

Evaluation of a Cognitive Tool for Enhanced Decision Making and Personal Change among College Students

Crystal Mata Kreidler, Angelo State University
Donald F. Dansereau, Texas Christian University
Timothy M. Barth, Texas Christian University
Gregory T. Repasky, Texas Christian University
James Miller, University of North Texas

Many college students have difficulty with decision making and personal change. In this study, we examine the impact of a fill-in-the-node spatial display that college students complete while considering alternatives and action plans related to dilemmas and behavior change. College students who utilized the cognitive tool reported greater positive expectations for future decision making and personal change than did those in a problem-based writing group and a no treatment group. Implications for academic advisors are discussed.

KEYWORDS: ACED IT, *Decision Process Evaluation Questionnaire*, instruments, *Personal Change Questionnaire*, problem-based writing

Many college students make bad decisions that can lead them to poor academic performance or more serious health risks, such as binge drinking, drug use, reckless driving, or unprotected sex (Arnett, 1992; McCabe, 1992; Reyna & Rivers, 2008). For example, the majority of first-year college students who received emergency medical transportation and treatment for alcohol overdose later attributed this event to poor decision making (Reis, 2007; Reis, Harned, & Riley, 2004). Decisions leading to such imprudent behavior can have lasting repercussions resulting in poor outcomes, including limited career options, dismissal from school, jail time, bodily injury, or death. Unfortunately, academic advisors may be unsure of ways to best assist a student in time of need and may find themselves unaware of or ill equipped to deal with potentially troubling issues (see, e.g., Barnes, Williams, & Archer, 2010; Shane, 1981).

Moreover, in addition to the decisions involving the serious risks noted above, college students also struggle with academic decisions, such as selecting a college major and suitable career path (Beggs, Bantham, & Taylor, 2008; Gordon & Sears, 2009). Selection of a major represents an important decision that many students regret later in life (Beggs et al., 2008). Other students seamlessly select a

major but make some decisions that make graduating in fewer than 5 years difficult (see, e.g., Bowen, Chingos, & McPherson, 2009). Indeed, many students struggle to remain focused in their academic endeavors and rely on the advice of their academic advisors and university counselors (Shaw & Barbuti, 2010).

The efforts of students and their academic advisors to implement changes to improve study habits, class attendance, and time management as well as assist with selecting a major are often unsuccessful (see, e.g., Brownfield, Fernando, & Halberstadt, 2003; Kiene, Tennen, & Armeli, 2008). Although progress has been made by academic advisors in facilitating decision making and encouraging personal and academic development (Ford & Ford, 2009), considerable work remains to be done (see, e.g., McNally & Palfai, 2003; Zhou & Santos, 2007). Recent literature suggests that application of personal writing techniques may provide substantial assistance to students struggling with decisions and a desire for change. For example, problem-based writing (PBW) (see Pennebaker, 1997, for a review) has proven effective. Typically, students undertake PBW on a blank sheet of paper with no guiding instructions; they write unhindered about a troubling issue for 20 minutes on two or three occasions. Research suggests PBW facilitates emotional release, leading to improved coping processes (Frattaroli, 2006; Lyubomirsky, Sousa, & Dickerhoof, 2006; Sloan, Marx, Epstein, & Dobbs, 2008) as well as improved immune function and diminished health-care visits (Esterling, Antoni, Fletcher, Margulies, & Schneiderman, 1994; Gross & Levenson, 1993). Furthermore, a recent study by Dalton and Glenwick (2009) showed that participants who wrote about their upcoming GRE, GMAT, or LSAT exam scored, on average, 19 percentile points higher than those in a control group. Expression of emotion is critical to PBW success (Pennebaker, 1997). Although useful in relieving stress, PBW may be insufficient for exploring decision options and actions plans.

