

Style Over Substance Reconsidered: Intrusive Intervention and At-Risk Students with Learning Disabilities

Robert Abelman, Cleveland State University

Anthony Molina, Cleveland State University

In two recent publications, we reported that the academic intervention process, not the specific intervention content, was responsible for a short- and long-term influx in at-risk student performance (grade-point average) and persistence (retention). All at-risk students who participated in the most intrusive of three interventions had higher cumulative grade-point averages and retention rates than those who received less intrusive interventions. In this post hoc analysis, we looked at probationary students with learning disabilities and found that they are only responsive to the individual attention and personalized accommodation provided under a highly intrusive model, and the impact is temporary.

KEY WORDS: academic probation, advising approaches, intrusive advising, learning disabilities, retention

Intrusive, developmentally based advising is often difficult, time-consuming, labor-intensive, and more costly to implement than less intrusive prescriptive strategies (Garing, 1992; Jeschke, Johnson, & Williams, 2001). Nonetheless, its overall efficacy and effectiveness has been well documented in recent years (Grites & Gordon, 2000; Kirk-Kuwaye & Nishida, 2001; Miller & Alberts, 1994; Upcraft & Stephens, 2000). While many practitioners and researchers have advocated one functional application over another (e.g., Hyers & Joslin, 1998; Ruddock, Hanson, & Moss, 1999), we found that when substance was held constant, “The manner in which information is relayed has a significant impact on the performance and persistence of academically at-risk students” (Molina & Abelman, 2000, p. 13). Indeed, the more intrusive the intervention, the greater the immediate and longitudinal impact on student grade-point averages (GPAs) and retention rates (Abelman & Molina, 2001).

For at-risk students with learning disabilities, the outcome of intrusive academic advising may be significantly different than it is for students classified as at risk but without an identified learning disability. Students with learning disabilities represent a sizable group of individuals who “deal with certain kinds of information differently”

(Hammill & Bryant, 1998, p. 7) that leads directly to difficulties in listening, reading, writing, reasoning, or other academic areas. If these processing deficits and disorders go undetected, or if accommodations are not provided in the classroom and advising office, these students are likely to be at great risk of academic difficulty and subsequent dismissal (Lock & Layton, 2001; Mastropieri & Scruggs, 2000). Adequate accommodations are required under the Americans with Disabilities Act (1990) and Section 504 of the Individuals with Disabilities Act of 1997 (Thomas, 2000). However, according to Vallecorsa, deBettencourt, and Zigmond (2000, p. 195): “Providing *appropriate* [italics added] accommodations for students with disabilities entails much more than simply selecting from a list of suggested various adaptations. It requires planning, assessment of the student’s ability and skills, and consideration of resources.”

While most colleges and universities provide reasonable classroom assistance in the form of shortened assignments, extended time for exams, and technological support (Hurst & Smerdon, 2001; Lock & Layton, 2002), there is little evidence that appropriate planning and delegation of advising resources occurs. In particular, academic advising offices are rarely considered to be instrumental or fundamental in meeting the student-specific accommodation needs of students with learning disabilities (Finn, 1999; Norton, 1997). Lock and Layton (2001) noted that academic advisors have little say in the initial decisions concerning accommodations as formulated by the personnel of administrative offices responsible for special student services and are rarely involved in or kept in the loop on implementation strategies or follow-up with the faculty. Typically, students with learning disabilities who are placed on academic probation and are at risk of dismissal are subjected to the same academic policies and advising protocols and are provided the same academic interventions as the general at-risk student population (Finn, 1999; Hurst & Smerdon, 2000). This is true regardless of whether the institution is a 2-year college, liberal arts college, comprehensive college/university, or research university (Lynch & Stucky, 2001). Such was the case with the students who participated in our previous studies: Abelman

and Molina (2001) and Molina and Abelman (2000).

