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A Brief Career Intervention: Psychology Students' Changed Views of Life Beyond a Baccalaureate

D. W. Rajecki, Kathy E. Johnson, Mikki Poynter Jeschke, Drew C. Appleby, Cynthia Clark Williams, Kathryn E. Daniels, William J. A. Eiler, II, and Jessica R. Brokering[1]

Abstract. Most (77%) of a sample of some 300 undergraduate psychology majors indicated plans for a Master's or PhD degree, and most expressed high valuation of a job with a Bachelor's degree. Respondents then received a brief career intervention via a take-home booklet containing information about admission to graduate school, and features of jobs with a baccalaureate. Subsequently, regarding graduate school, 30% of the students reported less interest, 64% indicated reduced estimates of own chances of admission, 49% raised estimates of prerequisite GPA, and 51% lowered estimates of percent applicants accepted. There were suggestions of coherence in changed views: for example, change scores for interest in-, and own chances for graduate school correlated .26. Attitudes toward jobs were generally unaffected. We offer our brief psychology career intervention as a general model for research and advising in other non-preprofessional undergraduate programs.

Key terms: career counseling, counseling assessment, brief career intervention, graduate school aspirations, graduate school perceptions, job aspirations, psychology majors.

I. Introduction.

Deciding on an undergraduate major implies additional decisions for students. Complicated career-path choices may follow, including possible employment following commencement versus postgraduate training. Teaching the facts of life beyond a Bachelor's degree should be a core component of the curriculum in the liberal arts and social sciences. The current study examined the effects of a convenient type of career counseling on advisees' views of graduate school and post-baccalaureate jobs.

Our work involved students enrolled in psychology informational courses, so naturally the substance of our career project focused on the facts and figures of academic psychology. Nevertheless, we believe the issues, procedures, and findings in this paper have relevance for

[1] Address correspondence to D. W. Rajecki, 11245 Garrick Street, Fishers, IN 46038-1928; e-mail: dwrajecki@sbcglobal.net; phone: (317) 594-0313. The departmental mailing address for all authors is: Department of Psychology, LD124, IUPUI, 402 N. Blackford St., Indianapolis, IN 46202-3275. Email addresses are: Johnson: kjohnson@iupui.edu; Jeschke: mjeschke@iupui.edu; Appleby: dappleby@iupui.edu; Clark Williams: cyclark@iupui.edu

non-preprofessional undergraduate programs in general. Psychology majors share many career concerns with their counterparts in the humanities and in other social sciences, as reflected in the following cases where published data or observations were available.

A. Employment with a BA: "You want fries with that?"

Psychology alumni often find themselves in a job with a baccalaureate, at incomes and with opportunities that compare poorly with those of majors from preprofessional programs (Borden & Rajecki, 2000; Kohout, 2000). Former psychology majors thus face employment challenges in common with many liberal arts graduates (cf., Knotts, 2002). Indeed, research over the last two decades indicates considerable convergence in the real-world fates of psychology and other liberal arts students.

For example, from a series of national surveys between 1977 to 1986, Amirault (1990) showed the percentage of alumni that held jobs in occupations "directly related" to their field of study one year after graduation. The average (unweighted) figure for psychology majors was a low 22%, which is comparable to levels for the non-preprofessional fields of economics (16%), English (35%), history (18%), political science (13%), and sociology (18%). Much higher rates of relatedness were reported for preprofessional majors, such as accounting (77%), engineering (79%), and nursing (89%).

From another perspective, a national survey of graduates between 1989 and 1990 asked them to indicate the nature of their jobs (Steinberg, 1994). Quite a few psychology majors (21%) found themselves in occupations defined as "administrative support including clerical," with similar numbers for students from history (26%) and the humanities (20%). Again, contrasting values were noted for preprofessional majors from engineering (4%) and the health professions (5%).

Later, between 1994 and 1998 graduates of a large public urban university were surveyed about how well their local education prepared them for their job in the year following commencement (Borden & Rajecki, 2000). The scale response option of "not at all" was chosen by a fair number of psychology alumni (25%), as well as those from liberal arts (21%), but far less frequently by health profession graduates (2%).

