



Research - Basic Empirical Research

Values are not just goals: Online ACT-based values training adds to goal setting in improving undergraduate college student performance



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ABSTRACT

Goal-setting programs sometimes are defined to include personal values exploration but to date, without specifically testing the impact of values training as an element of the overall package. The present study examined the impact of online goal-setting training with and without personal values exploration (drawn from Acceptance and Commitment Therapy) on a measure of undergraduate academic performance (GPA). Psychology majors in their second year or beyond were recruited and randomly assigned to one of three conditions: goal-setting training alone, values training plus goal-setting training, and a waitlist. The use of anonymous institutional data allowed non-respondent majors to be included as a non-randomized, non-responders control condition. Participants were exposed to web-based content delivered via media clips and text with questions covering the material presented. After one semester, waitlist participants also received the values training plus goal-setting training. Analyses showed that the combination of goal setting and values training significantly improved GPAs over the next semester. Goal setting alone had no effect as compared to either the wait list or non-randomized, non-responders control condition. Additional research will be needed to determine *why* values exploration is helpful in enhancing academic performance.

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1. Introduction

Students who implement strategies that lead to personal control of their learning are more likely to be successful (Zimmerman & Risenberg, 1997). Moreover, strategies that encourage an active approach to learning such as planning, goal setting, or values clarification, are widely implemented methods of increasing academic achievement (Moeller, Theiler, & Wu, 2012). For example, goal setting, which has been examined in hundreds of laboratory and field studies (Locke & Latham, 1990) is frequently included in university mentoring and orientation programs, with benefits to retention and student experiences (Bean & Eaton, 2002). The concept of goal setting has been used to refer to a variety of different forms and styles of intervention. However, the associated language does not necessarily organize and categorize goals and other verbal statements of intention or purpose in a scientifically clear way.

One distinction that is central to Acceptance and Commitment Therapy (ACT; Hayes, Strosahl, & Wilson, 2011) is that between values and goals. These concepts overlap considerably in conventional language. For example, if students are asked, “What do you want from your education?” or “Why do you want to earn a degree?” the answers may range from concrete, discrete, external outcomes such

as, “I want a job” or “I want to make a lot of money.” Alternative responses may appeal to qualities of ongoing patterns of action such as, “I want to appreciate the connections between things” or “I want to be more able to contribute to others.” From an ACT perspective, some of these answers refer to *goals* – the concrete, object-like consequences of action that can be obtained or finished; while others refer to *values* – adverb-like, as qualities intrinsic to action that can be instantiated but not obtained or finished. ACT theory does not dismiss the importance of goals; rather, it seeks to nest them under values choices on the basis that chosen qualities of action are more likely to motivate effective action over the long term, in part because they are continuously available, temporally extended, and immediately relevant.

To date, there are no studies comparing goal setting and values exploration from an ACT perspective. In the area of academic performance, this seems especially worth investigating in that while personal values exploration and goal setting are both thought to have an impact on academic performance, the existing research (e.g., Morisano, Hirsh, Peterson, Pihl, & Shore 2010) has sometimes conflated the two concepts in ways that make their individual contributions difficult to determine.

Programs that help students define, choose, and explore their personal values have demonstrated an influence on objective academic performance as measured by grade point average (GPA), which is a key indicator of academic success (Pascarella & Terenzini, 2005). For example, Cohen, Garcia, Apfel, and Master (2006) randomly

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assigned seventh graders to either a personal values exploration condition or a control condition. Participants were instructed to choose personal values ranging from most to least important. Those in the personal values exploration condition wrote a paragraph about why their selected value was important to them while control participants wrote about why the chosen value might be important to someone else. Obtained results demonstrated GPA was significantly higher in the personal values exploration condition (Cohen et al., 2006); these effects decreased but were still discernible 2 years later (Cohen, Garcia, Purdie-Vaughns, Apfel, & Brzustoski, 2009; for a replication and extension see Miyake et al. (2010)).