Although nothing in the special education literature suggests that this practice is problematic, it is certainly not in keeping with Vallecorsa et al.'s (2000) recommendation that “*appropriate accommodations*” be provided for students with learning disabilities. Similarly, in the case of intrusive advising strategies, the authors of recent literature do not indicate whether more intrusive interventions will have a different short- or long-term impact on the academic performances and persistence rates of students with learning disabilities than they do on other academically at-risk students. To expand the scope of our earlier studies, we addressed the following research questions (RQs):

RQ1: Will at-risk students with learning disabilities respond differently to interventions of varying degrees of intrusiveness, in terms of short- and long-term GPA/academic performance, when compared to at-risk students without learning disabilities?

RQ2: Will at-risk students with learning disabilities respond differently to interventions of varying degrees of intrusiveness, in terms of short- and long-term retention rates/academic persistence, when compared to at-risk students without learning disabilities?

Probationary students at different levels of risk of academic dismissal are not equally responsive to interventions in general (Fielstein & Bush, 1998; Geradi, 1990) or intrusive interventions in particular (Austin, Cherney, Crowner, & Hill, 1997). However, because we found that students in the most severe state of academic risk were “consistently and significantly more responsive to fully intrusive intervention” (Abelman & Molina, 2001, p. 37), the following RQ is also raised:

RQ3: Will students with learning disabilities at the highest degree of academic risk respond differently to the more intrusive form of intervention, in terms of short- and long-term GPA/academic performance and retention rates/academic persistence, when compared to at-risk students without learning disabilities?

Methods

Participants

The research study was conducted at a mid-western, open-enrollment, urban university with a total student population of approximately 17,000. A sample of 210 probationary students was randomly selected from the population of 500 students in the College of Arts and Sciences who were subject to academic probation at the end of the fall semester 1998 (approximately 10% of the college population). No designation of learning disability was provided by any administrative office, but a post hoc analysis of the sample revealed that 18% ($n = 38$) of the sample was classified as “learning disabled” (LD) by and receiving special services from personnel at the Office of Disabled Student Services.

Students are placed on academic probation if their term or cumulative GPA falls below a 2.00 (on a 4.00 scale).¹ A student may be placed on one of two levels of probation. A student on “may result” probation is at minimal risk of dismissal and is informed that failure to achieve a specified GPA (calculated from credit earned) in the subsequent term may result in dismissal. Typically, students who receive this warning are new to probationary status. Students who receive “will result” probation notices are at maximum risk of dismissal and failure to achieve a specified GPA (calculated from credit earned) in the subsequent term will result in their automatic dismissal. May-result students are subsequently placed on will-result status if they fail to achieve the specified GPA; will-result students are subsequently returned to may-result status if they achieve the specified GPA and will remain on probation until their cumulative GPA reaches 2.00.

For this investigation, may-result ($n = 105$; LD = 17) and will-result ($n = 105$; LD = 21) sophomore and junior students were selected, with 35 of each randomly chosen for the nonintrusive, moderately intrusive, and fully intrusive interventions. A breakdown of the student sample for each level of intervention can be found in Table 1. Approximately 54% of the overall undergraduate student population of the institution is female and the average age is 28 years, and approximately 3% have been identified as having learning disabilities requiring special student services.

¹ As with many other state institutions, the university under study has recently firmed up its student retention standards such that many of the poorest performing students employed in this investigation would have been automatically dismissed. Thus, this investigation provides a unique and increasingly rare opportunity to explore the longitudinal impact of intrusive intervention for the most at-risk student populations.