A supplement and alternative to PBW, ACED IT is a cognitive tool that stands for assess, create, evaluate, decide, implement, and test. It prompts individuals to examine a number of potential solutions, as well as the strengths and weaknesses of each option, by using a fill-in-the-space format to organize the written information (Dansereau, 2005). It is based on two frameworks used to guide students through effective decision making and action planning: decision stages (Robbins & Judge, 2007) and multiple perspective taking (Atha-Weldon & Dansereau, 2006; Hall & Davis, 2007). The standard decision-making model (Robbins & Judge, 2007) includes five broad stages: define the issue, generate options, evaluate, select, and act. It also incorporates alternative perspectives via an internal decision team through which students mentally select and refer to familiar people for guidance (Atha-Weldon & Dansereau, 2006); for example, a deciding individual may consider the answer to the rhetorical question: "What would Mother Theresa do?" For additional perspectives, a student may consider the ethical implications of possible choices and actions as described and taught in college courses: virtue, rights, justice/fairness, common good, and utilitarian (Velasquez et al., 1988). Virtue is characterized by common ideals such as honesty, caring, tolerance, loyalty, patience, and courage. Those considering the protection of the basic rights of those involved in the decision seek a rights perspective. The justice/fairness approach embodies a perspective under which human beings should be treated equally or, if unequally, fairly based on a defensible standard. The common good perspective focuses on societal impacts, such as clean air, safety, and health care; those using this approach may accept infringement on individual rights in the pursuit of community goals. Those advocating a utilitarian ethic evaluate alternatives in cost-benefit terms.

ACED IT has been the focus of several recent ethical decision-making workshops for midlevel managers in local government (Dansereau, Barth, & Kreitler, 2009). Feedback from the participants indicated high satisfaction with ACED IT and an intent to use it as a future strategy. Indeed, evaluations sought via e-mail 2 months following each workshop indicated a continued satisfaction with and frequent use of ACED IT.

To assess the value of ACED IT to a college population, Kreitler, Dansereau, Barth, and Ito (2009) conducted a study with undergraduates in a midsized southwestern university. Participants were asked to briefly describe three past dilemmas

that gave them difficulty, select the decision that proved most challenging, and rework it using the ACED IT procedure or PBW. Findings revealed that extroverted students using ACED IT reported significantly greater satisfaction with ACED IT than those who used PBW. However, extroverted individuals did not experience significantly greater satisfaction than introverted participants in any of the treatment groups or extroverted participants in the control group. Furthermore, introverted participants showed no differences between treatment conditions, suggesting that they may develop their own reflection strategies and are less likely to reap the benefits of ACED IT than extroverts who appreciated the guidance and structure it provided. In addition, the multiple perspectives in ACED IT may have resonated more with socially oriented extroverts than inward directed introverts.

A follow-up study (Kreitler, 2011) replicated and extended the Kreitler et al. (2009) findings by showing that after 4 weeks participants in the ACED IT and PBW groups reported improved mental health, better role functioning, diminished pain, and a greater likelihood to include others in future coping compared to those in the no-treatment group. However, the researchers found no differences between ACED IT and PBW conditions based on extroversion.

Because of the potential value of the ACED IT and PBW procedures, we sought to compare the effects of ACED IT, PBW, and no treatment on decision making and personal change. We hypothesized that the students using ACED IT or PBW would report greater benefits than those not receiving treatment. We also expected that ACED IT, due to its emphasis on systematic analyses, would show advantages over PBW on measures of future decision making.

Method

Participants

One hundred thirty-four undergraduate psychology students from a midsized private university in the Southwest volunteered to participate in this research as an optional means of fulfilling a course requirement or to receive extra credit for a class (76 females, 58 males; average age 19.91 years, $SD = 2.96$). Table 1 presents demographic information for the three groups.

Materials

ACED IT. ACED IT is a prestructured map (Kreitler et al., 2009) that utilizes a fill-in-the-space format to spatially organize written information.

Table 1. Comparison of demographics in experimental, comparison, and no-treatment groups

Variables	Groups		
	Experimental (ACED IT)	Comparison (PBW)	No Treatment
Race (<i>n</i>)			
Caucasian	33	36	39
African American	1	2	3
Asian American	4	2	2
Latino	3	4	3
Other	2	0	1
Age (years)			
<i>M</i>	19.28	20.37	20.09
<i>SD</i>	2.04	3.13	2.92
Gender (<i>n</i>)			
Male	20	23	15
Female	26	22	28

On side one of a hardcopy, the map prompts participants to describe a decision dilemma (e.g., “My friend just cheated on an exam. What should I do?”), note practical issues and individuals affected by the decision dilemma, and generate a decision team. Next, participants are asked to utilize the imagined advice of decision team members to list up to six potential options for resolving the dilemma. Then, using ethical criteria (e.g., “It protects the rights of those involved”), participants rate each option on a Likert-type scale (0 = *not at all*; 3 = *very much so*). Participants are then encouraged to eliminate options with low scores and consider the most highly rated ones. Following the selection of the optimal solution, the participant turns to side two and begins to detail the steps needed to implement the decision (see Figure 1).