Until recently, no well-controlled randomized study had examined the impact of goal setting on actual GPA with college students. This gap was addressed by Morisano et al. (2010) who demonstrated that an intensive online goal-setting program improved the overall GPA of academically struggling college students. A wide number of concepts are used to explain the impact of goal setting in the relevant literature, however (e.g., Latham & Locke, 2007; O'Hara & Maglieri, 2006; Moeller et al., 2012) and the actual "goal-setting" program in the Morisano et al. (2010) study included a variety of distinguishable elements under that label.

Morisano et al. (2010) based their online program on eight steps drawn from a comprehensive goal-setting program (Peterson & Mar, 2004). In a two-and-a-half hour online program, they directed students to first write about their academic "fantasies" including their desired future, qualities they admired in others, things they would like to learn more about, and habits they would like to improve, among other desired qualities. They then had participants specify several goals that might give rise to these desired states and encouraged them to make these goals clear and specific, as is suggested by the goal-setting literature (Locke & Latham, 2002). After ranking the importance of these goals, students then wrote about their attainability and the impact of goal attainment, generated a goal attainment plan that would overcome challenges and obstacles, and described how they would monitor goal achievement. This comprehensive program resulted in a significant medium effect sized ($d=.65$) increase in actual GPA over the next semester.

Most of the elements of Morisano et al.'s (2010) program are closely linked to the goal-setting literature and comport with the concept of goals as verbalized outcomes that are discrete, concrete, and can be obtained and finished. By considering desired qualities in others or in oneself, however, the program in essence encouraged participants to explore what might better be viewed as personal values, as might be done in ACT (e.g., Hayes et al., 2011, chapter 11) or as has been done in the personal values programs reviewed earlier (e.g., Cohen et al., 2006). Thus, Morisano et al. essentially nested goal setting under personal values exploration – the approach to goal setting commonly taken in an ACT approach.

There is some evidence that goals rooted in positive personal interests and values are associated with greater success (Sheldon & Elliot, 1999; Sheldon & Houser-Marko, 2001) especially relative to goals that are rooted in avoidance of failure (Elliot & Sheldon, 1997). Chosen values could thus serve as a motivator of successful goal setting and accomplishment, and indeed, Morisano et al. (2010) stated that the fantasies about desired personal qualities were included in their program on such a motivational basis. Component studies have shown that ACT-based values exploration (both alone and in combination with other behavioral and mindfulness methods) can produce significant effects (see Levin, Hildebrandt, Lillis, & Hayes, 2012, for a recent meta-analysis of laboratory based experiments of this kind). Given that values exploration alone has already been shown to increase actual academic performance (e.g., Cohen et al., 2006) without the inclusion of goal setting, it seems important to examine the contribution values exploration makes when added to goal setting.

As such, the present study systematically replicated the Morisano et al. (2010) protocol involving a combination of behaviorally-based,

goal-setting training and ACT-based values training. Unlike Morisano et al. however, students were not selected based on academic difficulties and further, a comparison condition was included that examined goal setting alone. The latter allowed for an examination of the contribution of values exploration to the impact of the program as well as an assessment of goal setting without the motivational effect of values exploration.

2. Method

2.1. Participants, setting, and design

Prior to the spring 2009 semester, all declared psychology majors (18 years of age or older; $N=579$) received an email letter inviting them to participate in a study designed to improve their academic performance. In order to incentivize engagement, a raffle inclusive of three, \$50 gift cards was offered through research participation credits. The majority of respondents ($N=132$) were between the ages of 19 and 22 (78%, range 18–25), female (78%), Caucasian (70%) in their second or third year in school (77%), and enrolled as full-time students (89%). Respondents were randomly assigned to one of three conditions and in the Spring of 2009, they received an on-line goal-setting program ($N=48$), goal setting plus a values program ($N=51$), or were placed on a waitlist ($N=33$) which then received the goal setting plus values intervention one semester later (Fall 2009). Academic grades and some demographic data were available for those majors who did not respond ($N=447$), allowing their anonymous institutional data to be analyzed as a non-equivalent control group (generally termed here the "non-responders control"). The non-responding majors were older (58% were 22 or older, $SD=28.54$), and most were in their fourth year of school (54%), but similar to participants, the majority were female (62%), Caucasian (61%), and enrolled as full-time students (72%).