Table 1 Characteristics of sample population

Characteristic	Nonintrusion Participants	Moderate Intrusion Participants	Full Intrusion Participants
Participants	70	70	70
Gender	56% female	49% female	52% female
Average age	25.2 (<i>SD</i> = 3.7)	26.9 (<i>SD</i> = 4.1)	25.8 (<i>SD</i> = 4.4)
Diagnosed with learning disability	15.71% (<i>n</i> = 11)	14.29% (<i>n</i> = 10)	24.29% (<i>n</i> = 17)
May-result status	<i>n</i> = 35; LD = 6	<i>n</i> = 35; LD = 5	<i>n</i> = 35; LD = 6
Will-result status	<i>n</i> = 35; LD = 5	<i>n</i> = 35; LD = 5	<i>n</i> = 35; LD = 11

Measures

Mean GPA. The cumulative GPA for each student was calculated by the University Registrar. The mean sample GPAs for fall semester 1998 and subsequent terms up to and including fall semester 2001 were obtained and employed as the pre- and postintervention performance criteria. GPAs of students who did not return to the university after spring 1999 due to graduation (*n* = 2, nonintrusive group; *n* = 9, moderately intrusive group; *n* = 7, fully intrusive group) were removed from the analysis. The low graduation rate during this time frame was the result of the lower class standing of the majority of the sample, slow accumulation of earned credit hours (failed or incomplete courses), and fewer attempted credit hours per term by choice, administrative mandate, or design of the academic intervention. In addition, to graduate, students must surpass a 2.00 cumulative GPA; however, the students participating in our study have low GPAs and must earn more credits than the average student to qualify for graduation.

Retention rate. We calculated the groups' mean retention rates for each term, from spring semester 1999 through fall semester 2001, and measured students' continued enrollment from one term to the next. Students who were academically dismissed (*n* = 5, nonintrusive group; *n* = 1, moderately intrusive group; *n* = 3, fully intrusive group) or graduated were factored out of retention rate analyses so that the data reflect only eligible students. Comparisons were made within probationary status groups and across assignment to intervention strategies.

Research questions that we used to explore the relationship between the interventions and academic performance and persistence were examined using a correlated *t* test and chi-square test of marginal homogeneity. In addition, to assess main effects and interactions not directly testable by the *t*-test and chi-square methods, the Grizzle, Starmer, and Koch (GSK) (1969) approach was employed on all data. GSK analysis is a procedure for fitting categorical data, such as GPA, into linear models. It allows for the exploration of underlying parameters

that are incorporated into, but frequently obscured by, the overall chi-square analysis. Unlike a multiple regression or analysis of variance approach, the GSK method of analysis does not allow for analysis of the variances of individual responses. Rather, the GSK procedure is used to apply the method of weighted least squares to the probabilities obtained from the traditional cross-classification matrix. This approach has the potential to explain the main effects and interactions of specific probabilities rather than merely describe the variance of a dependent variable (Johnson & Koch, 1970; Reynolds, 1977). All significance tests were conducted with alpha set at 0.05.

The Interventions

At the end of fall semester 1998, students in each category of probation were randomly assigned to one of three intervention strategies that incorporated controlled content but employed a divergent style of presentation.

Nonintrusive Group

The students that were in the nonintrusive group received a letter from the Academic Advising Office informing them of their probationary status and the minimum GPA that must be achieved in their next term of enrollment (based on earned credit to date). The letter identified various student service resources at the university that were available to the students, such as the Writing Center, the Math Tutoring Center, advising services within their major, and the Counseling Center. The letter also included a brief report of the student's academic standing, progress toward graduation, outstanding requirements that required immediate attention, and recommendations on actions that needed to be taken. Consistent with the existing policies of the Arts and Sciences Advising Office, no other intervention was undertaken with the student. Consistent with nonintrusive intervention strategies, no effort was made to generate student responsibility for problem solving or the identification of resolvable causes of academic probation.

Moderate Intrusion Group

The students who were selected to receive a moderate academic intervention were also sent the Academic Advising Office letter that informed them of their status. However, within 3 days of receipt, the letter was followed by a phone call from the Coordinator of Academic Advising, who reviewed the letter with the student. In addition to identifying student service resources at the university, the advisor had each student identify those resources most relevant to his or her academic problems and develop a plan of action. The brief reports of the student's academic standing, progress toward graduation, outstanding requirements, and individual course responsibilities were reviewed, and the student was queried with regard to her or his actions to maintain satisfactory academic progress. In the course of the conversation, the student was asked a series of questions intended to identify internal and external factors potentially impacting academic performance (Kelley, 1996; Weiner, 1985). The conducted phone calls lasted, on average, for 20 minutes.