Problem-based writing task. Participants of the PBW group received two blank sheets of paper on which to express their deepest thoughts and feelings regarding a dilemma or desired change. They wrote for 20 minutes under instructions not to worry about using full sentences or being logical but writing about whatever came to mind about their experience. They received the following instructions as adapted from Pennebaker (1997, p. 162):

I would like for you to write about your deepest thoughts and feelings regarding a decision dilemma/personal change you described on the questionnaire. In your writing, I'd like you to really let go and explore your deepest emotions and thoughts about this past event/personal change. You might tie your topic to your relationships with others, including par-

ents, significant others, friends, or relatives, to your past, your present, or your future, or to who you have been, who you would like to be, or who you are now. Don't worry about using complete sentences or being logical. Just write whatever comes to your mind about this experience.

Nonrelevant comparison tasks. The *Positive and Negative Affect Scales* form (Watson, Clark, & Tellegen, 1988) lists 20 adjectives (e.g., *proud, alert, nervous*). All respondents rate their current experience of each item (i.e., how they feel right now) by using a 5-point scale (1 = *very slightly or not at all*; 5 = *extremely*). Additionally, participants were administered the *State Trait Anxiety Inventory* (STAI) (Spielberger, 1974), a form consisting of 40 items assessing anxiety as an additional nonrelevant task. Twenty items are used to assess current anxiety symptoms (state anxiety) and the remaining 20 items reflect trait anxiety symptoms (a participant's general state of anxiety). The STAI scale is scored on four levels of anxiety intensity (1 = *not at all*; 4 = *very much*) for the 20 current anxiety items and from 1 = *nearly always* to 4 = *nearly never* for the remaining 20 items. We selected these questionnaires because simple assessments of participant affect would unlikely alter decision making or personal change.

Dependent measures. We administered the *Decision Process Evaluation Questionnaire* (Kreitler et al., 2009) to assess participants' decision-making processes. The measure consists of two subscales that assess future decision making (15 items) and target decisions (4 items). The future decision-making subscale asks participants to rate their

Figure 1. ACED IT template

ACED IT
Assess ♦ Create ♦ Evaluate ♦ Decide ♦ Implement ♦ Test

An Ethical Decision-Making Strategy

Assess Situation

Problem or dilemma:

Practical Issues:
(deadlines, etc.)

Your "Decision Team":
(real and imaginary people who can advise you)
♦
♦
♦
♦

People who will be affected by this decision:

Create Choices

Brainstorm with your "Decision Team"
↔
Take a break to let the rest of your brain chime in.

CHOICES

	A:	B:	C:	D:	E:	F:
(Briefly describe each choice)→						

Evaluate Choices Using Filters

It reflects your values. (Use scale below to rate each statement)→						
It protects the rights of those involved.						
It is fair to those involved.						
It meets relevant ethical and legal standards.						
It sets a good precedent for the future.						
Short-term positives outweigh negatives. (See worksheet before rating)						
Long-term positives outweigh negatives. (See worksheet before rating)						
It is practical. I can pull this off.						
Totals: Any unacceptable?						

Decide

NOT AT ALL (0) SOMEWHAT (1) PRETTY MUCH SO (2) VERY MUCH SO (3)

See if any of your ratings would cause you to eliminate choices.

Check totals, consult your "Decision Team", and **DECIDE**.

(Over)

Figure 1. ACED IT template (continued)

(Side 2)

Your Decision:
 (Briefly describe and modify if necessary.)

Implement Decision

Steps I need to take:	Possible Problems:	Solutions:

Looks OK?
☐ Yes ☐ No

↓
Implement Decision.

♦
 ♦
 ♦

Test

How did it work out?

(come back to this later)

Center for Applied Psychology
 Texas Christian University

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intentions regarding future decision making (e.g., “I will confidently face decisions in the future”) on a 7-point Likert scale (1 = *strongly disagree*; 7 = *strongly agree*). The target decision subscale asks participants to rate the extent to which they would revise their former decision (e.g., “If you were to now face the past dilemma you described earlier in this study, to what extent would your decision be different from what it was in the past?”) on a 7-point Likert scale (1 = *not at all*; 7 = *very much*).

Additionally, we developed and used a four-item personal change questionnaire, similar in format to the target decision subscale, to assess the extent to which participants intend to implement a personal lifestyle change. For example, respondents address “I intend to plan for changes in the future” on a 7-point Likert scale (1 = *strongly disagree*; 7 = *strongly agree*).

