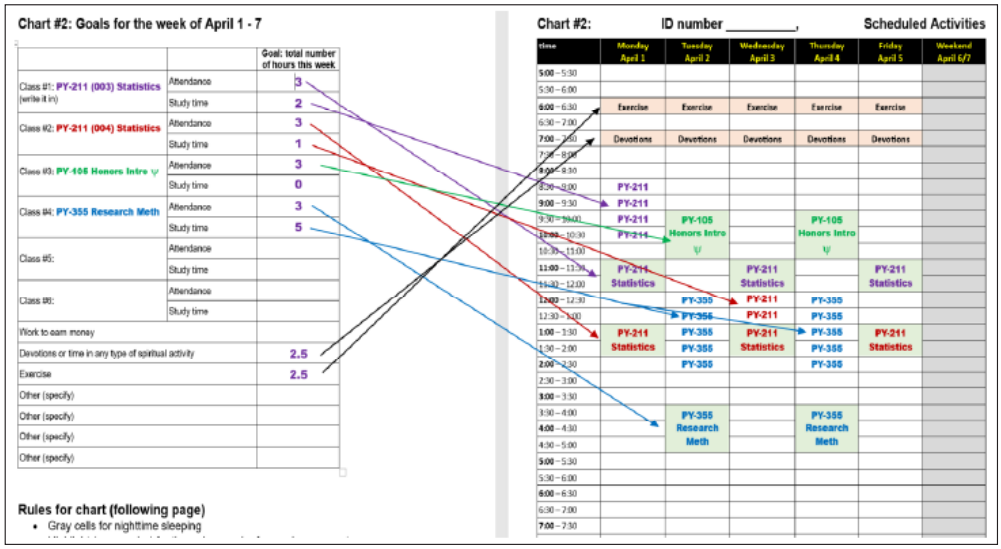

Figure 4. *Chart to identify how the Goals chart would be recorded on the Time Management chart.*

Finally, these goals were duplicated on the back of the Educational Outcomes chart for easy access as they identified the number of hours spent in each goal-related activity (the 11 from the previous paragraph) then rated the 18 other outcome variables (order, procrastination, stress, anxiety etc.) on the 7-point scales.

Timing. Participants were instructed to fill out the time-management chart, AND (on the backside) their goals for the coming week on the weekend prior to the designated week. Their deadline for turning in (uploading) the chart waseach Sunday before 11:59 pm. just prior to the week for which they had organized their time and stated their goals.

The same time (11:59 pm. on Sunday) was also the deadline for turning in their Educational Outcome charts from the previous week. Hence, every Sunday before midnight, (during the Experimental phase) two charts were due: the Educational Outcomes chart (along with the goals) for the just-completed week, and the Time-Management chart for the coming week (along with goals for the coming week.)

The sequence. The following bullet list will assist in clarity. All material was due Sunday before midnight of the given week. Hard-copy submission (in class) was allowed but rare.

- End of Week 1 (baseline): Turn in the Educational Outcomes chart for Week 1.
- End of Week 2 (baseline): Turn in the Educational Outcomes chart for Week 2.
- End of Week 3 (baseline): Turn in the Educational Outcomes chart for Week 3.
- End of Week 4 (baseline): Turn in the Educational Outcomes chart for Week 4.
- End of Week 5 (baseline): Turn in the Educational Outcomes chart for Week 5.
- Spring Break
- The week following Spring Break, in two class periods, researchers taught students how to set goals and use the time management charts. At the end of this week students turned in the Goals chart (Figure 2) and the Time Management chart (Figure 3) identifying goals for the coming weekand entering the timing of those goals on the Time Management chart—for, in this case, Week 6,
- End of Week 6 (experimental): Turn in Educational Outcomes chart for Week 6. Turn in Goals chart and Time Management chart for Week 7
- End of Week 7 (experimental): Turn in Educational Outcomes chart for Week 7. Turn in Goals chart and Time Management chart for Week 8
- End of Week 8 (experimental): Turn in Educational Outcomes chart for Week 8. Turn in Goals chart and Time Management chart for Week 9
- End of Week 9 (experimental): Turn in Educational Outcomes chart for Week 9. Turn in Goals chart and Time Management chart for Week 10
- End of Week 10 (experimental): Turn in Educational Outcomes chart for Week 10.

2.4 Additional Variables

Additional outcome variables included (a) each student's final class percentage (acquired from the

professor's records), (b) the overall cumulative GPA (acquired from university records) and (c) their attendance in the class.