2.2. Procedure

Upon agreeing to participate, students were provided with a link to the experimental programs for their respective condition that was active for 1 month and that required 30–45 min to complete. In addition, email prompts were sent to ensure that students accessed the programs. Following completion of the assigned module, participants were given access to on-line tools to monitor goal completion or both goal completion and values success (though use of these tools was not required).

2.2.1. Academic goal-setting program

All experimental groups were exposed to an online academic goal-setting program. This web-based program provided participants with information about the importance of academic goal setting and how to set challenging academic goals that were specific, measurable, attainable, realistic, and time-orientated (SMART). Content was provided via media clips with embedded text that corresponded with audio files (a sample screen shot is shown in Fig. 1). Participants were asked questions following each segment of information and feedback was provided. After learning how best to set goals, the program prompted participants to set a long-term/distal goal (i.e., next 2–3 years or after graduation); an intermediate goal (i.e., end of the semester); and proximal SMART goal(s) to meet their intermediate and distal goals. After setting SMART goals, participants were asked to list potential obstacles to goal achievement (for example, competing contingencies) and to generate possible solutions for each obstacle. Participants were asked why the goal was important to them as an individual as well of the potential benefits of achieving their goal. Training concluded by prompting participants to list the specific action steps needed to achieve their academic goal.

* What is your Academic Goal?

Verify that your Academic goal is **SMART**:

* **Specific (S):** What exactly will you accomplish? Example: Rather than I will read more this week, be specific – I will read 50 pages per day, I will study for two hours per day, etc...

* **Measurable:** How will you know when you have reached this goal? Example: can the goal be measured or easily observed in terms of frequency (e.g., number of pages read) or duration (e.g., hours studying), etc.?

* **Attainable (yet Challenging):** is this goal difficult enough to challenge you but part of your behavioral repertoire such that you can achieve your stated goal? Example: if you typically read 30 pages per day or study for one hour per day, could you read 50 pages per day or study for two hours per day, etc.?

To listen to the audio, please click the link below:
https://www.cisweb1.unr.edu/survey/userMedia/Dissertation_ACT/B2-compressed.mov

WHAT ARE VALUES?
 Personal values can be defined as areas of your life that have meaning to you. The specific way or ways an area of life has meaning to you is unique to you, although you may have learned some about these areas from other people in your life. Values can direct your behavior over long periods of time – say throughout your time at college and even beyond. Maybe you know that certain people, relationships, morals, or achievements in your life are important. However, we want to examine personal values in a slightly different way. Even if you have learned from others – parents, friends, teachers, ministers, coaches – what is important in life, it is also important to know what matters to you within these areas, and possibly beyond them. Why? Because knowing what matters to you beyond the confines of specific relationships, achievements, or morals will help you make choices in your life. Values can guide your choices across many different situations and life circumstances.

Take a moment to think of a time, maybe recently, when you felt that you were living your life with meaning or purpose. Perhaps you felt really alive in some area of your life ... it could have been school related, something with a friend or family member, or an activity you enjoy... there might have been a feeling of excitement, complete engagement, pure enjoyment, even if the task was somehow challenging... These qualities of feeling alive, engaged, that there was something meaningful in this task or activity – in a way that is not simply about happiness or excitement, or that things were working out well – THIS is what we mean by a value.

We will now examine the different aspects of values to help you identify, clarify, or strengthen what matters to you in your life.

Values are Chosen Life Directions: Like a Road Map
 When we think about values, the idea of a direction is useful. Having a direction is like having a map for a road trip. Even if you don't know exactly where you want to go, you do have a sense of which direction you'd like to travel. Having a direction allows you to continue to travel, no matter what happens to get you off course. If you are traveling West, even if you reach the Pacific ocean, you can still travel West. And when do you ever arrive at 'WEST'?

* **Values are like:**

- ☐ an engine in a car
- ☐ waves in the ocean
- ☐ directions on a road map
- ☐ leaves on a stream

Fig. 1. Sample screen shots from the goal setting and values training program components.