Procedure

We randomly assigned participants to one of three groups: ACED IT ($n = 43$), PBW ($n = 45$), and no-treatment ($n = 48$). Individually numbered folders held experimental materials for each of the three groups. We randomly sorted and placed them in one large pile. According to directions, as participants entered the large lecture hall, they selected the folder on top of the pile and sat one seat apart from other participants. After giving informed consent, participants followed the brief instructions in their folders.

All participants were asked to describe one past decision dilemma. Consistent with other studies that have allowed participants to select the writing topic (e.g., Epstein, Sloan, & Marx, 2005; Park & Blumberg, 2002), participants offered a considerable range in the types of decision dilemmas described. Most described either an academic decision (31%) or the decision to end a close relationship (28%). Other participants chose to write about addiction (17%), unethical behavior/cheating (9%), lying to parents (8%), religion (5%), or illness of a pet (2%). Participants in the ACED IT group were next instructed to rework the past decision dilemma they had selected using the ACED IT map. Participants in the PBW group expressed their thoughts and feelings regarding the past dilemma. Participants in the no-treatment condition received an unrelated questionnaire. All groups had 20 minutes to complete their task and an additional 8 minutes to complete the *Decision Process Evaluation Questionnaire*. Next, participants selected a personal change from the exercise, studying, or personal-choice lifestyle categories and wrote

about implementing it. Most participants chose to write about either implementing improved study habits (41%) or exercise (32%), while the remainder chose one of their personal choice (27%): for example, quit smoking, be more involved in school activities, eat healthier food.

Participants in the ACED IT group completed the map exploring the desired change. For example, if a participant selected exercise as the desired change, he or she wrote in the map “How can I exercise more consistently?” as the current dilemma and began generating solutions for implementation. Participants in the PBW group wrote down their thoughts and feelings regarding the implementation of their desired personal change. The participants in the no-treatment condition received another unrelated questionnaire. The participants had 20 minutes for this phase of the procedure and an additional 8 minutes to complete the personal change questionnaire to evaluate the process they completed. The session ended with a full debriefing.

Results

Future Decision Making

We conducted a principal components factor analysis with a varimax rotation on the future decision items in the *Decision Process Evaluation Questionnaire* (Kreitler et al., 2009). Three factors containing three or more items emerged from the analysis, accounting for 55% of the variance. In accordance with guidelines founded by Bryant and Yarnold (1995), we formed factor scores by averaging items that loaded greater than .5. Internal consistency for each of the scales was examined using Cronbach’s alpha. The α values were .71 for Intent to Include Others (five items), .69 for Decision Thoughtfulness (three items), .67 for Decision Confidence (four items), .73 for Decision Revision (four items), and .71 for Target Change (four items).

We used the first factor, Intent to Include Others, to determine the role of others in decision making. The second factor, Decision Thoughtfulness, included intention to be thoughtful about future decisions (.80), take more time with future decisions (.72), and likelihood to write down thoughts to help make future decisions (.71). The third factor, Decision Confidence included items about confidence in making effective future. See Table 2.

We conducted a one-way multivariate analysis (MANOVA) (ACED IT vs. PBW vs. no treatment) on the decision-process factors described. The main effect for experimental condition was significant as

Table 2. Factor loadings based on principal components analysis with varimax rotation for decision making (DQ) and personal change (PQ) questionnaires ($N = 134$)

Measure and Variable	Factor Loading
DQ—Intent to Include Others	
I see the value of considering others' points of view in making my decisions	.82
If given the opportunity, I will help others with their difficult decisions	.74
I feel I will be able to teach others about how to make decisions	.65
I see others turning to me for help with their future decisions	.59
I intend to consider others' opinions	.58
DQ—Decision Thoughtfulness	
I intend to be more thoughtful about future decisions	.80
I plan to take more time making decisions in the future	.72
I intend to write down my thoughts to help make decisions in the future	.71
DQ—Decision Confidence	
I will confidently make decisions similar to the one previously described	.80
I see myself as being an effective decision maker in the future	.77
I will confidently face decisions in the future	.73
I feel like I will be able to defend the decisions in the future	.69
DQ—Decision Revision	
How differently would you approach your decision if you were to face it now?	.84
If you were to now face the past dilemma you described earlier in this study, to what extent would your decision be different from what it was in the past?	.83
Do you think you would be more satisfied with your decision now than before?	.68
How much have you learned about decision-making that will help you in the future?	.61
PQ—Target Change	
How motivated are you to make this change?	.87
How likely is it that you make this "change" in the future?	.83
How confident are you that you will be able to make this change if you decide to do it?	.72
Are you closer to making this change than you were at the beginning of the experiment?	.62