Lastly, national data presented by the American Psychological Association (APA) indicated an extension of these trends for psychology graduates in the class of 1999. Only 23% indicated their work was "closely related" to psychology (APA, 2003a) and as many as 44% were employed in management, sales, and administration (APA, 2003b).

B. Graduate School: Getting In and Getting Out

Beginning in the late 1960s there was a marked rise of interest among new college students in Master's, EdD, and PhD degrees (Astin, Parrott, Korn, & Sax, 1997, p. 5). Surveys in 2000 and 2002 indicated that approximately 60% of all freshmen nationwide planned to pursue one or another of these postgraduate degrees (Kellog, 2001; "This Year's Freshmen," 2003).

Psychology majors were certainly represented in the national trends. Studies have documented psychology undergraduates' high level of interest in graduate school and professional involvement (Briihl, 2001; Gallucci, 1997; Grocer & Kohout, 1997; Metzner, Rajecki, & Lauer, 1994; Rajecki, Lauer, & Metzner, 1998; Vittengl et al., 2004). One sobering consequence is that "Every year thousands of promising individuals apply to graduate school in

psychology, *but only a small percentage get in*" (APA, 1997, p. vii, italics added; and see APA, 1996, p. 9). For some who do gain admission, there can be a long road ahead: "A doctorate of psychology requires 6-8 years and further specialization often requires 10 years. [Approximately] 25% of [health service] psychologists have a debt of $75,000 or more from their professional education" (APA, 2004, p. 1).

As in psychology, selectivity is the rule in other social science graduate domains. For instance, in the year 2001, sociology departments admitted only 25% of presumably qualified applicants to their PhD programs (American Sociological Association, 2005). Getting into a liberal arts graduate school can be tough, but for successful applicants, being in such a unit can be grim. According to one survivor, "Grad school [in the humanities] is a confidence-killing daily assault of petty degradations. All of this is compounded by the fear that it is all for nothing; that you are a useful fool" (Benton, 2003, p. C3). And there are questions about the very utility of the liberal arts PhD: "… in the real world no one considers a humanities doctorate as good for much of anything…. a degree that makes no sense" (Price, 2004, p. 1). Even in the alternative world of academe, humanities positions may be hard to find (Montell, 2002).

C. Career Interventions

Such circumstances call for career interventions, defined in the literature as any counseling treatment or effort aimed at enhancing individuals' career-related development or decisions (Whiston, Sexton, & Lasoff, 1998). The term career intervention is also found in the popular press (Smith, 2004).

A number of sources currently offer what we characterize as *brief career interventions* for psychology majors. These compact and convenient presentations variously cover graduate school requirements, professional credentials and activities, and, alternatively, finding employment with a baccalaureate. Some of these concise interventions are available in print as textbook appendixes (see Anderson, Eiler, & Rajecki, 2003), or brochures and booklets (APA, 1996; Lawson, Jordan-Fleming, & Upton, 1997). Increasingly, succinct advice for psychology majors can be found on the World Wide Web (e.g., Fretz, n.d.; Friedman, 2003; Lloyd, 2003; Psi Chi, 2004; Sobelman, n.d.). Aside from psychology, one web site offers capsule career counseling for students in 53 additional majors (University of Tennessee, 2003).

We assume that these streamlined print and electronic sources have some desirable short-term consequences, if for no other reason than the known effectiveness of the wide variety of other types of career interventions (see Whiston et al., 1998). However, we agree with Davidson (2001) that there is a need for evaluation of the extent to which contemporary forms of counseling might affect career development.

Accordingly, we offer an assessment of the impact of our version of a brief career intervention--in the form of a booklet--distributed to students in psychology informational courses. We collected pretest and post-test data at two universities--one urban-comprehensive, one traditional-residential. For this empirical effort we employed measures in various formats (bipolar scale, multiple-choice, fill-in-the-blank) to inquire about the influence of our print counseling material on psychology students' career views, with special reference to graduate school.