2.2.2. Academic values program

Before receiving goal-setting training, those in the goal setting plus values groups (either the original Spring 2009 group or the waitlist group in Fall 2009) were exposed to an academic values program based on ACT concepts. The sequence of values exploration followed by goal setting was the same as in Morisano et al. (2010) – a sequence that allows goal setting to be informed by values choices. Similar to the academic goal-setting program,

information was provided via media clips with embedded text that corresponded with audio files (a sample screen shot is shown in Fig. 1). This program defined values from an ACT perspective and participants answered questions regarding the definition. Content was provided to guide participants' identification of their values using both positive (i.e., what values are) and negative examples (i.e., what values are not, see Hayes et al., 2011, chapter 11), with an emphasis on the distinction between values

and goals. Participants were then encouraged to reflect upon their academic values and make choices about what is important to them as a student. Two ACT metaphors (*Bringing Education Values into the Present and Tending a Garden*) were presented and as in the [Morisano et al. \(2010\)](#) program, participants then wrote for several minutes about their personally important academic values.

2.3. Data collection and analysis

The data of interest were students' cumulative grade point average (GPA). GPA data were obtained through archival data maintained by the Psychology Department Undergraduate Advisor. Cumulative GPA outcomes were analyzed using a Mixed Model Repeated Measures (MMRM) approach and an intent-to-treat sample. MMRM is a form of mixed regression modeling similar to Hierarchical Linear Modeling (HLM) but one that treats time as categorical factor rather than as a linear covariate (HLM could not be used in this case because outcomes were not linear). Mixed regression models use all available data from all participants and take into account the fixed and random effects when dealing with missing data. For example, estimates of treatment impact were reduced for conditions with dropouts among participants who were doing poorly before producing missing data. Because institutional data were used, none of the expected GPA data were missing except for student attrition from the University (seven participants in the randomized portion of the trial and 35 psychology majors not participating in the study). Graduation (30 participants in the randomized portion and 127 in the non-randomized group) also resulted in missing data, primarily in the follow-up period.

An unstructured covariance model was used in the analysis because more restricted covariance models were significantly different in their fit as determined by comparison of nested models through the restricted log-likelihood. Denominator degrees of freedom for the fixed effects test statistics were based on the Satterthwaite approximation. Effect sizes for *F* values were based on the method suggested for repeated measures and multilevel designs by Rosenthal and Rosnow (1991) (see also Verbeke and Molenberghs, 2000); effect sizes for MMRM contrasts were calculated as specified by Wackerly, Mendenhall, and Scheaffer (2008). All effect sizes were discussed using the cutoffs suggested by Cohen (1988).

3. Results

3.1. Student performance

GPA data were entered at three time points: *pre* (beginning of Spring 2009 semester), *post* (end of Spring 2009), and *follow-up* (end of Fall 2009). The primary analysis of outcomes was conducted on the fully randomized portion of the study (three groups \times three time periods). Contrast tests showed that there was no significant difference in baseline levels of GPA. Three demographic covariates were added to the analysis that correlated significantly with GPA among all 579 psychology majors at the time of the study: *age*, *gender*, and *Millennium Scholarship* status (Age: $r=.11$, $p=.006$; Gender: $r=.09$, $p=.023$ – females receiving higher grades; Millennium scholarship status: $r=.34$, $p<.0009$ – at the time of the intervention, Nevada students with an adequate high school GPA could automatically receive a “Millennium scholarship” from tobacco settlement money provided they continued to do well in college). In all cases, the significant fixed effects and contrasts reported below in analyses using covariates were still significant and virtually unchanged with the covariates removed. The primary analytic reason to add them is that baseline GPA levels between the three groups became minimal when they were added (the largest GPA difference between groups at baseline was reduced from .097 to .012; the significance of the

baseline differences among groups was reduced from $p<.4$ to $p<.9$), thus better equating the groups prior to intervention.