2.5 Types of Analysis

The types of analysis were straight forward: (a) check all variables for psychometric soundness, (b) compare Baseline results with Experimental results (also referred to as "pre" and "post") by a series of paired-samples t tests across all variables, (c) run a set of correlations with the three additional outcome variables (GPA, class percent, attendance), and (d) explore whether the percent of goals attained each week has an impact (bivariate correlation) on other outcome variables.

3. Results

3.1 Psychometrics

Whether considering pre-data or post-data the psychometrics were exceptionally good with Skewness and Kurtosis values between the ideal ±1 range. Only one variable created difficulty. The work variable revealed skewness values of 1.28 (pre),1.85 (post); Kurtosis values of 1.33 (pre),4.71 (post). The pre-data, although not ideal, were acceptable. For post-data we restricted the range of values between ±3.5 standard deviations (essentially eliminating outliers) and psychometrics returned to acceptable. See George and Mallory (2024) for a discussion of psychometric validity.

3.2 Paired-Samples t-Tests between Pre and Post Data

These results were the heart of our analysis. Was there improvement from Pre to Post? Initial results were disappointing as there were few significant improvements across all variables. The sponsoring faculty member (the last author) of this study recalled a similar experience in another pre-post study. A brief description of the problems of that study lays the ground work for procedures employed in the present study.

The class was a conflict-resolution class in which the professor had students complete a 31-item questionnaire about conflict resolution procedures on the first day of class. Then students completed the same 31-item questionnaire on the last day of class to see if taking the class resulted in improvement.The 6-point scale identified "1" as the completely wrong answer and "6" as the completely correct answer. The study included nine classes over 5 years as their data. Like the present study results were initially disappointing. The problem was that anyone who rated a 6 on any question at the beginning of the course couldn't improve. So, question by question we deleted anyone who rated "6" on the initial administration and calculated results only for those who *could* improve. The results, with this procedure, turned from weak to robust and the article soon published.

This study is a bit trickier because there is no "completely right answer". What we did is, question by question, eliminate the highest 20% of pre-scores (those who couldn't improve or improve very little) and calculate values with the remainder of participants. Based on that criteria, the following results emerged:

What follows is a series of paired-samples t-tests(one-tail significance) between baseline values and experimental phase values across all variables. Rank ordered from greatest to least significant difference, the following results emerged:

- Post (M = 4.37) did more work for pay than Pre (M = 2.50), $t(115) = -4.03$, $p < .001$, $d = -.37$
- Post (M = 4.80) was more confident than Pre (M = 4.57), $t(115) = -3.86$, $p < .001$, $d = -.36$
- Post (M = 4.31) was more efficient than Pre (M = 4.05), $t(113) = -3.88$, $p < .001$, $d = -.36$
- Post (M = 3.61) experienced less guilt than Pre (M = 4.02), $t(115) = 3.74$, $p < .001$, $d = .35$
- Post (M = 4.59) had greater internal order than Pre (M = 4.35), $t(117) = -3.78$, $p < .001$, $d = -.31$
- Post (M = 4.09) was less distracted than Pre (M = 4.32), $t(115) = 3.18$, $p < .001$, $d = .29$
- Post (M = 4.54) experienced greater clarity than Pre (M = 4.29), $t(115) = -3.00$, $p = .001$, $d = -.28$
- Post (M = 4.94) understood material better than Pre (M = 4.77), $t(115) = -2.81$, $p = .003$, $d = -.26$
- Post (M = 2.90) did more exercise than Pre (M = 2.54), $t(115) = -2.79$, $p = .003$, $d = -.26$
- Post (M = 3.98) ahead of the gamemorethan Pre (M = 3.82), $t(115) = -2.62$, $p = .005$, $d = -.24$
- Post (M = 4.19) more outside activities than Pre (M = 4.01), $t(115) = -2.61$, $p = .005$, $d = -.24$
- Post (M = 4.56) had better life balance Pre (M = 4.38), $t(115) = -2.51$, $p = .007$, $d = -.23$
- Post (M = 4.05) more time with friends than Pre (M = 3.85), $t(115) = -2.41$, $p = .009$, $d = -.22$
- Post (M = 7.84) put in more studyingthan Pre (M = 7.20), $t(115) = -1.98$, $p = .03$, $d = -.19$

- Post (M = 4.31) tended to have better focus than Pre (M = 4.20), $t(115)$ = -1.66, p= .05, d = -.15

3.3 Correlates between Post-scores and GPA, Class Percent, and Attendance

This is the only analysis where other activities are analyzed. The hypothesis being that better class percentage, higher GPA and better attendance is associated with better educational outcomes.