Full Intrusion Group

Within the customary letter received by the students who received fully intrusive treatment was notification that the recipient was required to meet with the Coordinator of Academic Advising for an "academic interview to discuss your probation." This letter was followed by a phone call to the student from the Coordinator of Academic Advising for the purpose of scheduling an appointment. The student was made to understand that the interview was largely a self-assessment of academic performance, and based on this self-assessment, he or she and the Coordinator would develop a strategy that would lead to the return to good academic standing.

The 30–40 minute interview began with a review of the letter. The student identified those resources most relevant to her or his academic problems, developed a plan of action, and appointments with counselors and tutors were formalized as part of a written contract. The brief reports of the student's academic performance and progress were reviewed and the student and advisor negotiated a strategy for maintaining satisfactory academic progress.

To arrive at a set of expectations that would lead to improved academic performance, the advisor and advisee negotiated the contingencies of reinforcement. For example, if the student and advisor mutually agreed that the student's poor academic performance could properly be attributed to a failure to attend classes and read assignments,

reinforcement (improved academic performance) was clearly seen to be contingent upon the student regularly attending classes and reading assignments. Once the contingencies of reinforcement were agreed upon, they were articulated in an academic success contract. Both the advisee and the advisor signed the contract; a copy was given to the student, and a copy was retained in the Advising Office.

Results

In RQ1, we asked whether at-risk students with learning disabilities will respond differently to interventions of varying degrees of intrusiveness, in terms of short- and long-term GPA/academic performance, when compared to at-risk students without learning disabilities. Findings pertinent to this question are summarized in Figures 1 and 2 and described below.

Academic Performance—Short-Term Yield

At-risk students without learning disabilities who received a fully intrusive intervention had a cumulative mean GPA of 1.49 at the start of the intervention (end of fall semester 1998) and a 1.56 at the end of the following term (spring semester 1999), which is short-term increase of 4.49%. Students with learning disabilities had a cumulative mean GPA of 1.47 at the time of the fully intrusive intervention and a 1.58 at the end of the following term, which is short-term increase of 6.96% (see Figure 1). By comparison, students without learning disabilities who received a moderately intrusive or nonintrusive intervention generated less impressive short-term increases in GPA, 2.40% (1.63–1.67) and 4.43% (1.51–1.58) respectively. Students with learning disabilities who received a moderately intrusive or nonintrusive intervention generated short-term decreases in GPA, –1.23% (1.65–1.63) and –0.66% (1.53–1.52) respectively (see Figure 2). These results suggest that, while the general at-risk student population responded positively to all forms of intervention in the short-term and were particularly responsive to the fully intrusive intervention, students with learning disabilities only responded to the fully intrusive intervention and were more responsive than were their counterparts who did not have identified learning disabilities.

Academic Performance—Long-Term Yield

Three years later, at the end of fall semester 2001, the cumulative mean GPAs of students without learning disabilities and students with learning disabilities in the fully intrusive intervention were

Figure 1 GPAs over time by students without learning disabilities and by intervention