Strict experimental psychology might call for control groups of students who did not receive a booklet, but in retrospect our real-life classroom conditions dictated that all students should be exposed. A before-to-after design did, however, permit two sorts of comparisons. First, to what extent did the intervention produce changes in responses to given measures? For

example, were there pre-to-post shifts in students' (a) expressed interest in graduate school, or (b) perceived personal odds for admission? Second, were changes in one variable consistent with changes in some other variable? For example, regarding graduate school, were change scores on the odds-of-admission measure associated with change scores on the interest-in measure?

In terms of general predictions, previous research (e.g., Metzner et al., 1994; Rajecki et al., 1998) suggested that a majority of current participants could have initial graduate school expectations that were too optimistic or ambitious given real-life constraints. Generally, we predicted that students' aspirations, along with their perceptions of barriers, would shift in a conservative direction. That is, personal interest or optimism about graduate school would decrease, and estimates of admissions standards would increase. Predictions about job ratings were left open.

II. Method.

A. Settings and Participants

Indiana University-Purdue University Indianapolis. Data were collected in classrooms at an urban public university. The Department of Psychology at Indiana University-Purdue University Indianapolis (IUPUI) required its students to complete a 1-credit-hour undergraduate course: B103 Orientation to a Major in Psychology. Between 1999 and 2001, the fourth and fifth authors (DCA, and CCW) each taught six sections of B103. We obtained data from questionnaires completed by their students and information from registrar's documents.

Beginners were meant to take B103, but, because of demand, sections enrolled various combinations of freshmen and other undergraduates. A total of 210 students provided usable data over the study period, including 98 freshmen (19 men), and 112 other students (19 men). Where appropriate in the paper, the freshmen ($IUPUI_f$) and the other students ($IUPUI_o$) are considered separately.

Syracuse University. We also collected data in classrooms at a traditional public university. The Department of Psychology at Syracuse University (SU) offered a 1-credit-hour undergraduate course: PSY400 Careers in Psychology. Between 2000 and 2001, the third author (MPJ) taught four sections of PSY400. The SU course was not open to freshmen. A total of 101 students (20 men) provided usable data over the study period.

Regarding sex non-differences, earlier reports indicated a high degree of similarity across men and women psychology undergraduates regarding career plans (e.g., Metzner et al., 1994; Rajecki et al., 1998) and highest degree sought (Rajecki, Appleby, Williams, Johnson, & Jeschke, in press). Accordingly, sex was not included as a variable in the current project.

B. Materials and Procedure

At the end of an early class session at IUPUI, students volunteered to fill out an initial questionnaire concerning, among other things, personal career aspirations and perceptions of the field of psychology. They then received a take-home reading assignment in the form of a seven-page handout, nicknamed the "Primer." Part of this booklet discussed at length the matter of admission to psychology graduate school. The heading of one passage read: "Some sobering facts about graduate school." Information included objective and non-objective criteria for application, and typical acceptance rates. A separate Primer section provided extensive coverage

of aspects of immediate employment with a baccalaureate, including expectable work categories, and attainable skills that enhance job opportunities. The IUPUI Primer can be inspected via the World Wide Web (Jeschke, Rajecki, & Johnson, n.d.).

Classroom instructions stated that the handout contained valuable information relevant to the goals of the course, and asked students to read the Primer before the next regular class, held one to two weeks later. During the next meeting an in-class discussion centered on the Primer, followed by the administration of a second questionnaire.

At SU, the Primer and questionnaire materials were revised to reflect academic circumstances in New York rather than Indiana. When SU students received the Primer for the take-home reading assignment, they were also assigned a 15-item worksheet, to be completed before the next course meeting. The SU worksheet items asked multiple-choice questions regarding specific Primer content.

C. Selected Questionnaire Items

The cover sheet of the first questionnaire contained an informed consent statement, and had a place for a self-report entry of the student's overall GPA. For the descriptions that follow, the order in which the items appear here is not necessarily their order in an instrument.

Highest degree sought. An item asked the respondent to consider the eventual occupation he or she planned to enter. It then instructed, "Please circle the degree you must earn to enter this occupation." Options were High School, BA/BS, Master's, and PhD. This item was not repeated in the second questionnaire.