Final class percentage. The final percent in the class where the study was conducted was associated with (in rank order), less outside work (r = -.35, p< .001), understanding material better (r = .28, p< .001), better attendance (r = .26, p< .001), less procrastination (r = -.23, p= .002), lower levels of stress (r = -.20, p= .008), more study (r = .19, p= .012), greater confidence (r = .17, p= .017),better focus (r = .14, p= .04), and being a head of the game (r = .14, p= .04),

GPA. GPA would, of course, be unrelated to the current baseline-experimental research as GPA will not change during the course of one semester. Never the less, it is of some interest to see which practices, in general, were associated with a higher GPA. There was surprisingly little effect as GPA was associated with less outside work (r = -.24, p= .002), understanding material better (r = .28, p< .001), less procrastination (r = -.15, p = .03), better attendance (r = .15, p = .04), and lower levels of stress (r = -.14, p = .05).

Attendance. Attendance was operationalized as "number of classes missed" during the semester. Poor attendance was uniformly associated with poorer performance across all outcome variables; the following relationships reached significance. Poor attendance was associated with more outside work (r = .25, p = .001), lower sense of life balance (r = -.22, p = .004), more procrastination (r = .22, p = .004), poorer efficiency (r = -.21, p = .006), less time studying (r = -.20, p= .008), poorer understanding of material (r = -.19, p = .01), poorer focus (r = -.19, p = .01), fewer enjoyed activities (r = -.14, p= .04), lower confidence (r = -.14, p = .04), and higher levels of stress (r = .14, p = .04).

4. Discussion

This discussion addresses essentially three issues. First, we look at and discuss the statistical outcomes of the study and their implications. Then we address the implementation of a procedure for teaching students in a classroom setting to begin a pattern of goal setting and managing events over time that generates significant benefit. Finally, we look at the implication for educators and psychologists for practical implementation of such programs.

4.1 Results of the study

Analyzing data was the straight forward part of the study. A series of paired samplest tests (did participants improve from baseline to the experimental phase?) and bivariate correlations between predictor and outcome variables was adequate to answer any statistical questions available from the data. Among outcome variables the study was not designed to determine whether there was academic improvement.

4.2 Paired-samples t tests.

The study demonstrated excellent improvement from baseline to the experimental phase across many outcome variables. Despite a relatively small sample size (an n ≈ 115 due to elimination of those who scored very high during the "pre" phase), six changes were significant at a. 001 level or better. These six included greater efficiency, greater confidence, less feelings of guilt, greater sense of internal order, less distractibility, and greater sense of clarity. Seven more showed significant improvement at a .01 level (or better) including understanding the material better, staying ahead of the game, more exercise, having time for more enjoyed activities, having better life balance, spending more time with friends, and putting in more study time.

These findings represent serious improvement based on only two days of teaching goal setting and time management procedures. While there is universal acceptance that clear goals and managing events over time is desirable, there is little research evidence that there are ways that these procedures can be taught and applied in a limited amount of time to a large number of individuals.

The positive results are almost entirely realized in the personal-benefit realm. In the 13 outcomes listed above, only "spent more time studying" has direct academic accomplishment implications. Our results appear to parallel the results of an extensive meta-analysis of 32 studies on goal setting and time management (Classen, et al., 2007). In that article the authors state "[This] review demonstrates that time management behaviours relate positively to perceived control of time, job satisfaction, and health, and negatively to stress. The relationship with work and academic performance is not clear. Time management training seems to enhance time management skills, but this does not automatically transfer to better performance."

Many studies show a significant link between goal setting, time management and successful accomplishment (e.g. George, Stansal, et al., 2011; Kalun et al., 2024; Britton & Tesser, 1991; Handoko et al., 2019) but most of these studies appear to be either correlational (in which the relationship between activities and accomplishment is based on the perspective of the participant) or longitudinal studies, the gold standard, but requiring extensive time and resources to accomplish.

One research project designed to show academic improvement (Britton & Tesser, 1991) required a four-year longitudinal study to (successfully) measure actual improvement. The cross-sectional setting of the present study prevents many types of comparisons. For instance, GPA was not a viable measure because GPA doesn't change during the course of a single semester. We couldn't compare academic performance in the first five weeks with academic performance in (and after) the final five weeks because the two segments of the class did not have comparable scored items. The two questions directly related to academic benefit (did you attend class more frequently and did you study more) found a significant improvement only for more study time but not for the attendance.