indicated by Wilks's lambda: $F(6, 258) = 4.07, p < .01$. We found significant univariate main effects of group for Intent to Include Others, $F(2, 131) = 4.19, p < .05$, and Decision Thoughtfulness, $F(2, 131) = 3.73, p < .05$. We found no main effect for Decision Confidence, $F(2, 131) = 6.38, p > .05$. Tukey post hoc tests identified participants in the ACED IT group ($M = 5.8, SD = .86$) as more likely to include others to a greater degree than those in the PBW ($M = 5.3, SD = 1.06$) and no-treatment ($M = 4.7, SD = .76$) groups. Participants in the ACED IT group ($M = 4.7, SD = 1.23$) also reported that they would be more thoughtful with future decisions than did participants in the no-treatment group ($M = 4.0, SD = 1.25$). We found no other significant differences.

Target Decision

We conducted a separate principal components factor analysis with a varimax rotation on the four items in the *Decision Process Evaluation Questionnaire* (Kreitler et al., 2009) used to assess the participant-described target decision. One fac-

tor, labeled Decision Revision, emerged from the analysis, accounting for 55% of the variance. This factor included the measures of the extent to which a different approach would be used while making a decision faced today (.84), extent to which the decision would be different from in the past (.83), satisfaction with decision now versus before (.68), and amount learned about decision making that will help in the future (.61). The single factor, labeled Decision Revision, was utilized in a one-way analysis of variance (ANOVA) and revealed a significant main effect for experimental condition, $F(2, 131) = 4.42, p < .05$. Post hoc comparisons revealed that participants in the ACED IT ($M = 4.2, SD = 1.50$) and PBW groups ($M = 4.2, SD = 1.67$) reported that they would more likely revise their prior decision than would those in the no-treatment group ($M = 3.4, SD = 1.13$).

Target Change

We conducted a separate principal components factor analysis with a varimax rotation on the four items in the personal change questionnaire that

assessed the target change participants described. One factor, labeled Target Change, emerged from the analysis, accounting for 58% of the variance. This factor included items assessing motivation to make the change (.87), likelihood that the change will be made in the near future (.83), confidence about the decision to make the change (.72), and increased likelihood that the individual would make this change now compared to before the experiment (.62).

The single factor, Target Change, was utilized in a one-way ANOVA. We found a significant main effect for experimental condition, $F(2, 131) = 6.44$, $p < .01$. Post hoc comparisons indicated that the ACED IT group participants ($M = 5.7$, $SD = .88$) rated their ability to make the target change as higher than did participants in the PBW ($M = 5.3$, $SD = 1.10$) and no-treatment ($M = 4.8$, $SD = 1.37$) groups.

Discussion

The present findings support and extend the literature regarding the utility of PBW and the ACED IT tool. Previous PBW initiatives were related to reports of diminished negative affect, depression, physical symptoms of pain, and rumination as well as enhanced life satisfaction, immune function, and general health (Lyubomirsky et al., 2006; Pennebaker, 1997; Sloan et al., 2008). With respect to decision making, our present study extends this research by providing evidence that students who reworked a prior decision dilemma using a PBW approach would treat future decisions differently than students who merely described a prior decision dilemma. Of considerably greater interest than comparing PBW with a group receiving no treatment, the comparison of use of the ACED IT tool with use of a PBW approach showed that the ACED IT procedure fared quite well despite the generally acknowledged efficacy of PBW. In all analyses in which either treatment condition (i.e., ACED IT or PBW) resulted in a beneficial outcome, the ACED IT methodology produced equally positive or better results than PBW. For example, like participants in the PBW group, those utilizing ACED IT reported that they would treat future decisions differently than students who merely described a prior decision dilemma. Students utilizing ACED IT, however, reported a greater tendency to include others and provide support for others in their future decision making than did students in either the PBW or the no-treatment groups. This result suggests that, in addition to emotional release, ACED IT may be more useful in motivating students to employ new

approaches in the future. ACED IT also showed this advantage over the no-treatment group, as well as an advantage over both groups in reporting the extent to which they would support and consult with others concerning future decisions. These data suggest ACED IT may be more potent than PBW in making future changes in decision making.