Means and standard deviations without covariates, and estimated means and standard errors when using the three covariates are presented in Table 1. Analytic results with and without covariates are shown in Table 2. Scholarship status, $F(1, 126.33)=28.95$, $p<.0009$, and age, $F(1, 125.68)=5.54$, $p<.020$, were found to be significant covariates. Analyses showed a significant effect for time, $F(1, 122.54)=4.21$, $p=.017$, and the interaction between condition and time, $F(4, 122.66)=4.50$, $p=.002$. Post hoc contrast tests showed that the interaction occurred because there was a significant and medium improvement in GPA in the goal setting plus values condition from pre- to post-relative to the wait list (Mdiff estimate = $-.11$, $SE=.04$, $t(129.0)=-2.84$, $p=.005$, 95% CI: $-.18, -.04$, $d=.63$) and a small but significant difference relative to the goal setting alone group (Mdiff estimate = $.07$, $SE=.03$, $t(129.0)=2.05$, $p=.043$, 95% CI: $.002, .14$, $d=.41$), while the goal setting alone group did not differ significantly from the waitlist (Mdiff estimate = $-.04$, $SE=.04$, $t(129.0)=-.98$, $p=.33$, 95% CI: $-.11, .04$, $d=.22$).

After the wait list was given the goal setting plus values intervention, however, the post to follow-up changes improved significantly, also a medium effect (Mdiff estimate = $.09$, $SE=.03$, $t(114.22)=2.55$, $p=.012$, 95% CI: $.02, .15$, $d=.51$). This improvement was small and marginally significant as compared to changes in the goal setting alone group from post to follow up (Mdiff estimate = $.08$, $SE=.04$, $t(114.70)=1.75$, $p=.083$, 95% CI: $-.01, .17$, $d=.46$). Meanwhile the

Table 1

Raw and estimated means for all conditions at the three time periods.

Group	Pre	Post	Follow-up
<i>Raw means and standard deviations</i>			
Goal setting only	3.19 (.69)	3.22 (.65)	3.23 (.66)
GS+values	3.09 (.60)	3.20 (.54)	3.16 (.56)
Wait list then GS+V	3.11 (.54)	3.10 (.54)	3.19 (.44)
Non-responders	3.05 (.62)	3.07 (.60)	3.10 (.54)
<i>Estimated means and standard errors</i>			
Goal setting only	3.14 (.083)	3.17 (.078)	3.17 (.076)
GS+values	3.13 (.08)	3.23 (.075)	3.19 (.074)
Wait list then GS+V	3.14 (.10)	3.14 (.094)	3.22 (.091)
Non-responders	3.08 (.034)	3.11 (.033)	3.12 (.033)

Covariates: Millennium Scholarship; Age; Gender. Estimated means for the randomized groups are drawn from a 3×3 MMRM analysis with unstructured covariance; those for the non-responders are drawn from a 4×3 MMRM analysis with unstructured covariance.

Table 2

Mixed model repeated measures results for cumulative GPA from pre to follow-up for the randomized experimental and comparison groups, with and without covariates added.

Source	Numerator df	Denominator df	F	p	d
Type III tests of fixed effects – analysis with covariates					
Intercept	1	125.28			
Scholarship	1	126.33	28.95	.000	.96
Age	1	125.68	5.54	.02	.42
Gender	1	125.13	.31	.58	.10
Time	2	122.54	4.21	.017	.37
Condition	2	126.17	.03	.97	.03
Condition \times Time	4	122.66	4.50	.002	.38
Type III tests of fixed effects – analysis without covariates					
Intercept	1	128.90			
Time	2	122.58	4.25	.016	.37
Condition	2	128.93	.26	.77	.09
Condition \times Time	4	122.68	4.42	.002	.38

original goal setting plus values group deteriorated somewhat. However, this was not significant either within ($p=.13$) or in comparison to the goal setting alone group ($p=.20$).

In order to compare the randomized conditions to the other psychology majors not participating, an omnibus MMRM analysis was conducted (four groups \times three time periods). All of the fixed effects showed the same pattern of results (see Fig. 2). Contrast tests showed that the goal setting alone and wait list groups never differed significantly from non-responding majors. In contrast, a small but significant difference from pre to post was observed in the goal setting plus values group (M_{diff} estimate=.07, $SE=.03$, $t(414.003)=-2.52$, $p=.012$, 95% CI: $-.13$, $-.02$, $d=.38$). Moreover, when the goal setting plus values condition was added to the wait list, a small but significant difference was observed for non-responding majors from post to follow up (M_{diff} estimate=.07, $SE=.03$, $t(271.46)=-2.23$, $p=.026$, 95% CI: $-.14$, $-.01$, $d=.43$).