Graduate school aspirations and perceptions. Six items related to graduate school: three inquired about students' own aspirations for postgraduate training, and three tapped perceptions of admission standards and rates. Regarding aspirations, one item asked, "All things considered, what is your current level of interest in getting into graduate school?" A seven-interval bipolar scale offered endpoints of 1 (*not at all interested*) versus 7 (*extremely interested*). Another item inquired, "What is the likelihood that *you* will be accepted into graduate school?" The fill-in-the-blank response sentence read "I have a _____% chance of being accepted into graduate school." A final aspiration item was open-ended and asked, "What specific actions should you take to improve your chances of getting into graduate school?" Five blank lines were provided.

Regarding perceptions of admission standards and rates, a fill-in-the-blank question inquired, "According to your own understanding... for getting into [a good Indiana/New York] psychology graduate school a minimum GPA is ____.____." This item set the response range at 2.0 to 4.0. Elsewhere, a multiple-choice question stated, "A graduate school program need not accept all qualified applicants." Then it asked, "In the area of psychology, which of the following would reflect a typical graduate school acceptance pattern?" Response options were "25 students applied [and] 25 were accepted (100%)," "25 students applied [and] 2 were accepted (8%)," "25 students applied [and] 20 were accepted (80%)," and "25 students applied [and] 12 were accepted (48%)." Finally, a multiple-choice item asked, "According to the American Psychological Association, what percentage of psychology majors enter Ph.D. programs?" Response options were 5%, 10%, 25%, and 50%.

Job aspirations. Three items related to employment with a baccalaureate. One item asked, "How important is it to you to major in a subject that leads to a job with a Bachelor's (BA or BS) degree?" A seven-interval bipolar scale offered endpoints of 1 (*unimportant*) versus 7 (*important*). Another item inquired, [concerning your interest in the psychology major] "How important is preparation for a job right after [an] *undergrad* degree?" There were five check

boxes: 1 (*never considered*), 2 (*not important*), 3 (*fairly important*), 4 (*very important*), and 5 (*extremely important*). A final employment item was open-ended and asked, "What specific steps could you take right now (and in the future) to improve your chances of getting a satisfactory job with a Bachelor's degree?" Five blank lines were provided.

Primer items. The second questionnaire repeated the preceding six graduate school and three job items, and presented two additional questions. One new item asked: "By now, how familiar are you with the Primer's contents?" A seven-interval bipolar scale had endpoints of 1 (*not at all familiar*) versus 7 (*very familiar*). The other item asked: "Regarding [the Primer], would you recommend that it should be required reading for new or prospective psychology majors?" A seven-interval bipolar scale had endpoints of 1 (*do not recommend*) versus 7 (*highly recommended*).

III. Results

A. Missing Data

All missing data were treated on a pair-wise basis, and are reflected in sample sizes and degrees of freedom. Substantial omissions occurred for IUPUI self-reported GPA. As indicated earlier, 98 of those participants were freshmen, and many had not yet earned a grade point average. Of the $IUPUI_f$ group, 57.1% omitted a personal GPA; the omission rate for the $IUPUI_o$ students was 9.8%. In contrast with the IUPUI samples, there were no missing own GPA entries at SU. However, at SU missing data occurred rather frequently on another dependent variable: highest degree sought (13.9%).

B. Highest Degree Sought

From the first questionnaire, of all the undergraduates who responded, 24.3% indicated a Bachelor's, 37.2% a Master's, and 38.5% a PhD as their highest degree sought. This trend was similar across the $IUPUI_f$, $IUPUI_o$, and SU student groups, $X^2(4, N = 288) = 7.83$, ns.

We examined the open-ended statements of the $IUPUI_f$ group to determine what occupations appealed to these initiates. Of the 73 freshmen that aspired to a Master's or PhD degree, 51 (69.9%) made reference to "psychology" (e.g., psychologist, counselor, private practice, behavioral scientist) and an additional 11 (15.1%) explicitly wrote in "psychiatry." Clearly, a majority of even this relatively naive cohort was drawn to advanced psychological training.

C. Primer Ratings

From the second questionnaire, the seven-interval scales that inquired directly about the Primer revealed reasonably high ratings from all groups. Regarding familiarity, for the 308 students with data the average score was 4.84 ($SD = 1.53$); 68.8% of these ratings were above the scale mathematical midpoint of 4.00. Regarding whether the Primer should be recommended reading, for the 306 students with data the average score was 5.93 ($SD = 1.23$); 86.3% of the ratings were above the scale midpoint.