In addition to addressing decision making, we extended previous work utilizing ACED IT (Kreidler et al., 2009) to personal change. Students who worked out a desired change using ACED IT, as opposed to using PBW or merely describing the personal change, reported significantly more motivation and closeness to making the personal change than those in the other two groups. The lack of difference between PBW and the no-treatment groups further clouds the mixed results for PBW in promoting personal change (Pennebaker, 1997). For example, Ames et al. (2005) tested the efficacy of PBW as a tool for smoking cessation and reported no significant benefit. A later study, however, conducted by many of the same authors, reported that PBW demonstrated significant promise as a tool for aiding smoking cessation (Ames et al., 2007). The present findings do not support this contention.

ACED IT may facilitate the processes of decision making and personal change in ways not as easily addressed by a PBW approach. One relevant difference between approaches may be the more focused nature of ACED IT with an emphasis on multiple perspective taking, numerous possible solutions, and optimal strategies and choices. Indeed, Patrick and Strough (2004) showed that more experienced individuals generally produced a larger number of solutions to a given problem enabling a greater strategic flexibility and a greater ability to make difficult decisions. ACED IT emphasis on taking multiple perspectives and generating a number of options before choosing the best one may partially compensate for a lack of life experience in a group prone to poor decision making. Furthermore, ACED IT helped students not only generate and analyze multiple options and approaches, but also helped them select the optimal one.

Limitations and Future Directions

Although the participants themselves are undoubtedly the best resource for information about their own cognitions, any data consisting of self-report measures require vigilant interpretation lest demand, perceived desirability, or response biases affect the outcome. However, the lack of significant differences in a number of the com-

parisons (i.e., those that would likely have shown false significant effects were experimental demand a serious problem) gives us confidence that the participants gave appropriate consideration to their responses and did not indiscriminately tout the merits of the ACED IT or PBW procedures. Regardless, future researchers could strengthen the knowledge base by using independent and objective means of assessment, such as behavioral measures (e.g., number of gym visits, number of hours in library, etc.). Furthermore, the nature of the reported changes as transient or long lasting remains unclear. Advisors would undoubtedly benefit from long-term follow-up assessments of personal change and problem-solving strategies.

Additionally, although considerable variability existed within all treatment groups, the diversity in participant-selected decision dilemmas suggested dramatic differences among respondents; that is, decisions about whether to end the life of an ill pet may require different considerations than those regarding choosing to cheat on an exam. In a subsequent study, we examined both within and between groups variances, and we found no significant differences in dilemma severity between treatment groups (Kreitler, 2011). However, although we would not anticipate a pattern to emerge, we have not specifically examined whether participants in one treatment group tended to select more serious dilemmas. Future studies would be enhanced by examination of the dilemma selection within and between groups, both to make sure that no differences exist between treatment groups and because this information may prove useful as an independent variable in subsequent analyses (Kreitler, 2011).

Our pool of participants consisted of students from a wide variety academic majors (particularly true of those selected from large general-psychology sections) enrolled in many different psychology courses at a midsize, private university. However, students majoring in psychology were well represented in our student population, and the beneficial effect of treatment conditions could partially depend upon student interest in or experience with psychology as an academic discipline. Therefore, future efforts to replicate these effects utilizing a student pool not consisting of a majority of psychology majors, along with testing student participants at a larger state school with its attending altered demographics, would prove beneficial in verifying generalizeability to a larger student population.

The modest life experience of our student popu-

lation could potentially influence (for better or for worse) the nature of the statistical effects, making difficult any prediction of the impact on the varied treatment conditions to older individuals with considerably more life experience. Researchers seeking to elucidate these potential differences would also benefit from examining ACED IT, and other cognitive tools, in a variety of populations.

Implications for Academic Advisors

Academic advisors who work with undergraduates are aware of hesitant help-seeking behaviors of students, apparently fearful of ostracism from peers, with problem-solving skills (see, e.g., Katz, Meyers, & Walls, 1995). One way to reach these students, as well as those who seek advising, is through a structured, self-help tool, such as ACED IT that can be distributed in a number of settings, including freshman orientations, academic advising sessions, on-campus workshops, and various kinds of college learning-techniques courses. For example, student-athletes participating in the Techniques of College Learning course at the university where we collected the data for this study routinely use ACED IT for course assignments after brief instructions. They reported finding ACED IT both intuitive and helpful in reaching difficult decisions regarding academics and ethical case studies. According to recent academic advising research (Gerdes & Crews 2010), college courses that match student learning styles is of great importance, and using ACED IT into more course assignments may facilitate this practice.