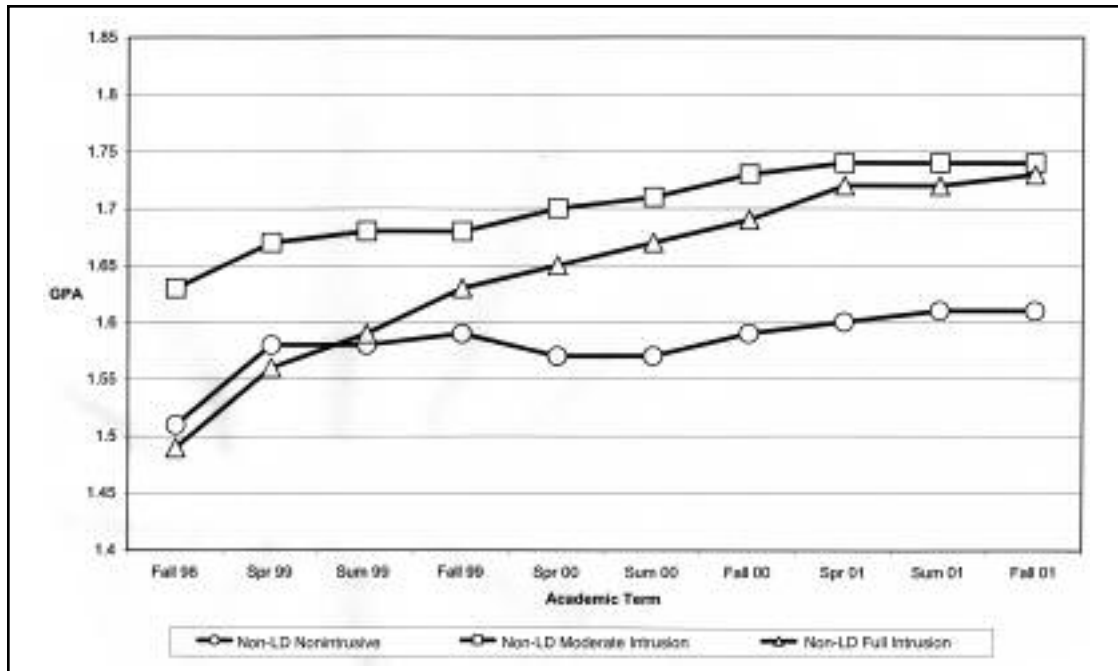
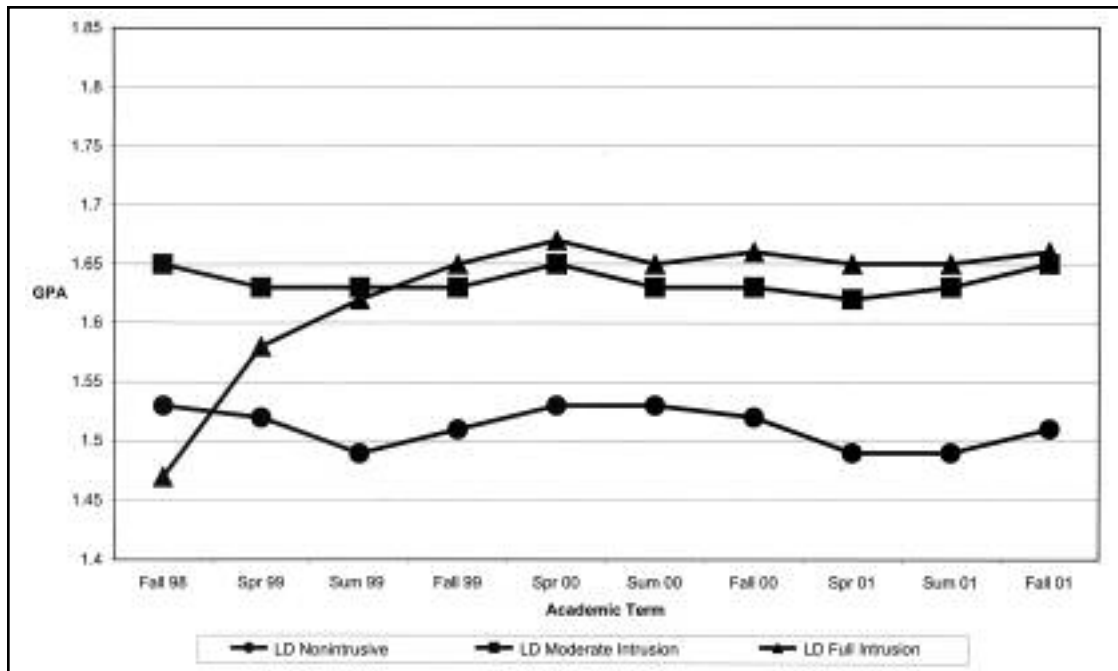