Table 1: ***Scores for Graduate School and Job Items Before and After Intervention***

Item	Mean (S.D.)	Mean (S.D.)	n	$Change_{(C)}$	$F_{T1\text{-}T2}$	$R_{T1\text{-}T2}$	$R_{T1\text{-}C}$
Graduate School Aspirations							
1. Own interest in Graduate School	5.81 (1.47)	5.46 (1.68)	309	-0.35	28.46*	0.75*	-0.20*
2. Own chance for acceptance into grad school	64.35 (24.48)	48.23 (29.87)	300	-16.12	143.36*	+0.65*	-0.22*
3. Action to take for getting into grad school	3.01 (1.57	3.31 (1.49)	310	+0.30	14.55*	+0.59*	-0.50*
Grad School Perceptions							
11.Minimum GPA for psych grad school	3.31 (0.33)	3.45 (0.25)	308	+0.14	55.64*	+0.35*	-0.73*
2. Percent of applicants accepted	37.36 (24.11)	17.21 (18.99)	304	-20.14	195.93*	+0.34*	-0.70*
3. Percent of psych majors entering PhD programs	16.56 (12.34)	10.62 (7.76)	298	-5.94	57.17*	+0.14	-0.83*
Job Aspirations							
1. Importance of major that leads to job with BA/BS	5.19 (1.63)	5.31 (1.52)	307	+0.12	1.58	+0.35*	-0.61*
2, Interest in major as preparation for a job after undergrad	3.23 (1.19)	3.22 (1.21)	305	-0.01	0.92	+0.60*	-0.43*
3. Steps to take for getting satisfactory job with BA/BS	2.57 (1.42)	3.10 (1.47)	310	+0.53	37.82*	+0.43*	-0.51*

Note. The $F_{T1\text{-}T2}$ column shows the ANOVA main effect for the before-to-after repeated measure. The $r_{T1\text{-}T2}$ column shows the correlation between the before and the after scores, and the $r_{T1\text{-}C}$ column shows the correlation between the before and the change scores.

D. *Intervention Effects: Individual Item Change Scores*

To examine the generality of intervention effects regarding the nine items shown in Table 1, student groups were treated as three levels of a between-subjects independent variable. For these analyses, before (T1) and after (T2) questionnaire scores represented a two-level, within-subjects independent variable. Thus we employed nine separate 3 (X 2) ANOVAs, with repeated measures on the second factor. Because of the many comparisons we set alpha at .01 for the ANOVAs, and for all other statistical tests reported in the paper.

T1-T2 changes in aspirations and perceptions were of central interest to the project. Relevant means, standard deviations, and *F* ratios for changes are shown in Table 1. Significant shifts did occur on all six of the graduate school items, and on one of the three job items.

Also important were possible differential effects of the intervention (changes) across the three student groups. However, none of the nine analyses yielded a significant 3 (X 2) interaction. Individual *F*s ranged from 0.05 to 3.14 with degrees of freedom ranging from 2, 295 to 2, 307. Intervention effects were therefore comparable across all groups.

Of general interest were possible overall main effects of group membership among the $IUPUI_f$, $IUPUI_o$, and SU students. Significant group differences were found for two graduate school items, as described below.

E. Graduate School Aspirations Items

Own interest in graduate school. Table 1 shows that interest in graduate school was generally high both before (M = 5.81) and after the intervention (M = 5.46). There was, however, a significant main effect based on an average downward shift of -0.35 scale units, $F(1, 306) = 28.46$, $p < .01$. In terms of the 309 individuals, 29.5% of the students expressed less interest the second time, 12.0% expressed more interest, and 58.6% did not change their ratings from before to after.

Own chances for acceptance into graduate school. Table 1 shows a significant average drop in expressed own chances from before to after, $F(1, 297) = 143.36$, $p < .01$. Individually, 64.0% of the students expressed lower chances the second time, 13.0% expressed higher chances, and 23.0% did not change their estimates from before to after.