Taken together, results demonstrated the immediate impact of goal setting plus ACT-based values training on student performance significantly increased GPAs the following semester (an effect replicated across two sets of participants) but that goal-setting training alone had no effects as compared either to the randomized or non-randomized comparison conditions.

Considering those who had not yet successfully graduated by the Spring of 2010, five of the 63 remaining combined goal setting plus values participants (original and wait list) failed to re-enroll after the intervention (7.9%) as compared to 35 of the 104 remaining participants (33.7%) in the non-responders control condition during the same time frame, a statistically significant and medium difference (X^2 with Yates correction=12.87, $p<.001$, $d=.58$). There was no significant difference between the goal setting only intervention (four of the remaining 33 after graduation dropped out; 12.1%) and the non-responders control condition; however, it could be that the test was underpowered given the smaller size of that group. Thus, an alternative explanation for

the apparent retention difference is that the willingness to volunteer for the main study was itself a marker of a process that predicted better retention.

4. Discussion

This is the first study designed to compare the educational impact of values exploration and goal setting as understood within a contextual behavioral science tradition. Results showed that when combined with behaviorally-based goal setting, training participants in an ACT-based definition of values, its distinction from goals, and having participants explore and write about their personally important educational values, significantly increased their academic performance as measured by GPA, relative to a wait list, or to majors not responding to the invitation to participate in the study. Moreover, goal setting alone had no positive impact on academic performance.

The lack of an impact of goal setting alone is a concern given the emphasis on goal setting in many academic skills training programs. The problem is not the dissemination of goal-setting programs per se. These programs have known benefits in areas such as retention and student experiences (e.g., [Bean & Eaton, 2002](#)), the problem is conceptual. Values are not goals. Packages deployed under the rubric “goal setting” have been shown to increase GPA when they include values exploration ([Morisano et al., 2010](#)) but such inclusion will not be certain unless program developers are aware both of the importance of personal values exploration, and of its distinction from goal setting per se.

From an ACT perspective, “values are freely chosen, verbally constructed consequences of ongoing, dynamic, evolving patterns of activity, which establish pre-dominant reinforcers for that activity that are intrinsic in engagement in the valued behavioral pattern itself.” ([Wilson & Dufrene, 2009](#), p. 66). As verbal constructions that establish the importance of qualities of action “values can never be fully satisfied, permanently achieved, or held like an object” ([Hayes, Strosahl, & Wilson, 1999](#), p. 207). Technically speaking, values choices are motivative augmentals – verbal establishing operations ([Hayes, Barnes-Holmes, & Roche, 2001](#)). Augmentals are verbal stimuli that alter the reinforcing effectiveness of other events. Because values encompass the intrinsic qualities of action, they establish intrinsic reinforcers that are immediately available even though temporally extended. Goals are explicitly not intrinsic to action – they are the discrete, concrete, verbalized and sought consequences of action that can be obtained and finished.

We do not yet know if the impact of values exploration actually fostered goal setting. That study remains to be done. If it turns out to be the case, it could be that attention to values puts goals and their achievement into a larger verbal network with motivating properties; for example, doing well on a test might now be less about a grade than about the value of new learning or rising to challenges (for further discussion see [O'Hara & Maglieri, 2006](#)). Values exploration could also diminish the possibility that goals could be set that would be values inconsistent. For example, setting a goal to get a good grade even if it means cheating might create competing contingencies that would interfere with academic behavior (e.g., avoiding reading a text to avoid feeling guilty about cheating). Finally, personal values exploration thought of as a verbal establishing operation could build on an old behavioral notion that goals exert control only to the extent that individuals have experienced previous reinforcement for goals attainment (e.g., [Fellner & Sulzer-Azaroff, 1985](#)).