Figure 2 GPAs over time by students with learning disabilities and by intervention



1.73 and 1.66, respectively. For the students without learning disabilities, these data reflect a statistically significant increase ($t = 4.73$, $df = 35$, $p < 0.01$) of 13.87% from the term immediately prior to the intervention (fall semester 1998) and an increase of 9.83% from the term immediately following the intervention (spring semester 1999). The long-term improvement in GPA among students with learning disabilities is less significant ($t = 2.45$, $df = 12$, $p < 0.05$) in comparison to the fall semester 2001 GPA: We found an 11.45% increase from the term immediately prior to the intervention and a 4.82% increase from the term immediately following the intervention.

These findings are in contrast to the long-term improvement in GPA among students without learning disabilities assigned to the moderately intrusive intervention (1.74 GPA, a 6.32% increase from pre-intervention levels; 4.03% increase from postintervention measures) and those assigned to the nonintrusive intervention (1.61 GPA, a 6.21% increase from pre-intervention levels; 1.86% increase from immediate postintervention measures). For students with learning disabilities, the long-term impact of moderately intrusive (1.65 GPA, a 0.00% increase from pre-intervention levels; 1.22% increase from postintervention measures) and nonintrusive interventions (1.51 GPA, a -1.32% decrease from pre-intervention levels; -0.66% decrease from postintervention measures) was less dramatic.

The results suggest that for the general at-risk student population the most intrusive form of the

intervention produced a higher cumulative GPA over time when compared to interventions that were less intrusive. All forms of intervention were effective in the long-term, but the more intrusive the intervention the greater the impact on academic performance as measured by GPA. Although at-risk students with learning disabilities demonstrated an improved academic performance in the long-term if they participated in the fully intrusive intervention, the long-term yield was less profound when compared with short-term increases. In addition, the long-term impact of the moderate and nonintrusive interventions proved to be inconsequential. For both samples of students, mean GPAs were not significantly different between males and females, sophomores and juniors, or across age levels in any of the interventions.

Through RQ2 we asked whether at-risk students with learning disabilities will respond differently to interventions of varying degrees of intrusiveness, in terms of short- and long-term retention/academic persistence, when compared to at-risk students without learning disabilities. Findings pertinent to this question are reported in Tables 2 and 3.

Academic Persistence—Short-Term Yield

Retention rates were highly variable across type of intervention and student classification. A chi-square analysis reveals these differences to be statistically significant: $\chi^2(3, N = 183) = 25.43$, $p < 0.0001$). Immediate postintervention retention was dependent on whether the student participated

Table 2 Postintervention retention rates (%) for students without learning disabilities

Group	Spring 1999	Fall 1999	Spring 2000	Fall 2000	Spring 2001	Fall 2001
Nonintrusive ($n = 53$)	57 _{bc}	39 _b	35 _b	28 _b	22 _{bc}	18 _b
Moderate ($n = 50$)	68 _{ac}	42 _a	36 _a	29 _a	33 _{ac}	23 _a
Full ($n = 45$)	81 _{ab}	68 _{ab}	64 _{ab}	53 _{ab}	47 _{ab}	39 _{ab}

Notes. Results with “a” or “b” subscript in common differ significantly within term cells at $p < 0.001$.

Results with “c” or “d” subscript in common differ significantly within term cells at $p < 0.01$.

Table 3 Postintervention retention rates (%) for students with learning disabilities

Group	Spring 1999	Fall 1999	Spring 2000	Fall 2000	Spring 2001	Fall 2001
Nonintrusive ($n = 10$)	58 _b	37 _b	29 _d	24	19	14
Moderate ($n = 10$)	60 _a	37 _a	27 _c	24	28	16
Full ($n = 15$)	86 _{ab}	59 _{ab}	43 _{cd}	32	28	22

Notes. Results with “a” or “b” subscript in common differ significantly within term cells at $p < 0.01$.