Actions to take for getting into graduate school. Table 1 shows a significant average increase in number of recommended actions from before to after, $F(2, 307) = 14.55$, $p < .01$. On an individual basis, 41.0% of the students named more actions the second time, 22.3% named fewer actions, and 36.8% did not change their numbers from before to after.

On this measure there was a main effect for student groups, $F(2, 307) = 7.21$, $p < .01$. The overall means for the $IUPUI_f$, $IUPUI_o$, and SU student groups were, respectively, 2.76 (SD = 1.44), 3.25 (SD = 1.34), and 3.46 (SD = 1.23). Post hoc LSD tests showed that the IUPUI freshmen recommended fewer actions compared with the other two groups.

F. Graduate School Perception Items

Minimum GPA for psychology graduate school. As shown in Table 1, there was a significant before-to-after average increase in estimates of the minimum GPA required for graduate school, $F(11, 305) = 54.64$,

$p < .01$. On an individual basis, 48.7% of the students indicated a higher estimate the second time, 18.5% lowered their estimate, and 32.8% did not change from before to after.

Percent of applicants admitted to graduate school. Based on this multiple-choice item, Table 1 shows a significant average T1-T2 drop in estimates of percent applicants admitted, $F(1, 305) = 195.93$, $p < .01$. Fully 50.7% of the students chose a lower estimate the second time, 4.3% chose a higher estimate, and 45.1% did not change their choice.

Because some individuals initially chose the lowest of the four response options ("2 were admitted [8%]"), technically they could not reduce their estimate due to the intervention. When these 108 students were set aside, 78.6% of the remainder chose a lower estimate the second time.

On this measure there was a main effect for student groups, $F(2, 301) = 7.91$, $p < .01$. The overall means for the $IUPUI_f$, $IUPUI_o$, and SU student groups were, respectively, 32.81 (SD = 18.08), 23.33 (SD = 17.09), and 26.22 (SD = 16.71). Post hoc LSD tests showed that the IUPUI freshmen made higher estimates compared with the other two groups.

Percent of psychology majors in PhD programs. Based on this multiple-choice item, Table 1 indicates a significant before-to-after average decrease in estimates, $F(1, 295) = 57.17$, $p < .01$. Individually, 43.0% of the students chose a lower estimate the second time, 18.8% chose a higher estimate, and 38.3% did not change their choice.

Because some individuals initially chose one of the two lowest response options ("5%" or "10%"), it is unlikely that they would reduce their estimate due to the intervention. When these 177 students were set aside, 85.1% of the remainder chose a lower estimate the second time.

G. Job Aspiration Items

For the first two job aspiration items in Table 1, there was neither a before-to-after shift nor a group main effect. For the third item--steps to take for getting a satisfactory job--there was a significant average T1-T2 increase in the number of recommendations listed, $F(1, 307) = 37.82$, $p < .01$. On this measure, 48.1% of the respondents listed more recommendations the second time, 22.9% listed fewer, and 29.0% did not change.

H. Item-Level Correlational Analyses

Associations between before (T1) and after (T2) scores. The two columns of correlations in Table 1 reveal associations between certain pairs of scores for each item. The first column, $r_{T1\text{-}T2}$, expresses the relationship of the before (T1) ratings to the after (T2) ratings. A significant positive coefficient indicates that, regardless of changes, level of response before was a fairly strong predictor of level of response after.

The first item in Table 1 provides an illustration of such association. We arranged the T1 interest-in-graduate-school scores trichotomously: low (1-3, n = 26), medium (4, n = 31), and high (5-7, n = 252). The T2 means for these groupings were, respectively, 2.50 (SD = 1.30), 3.94 (SD = 0.96), and 5.95 (SD = 1.32), which trend yields the tabled $r_{T1\text{-}T2}$ of .75 for this item.

All nine coefficients in the $r_{T1\text{-}T2}$ column are positive; eight are significant. This pattern indicates that, apart from reactions to the intervention, students showed a degree of consistency in their responses, which speaks to the reliability of the questionnaire items.

Associations between before (T1) and change (C) scores. The second column, $r_{T1\text{-}C}$, expresses the relationship of the before (T1) ratings to the amount of change (C) in individuals' ratings from before to after. A significant negative coefficient indicates that relatively high initial scores tended to anticipate downward shifts, and relatively low initial scores were often linked to upward shifts.