In nonclassroom settings, the use of ACED IT may provide the impetus for some students to seek direct guidance with their issues. For example, students placed on academic probation often come to academic advisors in need of guidance on how to improve their current status. For these special cases, advisors can distribute ACED IT and instruct the student to explore ways to improve the student's GPA by utilizing the map perhaps while waiting for the advising appointment or in advance of the advising session at home. This task will provide the student with potential solutions (e.g., longer hours at the library, smarter utilization of daytime study hours that are typically wasted, etc.) and may also serve to identify problem behaviors unnoticed by the student. The time spent completing the map might also provide useful buffer time for the academic advisor in finishing paperwork from a previous appointment and preparing for the next session. Following completion of ACED IT, the advisor and student may then discuss ways to amend and

implement the solutions highlighted on ACED IT. Furthermore, ACED IT may indicate serious student problems that warrant referral to counselors, physicians, or other health professionals.

In addition to helping identify problems and solutions, ACED IT may also assist an academic advisor in sharing difficult information that the student may need to hear. For instance, because students often respond poorly to unpleasant realities, an advisor may struggle with an explanation that a student's current performance is inconsistent with a pre-med academic track and that a change of major should be considered. The advisor, using ACED IT, could address key issues and work on feasible solutions as an icebreaker to broaching the more serious discussion about necessarily changing academic and career expectations. ACED IT may also aid the student in working toward a personal realization and solution that may be easier to accept than unvarnished frankness from a well-meaning advisor.

Research suggests the selection of an academic major creates a dilemma that causes considerable indecisiveness among many college students (Cuseo, 2005; Gordon & Sears, 2009), and the decision students make represents one of the most frequently identified life regrets for Americans (Beggs et al., 2008). Advisors can significantly improve upon the strategy and performance for assisting students with their indecisiveness, avoiding potential pitfalls, and facilitating completion of their studies in a time-effective manner (Cuseo, 2005). ACED IT may aid academic advisors in addressing major-selection concerns. Indeed, ACED IT requires that individuals write down and evaluate several viable decision options (e.g., several majors to consider) followed by evaluation of the short- and long-term benefits of this decision. Moreover, this tool may help shift some of the burden inappropriately placed on the academic advisor by students who want someone to make the decision for them. The advisor can subsequently make a copy of the completed ACED IT form and retain it in the student's file for easy retrieval if the student, parents, or administrative officials have questions regarding the reasons the student selected or changed to a particular major.

In summary, the utilization of the core elements within ACED IT appear to lead to improved strategies in decision making and planning for change among college students. ACED IT is easily learned and readily incorporated in academic advising and orientation to assist students in coping with the challenges and dilemmas of college life.

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Authors' Notes

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Crystal Mata Kreitler is an assistant professor of psychology at Angelo State University. She received her PhD at Texas Christian University in experimental psychology with a specialization in cognition in 2011. Her research interests are within topics such as cognitive mapping, ethical decision making, and individual differences with an emphasis on culture and personality. She can be reached at crystal.kreitler@angelo.edu.

Donald F. Dansereau is presently a consulting scientist with the Institute of Behavioral Research (IBR). He received his PhD from Carnegie Mellon and was on the faculty at Texas Christian Univer-

sity from 1968 to 2011, where he was a professor of psychology and also served as Associate Director for Cognitive Interventions in the IBR. Dr. Dansereau's research focused on cognitive approaches for improving education, drug abuse prevention and treatment, and parenting.

Timothy M. Barth is a professor of psychology and Department Chair at Texas Christian University (TCU). He received his PhD at the University of Texas at Austin. He has been a faculty member at TCU since 1990. His research focuses on decision making and problem solving.

Gregory T. Repasky is a graduate student in psychology at Texas Christian University (TCU). He received his BS at TCU in 2010. He expects to obtain his MS degree in experimental psychology in 2012. His research interests are within ethical perceptions, decision making, creativity, and self-control.

James Miller is a PhD student in the Clinical Health Psychology Program at the University of North Texas. He received his MS degree at the University of North Texas. He expects to obtain his PhD in 2014. His research interests focus on self-management programs and treatment outcomes among chronically ill and addiction populations.