Further, it is not yet apparent whether training participants in the nature of values from an ACT perspective (such as explicitly distinguishing values from goals) is any more effective than simply having participants write about important values without refining what “values” mean beyond a common sense understanding. In favor of

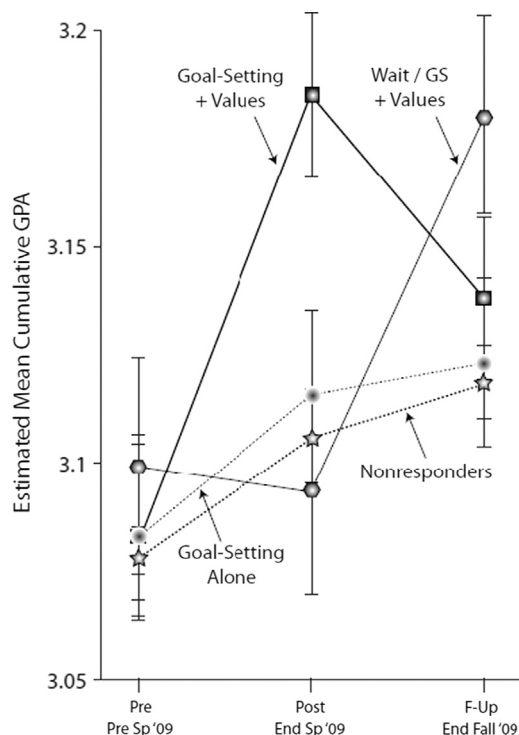


Fig. 2. Adjusted mean cumulative GPA and standard errors at pre, post, and follow-up for all experimental and non-experimental groups. Note: Covariates included were evaluated at the following values: Received scholarship=1.66, Age=23.54, Male or Female=1.68. Results from the omnibus 4 \times 3 MMRM analysis are displayed.

the unimportance of refining what values mean, the effect size of the impact on GPA of the present study ($d = .64$) was virtually identical to that of the previously published study by Morisano et al. ($d = .65$), which did not specifically train participants in the nature of values. However, the present results were applied to a general student population, unlike Morisano et al. (2010) who focused on academically challenged students. Previous values exploration research (e.g., Cohen et al., 2009) has shown an impact primarily on lower performing students. Thus, it is possible that the present approach was particularly useful. From a conceptual perspective however, we do not yet know if ideas drawn from ACT are any more powerful than common sense ideas about values and further research in this area is warranted.

The current approach could be practically significant for two reasons. First, since it was effective with students in general, it may be more easily disseminated. Further, targeting students who experience academic difficulty entails the risk of stigmatization and can raise practical problems of program implementation for educational institutions. Second, the use of automated, online training modules has the capacity and capability to provide individualized training and instruction to masses of individuals in a cost-effective and timely manner. Given the replication and extension of the similar online program tested by Morisano et al. (2010), it seems more likely values exploration and goal-setting interventions could provide broad utility to academic institutions.

There is nothing in the present data that explains why values exploration is helpful in fostering academic performance. Much of the work to date has focused on social cognitive variables such as the impact of values writing on perceived psychological threat (Cohen et al., 2006), the availability of stereotypes (Cohen et al., 2006), and reductions in a sense of defensiveness or increases in self-affirmation (Crocker, Niiya, & Mischkowski, 2008). In the educational area, a number of behavioral factors could be responsible for the positive influence of value exploration such a reduction in the aversive qualities of studying, increases in response flexibility, increases in persistence, choosing classes more in line with one's interests, and so on. Laboratory research within a contextual behavioral science approach has provided leads but not yet a definitive analysis (see studies reviewed by Levin et al. (2012)). It is also not yet known whether it is better in terms of educational outcomes for educational values to be explored, as opposed to any personally important values. Studies of both kinds have had an impact on academic performance – it is time for them to be directly compared.

The present study suggests that additional research of this kind is warranted since we now know that values exploration is a broadly useful intervention to improve academic performance. Values are not just goals. Understanding how and why they work to foster academic success could be very useful to students everywhere.

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