4.3 Correlational Findings

Correlational findings did not assess whether academic performance improved from the baseline to the experimental phase. Correlations with final class percentages provided evidence of which outcome variables were associated with better academic outcomes. If these variables improved from baseline to the experimental phase there is evidence of academic benefit from time management and goal setting procedures mediated through these practices. We list here only procedures that improve from phase 1 to phase 2: Higher final class percentage was associated with understanding material better, less procrastination, lower levels of stress, more study time, greater confidence, better focus and being ahead of the game.

Correlations with GPA were surprisingly weak as higher GPA was associated only with understanding material better, less outside work, less procrastination, better attendance and lower levels of stress. Only the first two were robust, the latter three achieved significance values of only between .03 and .05. This result suggests support for Classen and colleagues (2007) contention that "Time management training seems to enhance time management skills, but this does not automatically transfer to better performance."

4.4 Implementing a Procedure

A very difficult study to conduct. First hand reports from those who actually collected the data suggested that the data collection phase of the study was challenging. First, the sheer number of forms that had to be opened and processed was daunting. Forms were submitted online or turned in in at class 2900 times (1 form x 5 weeks x 145 students +3 forms x 5 weeks x145 students). Once obtained, then researchers were required to sum across time for 8 or 9 variables and average across the five days for the 18 outcome variables and enter into an Excell document 1450 times. These data were eventually downloaded into an SPSS file for analysis. Then, during the experimental phase, there were two additional charts to analyze and process.

An additional challenge was that more than 145 began the project. In the research methods class, students were allowed to select this time-management project or select a different project that involved a similar amount of time and effort. About 170 students began the time-management project but the study only accepted participants who successfully completed all 10 weeks (five baseline, five experimental). Those who missed a week were required to do the alternative project instead. Any professor can easily imagine the amount of whining from students who attempted to justify why they had missed.

Thoughts on how to implement time management and goal setting in an academic environment. As accomplishment literature has been saying for many decades, implementation is based on (a) absolute clarity on what to do and how to do it, and (b) a motivation to comply.

Absolute clarity. The authors feel that researchers who conducted this study get high marks on this objective. Participants already had five weeks of experience filling out the Educational Outcomes chart. Hence, when the experimental phase began a large aspect of the procedure was already clear to students.

Reduce the number of variables. During the experimental phase the temptation on the time-management chart is to require *too much* content. To require scheduling of each half hour of each day for an entire week places burdens on the participants that are not sustainable. Hence that chart provided to the student included only (a) times when classes occurred, (b) times when the student planned to study, and (c) important (to the participant) activities that occurred

on a regular bases (such as a regimen for exercise, practicing, or devotionals). Each week students could use the same time-management chart. The class times would remain the same. The important activities would be the same. The only thing that would change from week to week would be the amount of study time and when that study time occurred. Hence, we work with only one variable—when and how much time studying. With 145 participants completing all 10 weeks successfully, it was clear that this process did not test them beyond their willingness or their ability to do it.

The clarity extended to the setting of goals each week. For instance, a good student would have a goal of attending all classes. Also, a responsible participant would be clear on their important repeating personal activities. The goal for the amount of study time would vary from week to week depending on the demands of the class. Once again there is only one variable to be processed each week.

Motivation to comply. In a class setting there can be extrinsic motivation by requiring participation for class credit. In the present study compliance had teeth because charts were turned in and graded. As we consider Bert Raven's six bases of social power (French &Raven, 1959; Raven, 1992), the three that require surveillance are applied in this setting: threat (lowered grade if you don't do it) and reward (good grade if you do) and legitimate authority (the prof has authority to give and grade assignments). Surveillance means that we do check and that there are consequences. The other three bases of social power (expertise, referent power, strong arguments) are unrelated to surveillance. They may be used to help the participant understand why the assignment is important and its benefits. If the professor only presents goal setting and time management as procedures that *should* be followed (expertise, referent, and strong arguments), a few of the highly motivated students may implement these practices but the majority would not. Many studies show that if behavior isn't monitored (e.g., in academia, turned in and graded) then the desired behavior rarely occurs. (Larson & Callahan, 1990; Latene, 1981, Borden, 1990)

5. Conclusions

The most important and straight forward take aways appear to be that (a) yes, it is possible to teach effective goal setting and time management skills with in a relatively short period of time—such as two class periods. (b) success is unlikely unless the instruction is well crafted, and procedures are simple and absolutely clear. (c) Monitoring (turn in and grade written goals and time-management sequences) is required for the greatest benefit to the largest number of students.(d) the outcomes in terms of improvement across a number of personal-benefit variables is extraordinary. And (e) academic benefit is suggested in this study as many of the personal-benefit variables that showed improvement are also highly correlated with academic success.

6. References

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