The fourth item in Table 1 provides an illustration of such shifting. We arranged the T1 minimum-GPA scores trichotomously: low (2.0-3.4, n = 162), medium (3.5, n = 89), and high (3.6-4.0, n = 58). The change (C) means for these groupings were, respectively, 0.33 (SD = 0.31), -0.01 (SD = 0.19), and -0.16 (SD = 0.23), which trend yields the tabled $r_{T1\text{-}C}$ of -.73 for this item.

All nine coefficients in the $r_{T1\text{-}C}$ column are negative and significant. This pattern indicates that in general the intervention had strongest effects on students with relatively extreme initial views.

Intervention vs. statistical regression. Of course, in the absence of a no-treatment control group the entries in the $r_{T1\text{-}C}$ column can also be taken to indicate the artifact of simple regression to the mean. But we believe otherwise. If regression to the mean were the only influence, then one would expect similar T1-T2 shifts across all measures. Instead, obtained net change scores for specific items differed in ways interpretable in terms of the intended effects of the intervention.

Clear differences in change-score profiles of selected measures can be demonstrated through an analysis of standardized scores. We chose the graduate school items of (a) own interest in-, (b) own chances for-, and (c) minimum GPA for- for a demonstration because the first two showed differing net negative shifting, and the third showed a net positive shift. To achieve standardization, a given negative change score was assigned a value of -1, a change score of zero was assigned a value of 0, and a positive change score was assigned a value of 1.

These standardized scores were entered in a 3 (X 3) ANOVA, with student group as the between-subjects factor, and item as the within-subjects factor. There was neither a main effect for student group, $F(2, 296) = 2.69$, ns; nor a group X item interaction, $F(4, 592) = 0.74$, ns. There was, however, a strong main effect for item, $F(2, 592) = 100.82$, $p < .01$. The mean standardized change scores for the three items in question were, respectively, -0.16 (SD = 0.62), -0.51 (SD = 0.72), and 0.30 (SD = 0.77). From this perspective, the intervention produced markedly different effects for particular measures.

I. Intervention Effects: Intercorrelations of Change Scores

The intervention evidently had an impact on students' views of graduate school. Beyond changes in particular aspirations and perceptions, we inquired about alignment among such measures. That is, were the observed changes coherent? For example, to what extent were changes in own chances for acceptance associated with changes in own interest in graduate school?

To address this issue we chose five pertinent items listed in Table 2. Item change scores for the three student groups were combined and entered in a 5 X 4 intercorrelation matrix. Specific positive or negative correlations would indicate coherence between changes on particular measures.

Four coefficients in Table 2, although weak, are statistically significant. In terms of perceptions, minimum-GPA change scores were negatively correlated with percent-accepted changes, which indicates that lowered percent-accepted estimates were associated with raised minimum-GPA estimates (and vice versa). Further, percent-accepted shifts were associated with similar shifts on the majors-in-PhD-programs measure.

In terms of aspirations, own-interest change scores were positively correlated with own-chances changes, which says that lowered or raised chances were generally associated with lowered or raised interest. Furthermore, own-chances change scores were positively correlated

with percent-accepted a change, which says that shifts in percent-accepted estimates were generally aligned with shifts in own chances.

Table 2: Intercorrelations of Change Scores for Selected Graduate School Items

Item	B	C	D	E
A: Own interest in	+0.26*	-0.06	+0.07	+0.03
B. Own chances for acceptance		-0.07	+0.16*	+0.06
C. Minimum GPA for			-0.25*	-0.03
D. Percent accepted				+0.22*
E. Percent of majors entering PhD programs				

Also noteworthy, we separately calculated correlations between self-reported own GPA, and the own-interest and own-chances change scores. But associations with own GPA *failed* to emerge for both the interest-in shifts, $r(242) = .08$, ns., and the own-chances pattern, $r(239) = -.03$, ns.

IV. Discussion

Many of the psychology students in our samples were surely in need of a career intervention. Based on first questionnaire responses, we judge that degree sought, and graduate school aspirations such as own interest in- and own chances for-, tended to be too high. In a complementary fashion, perceptions of barriers to admission, such as prerequisite GPA and acceptance rates, tended to be too low. It is difficult to say precisely why psychology student expectations about graduate school would generally be so optimistic. Certainly, though, such enthusiasts could benefit from convenient access to brief career interventions found in textbook appendixes, web sites, primers, or elsewhere.

Table 1 indicates downward before-to-after shifts in students' aspirations as reflected by measures of own interest in-, and own chances for graduate school. Upward shifts occurred in students' perceptions of minimum GPA for-, and percent of applicants accepted to graduate school. On the whole, these findings agree with our prediction that following exposure to the Primer, students' average views would shift in a conservative direction. It is worth noting that certain shifts in our students' graduate school expectations are at least in agreement with short-course, intervention-based attitudinal patterns found earlier (Dillinger & Landrum, 2002). For example, in the Dillinger-Landrum study students showed marked positive shifts on an item that read "I know the information necessary to apply for graduate programs in psychology." In the current study, following the intervention, students offered more actions to take for entry to graduate school.

Otherwise, Table 1 indicates that the primer had little impact on the first two employment aspiration measures, but at least on the third measure there was an average increase in offerings of steps to take to get a satisfactory job with a Bachelor's degree.

We note in the literature that some psychology career interventions were aimed at freshmen (e.g., Dillinger & Landrum, 2002) whereas others were tailored to more advanced students (e.g., Buskist, 1999; Dodson, Chastain, & Landrum, 1996). Indeed, our Method section

reports that the SU PSY400 course was closed to freshmen. But if there is controversy as to when to best orient or advise students on careers, the data from IUPUI can help put it to rest.

The freshmen students at IUPUI, like their more advanced counterparts, were in need of advice. To review, about 77% of the $IUPUI_f$ group planned for a postgraduate degree, put their personal chances for admission to graduate school at 68%, and gave the highest estimate (44%) of applicants accepted. At the same time, as a group they offered the fewest number of actions to take for admission to graduate school. Taken together, these patterns indicate that views of life beyond a baccalaureate can be in place early in a college career, and therefore warrant early intervention.

Table 2 suggests some coherence in changes in students' views of graduate school. But strong associations did not emerge, and own GPA proved to be a very poor predictor of such change scores. If this is a problem, the fault may lie with the information presented (or not) in the current Primer. Our Primer contained many specific facts about the plusses and minuses of both graduate school and having a job with a baccalaureate. But it did not speak much about how to understand or calculate the tradeoffs or balances between the two diverging career paths. Further, it did not dwell on how students might actively integrate the various facts about careers with their own potentials and limitations. Further still, it did not take into account the before-to-after stability of, for example, personal aspirations (the $r_{T1\text{-}T2}$ column in Table 1). Future primer and appendix writers, web site creators, and short course instructors might do well to view students' career expectations as resistant attitudes, and to design their messages as persuasive communications rather than mere informational packages. One useful response to this list of issues might be to include a decision-tree exercise in brief career interventions (see Poe, 1988).

Of course, the importance of professional, face-to-face, extended career advising is not at issue; our compact orientation package was never meant to replace personalized advice. The weak associations among changes found in Table 2 remind us that students may well need a counselor's expertise to integrate the sheer facts and figures of career planning (cf. Davidson, 2001; Johnston, Buescher, & Heppner, 1988). However, handy resources such as the Primer might get students to begin to think more clearly about matters, and provide a stimulus for seeking additional counseling.

As seen, most students recommended the Primer to their peers. Regarding our professional recommendations, to the extent that the results of this Primer project resemble consequences for other streamlined counseling approaches, we borrow assessment terminology from the financial pages: A brief career intervention represents a relatively small investment that can yield a modest but welcome return. These vehicles are worth inclusion in an advisor's portfolio.

Finally, to reiterate comments from the Introduction, psychology majors share many career challenges with their counterparts in liberal arts. Therefore, we believe the issues, procedures, and findings in this paper have utility for advisors in several disciplines. Our brief psychology career intervention can serve as a model for research and advising in other non-preprofessional undergraduate programs.

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