Results with “c” or “d” subscript in common differ significantly within term cells at $p < 0.01$.

in an intervention that was fully intrusive (81% for non-LD; 86% for LD), moderately intrusive (68% for non-LD; 60% for LD), or nonintrusive (57% for non-LD; 58% for LD). As a point of comparison, note that approximately 68% of students who were not subject to probation at the end of fall semester 1998 returned the following term, a rate exceeded only by students in the fully intrusive group.

For students without learning disabilities (see Table 2),² GSK analyses suggest that the spring semester 1999 retention rate was significantly higher for those participating in the fully intrusive intervention than for those participating in the moderately intrusive, $\chi^2(1) = 8.42, p < 0.01$, and non-intrusive, $\chi^2(1) = 28.37, p < 0.001$, interventions. When we compared students participating in moderately intrusive and nonintrusive interventions, we found a significant difference in retention: $\chi^2(1) = 19.44, p < 0.001$. For students with learning disabilities, however, differences in spring semester 1999 retention rates were not significant between those participating in the moderately intrusive and nonintrusive interventions. Only differences between these students and those participating in the fully intrusive intervention, $\chi^2(1) = 8.21, p < 0.001$ and $\chi^2(1) = 29.54, p < 0.001$, respectively, were significant (see Table 3).

Academic Persistence—Long-Term Yield

For students without learning disabilities (see Table 2), findings from the longitudinal analysis suggest that persistence is significantly different across intervention grouping, $\chi^2(5, N = 148) = 21.23, p < 0.0001$. In particular, the more specific GSK analysis suggests that the fall semester 2001 retention rate was significantly higher for at-risk students without learning disabilities participating in the fully intrusive intervention than for those participating in the moderately intrusive, $\chi^2(1) = 12.22, p < 0.001$, and nonintrusive, $\chi^2(1) = 14.35, p < 0.001$, interventions. For students with learning disabilities (see Table 3), the longitudinal analysis also reveals that persistence is significantly different across intervention grouping, $\chi^2(5, N = 35) = 17.21, p < 0.001$. Interestingly, GSK analyses reveal that the longitudinal impact of the fully intrusive intervention, when compared to the moderately intrusive intervention, persists through fall semester 1999, $\chi^2(1) = 19.47, p < 0.001$, and spring semester 2000, $\chi^2(1) = 10.54, p < 0.01$, but then wanes into nonsignificance thereafter.

When comparing students with learning disabilities and students without disabilities in the fully intrusive intervention (see Tables 2 and 3), we found no significant differences in retention rates during the spring semester 1999 and subsequent fall semester 1999, but over time, the differences become significant (spring semester 2000, $\chi^2(1) = 16.45, p < 0.001$; fall semester 2000, $\chi^2(1) = 15.57, p < 0.001$; spring semester 2001, $\chi^2(1) = 10.76, p < 0.001$; fall semester 2001, $\chi^2(1) = 10.23, p < 0.001$).

These findings support previous research that suggests that the most intrusive form of the intervention results in higher retention for at-risk students, over time, when compared to interventions that were less intrusive. Indeed, for the general at-risk student population, the more intrusive the intervention, the higher the retention rate immediately and 3 years after the intervention. For students with learning disabilities, only the fully intrusive intervention resulted in high retention rates compared with other interventions. However, these results were short-term; that is, divergent retention rates across students with learning disabilities in all three conditions became increasingly similar. Although retention rates dropped significantly (13–27%) for all groups in the fall semester following the intervention and continued to drop in subsequent terms, the decreases were relatively proportional each term and the differences between the rates of change were found to be statistically insignificant. For both samples of students, retention rates were not significantly different between males and females, sophomores and juniors, or across age levels in any of the interventions.

In RQ3 we addressed the issue of long-term responsiveness to intrusive intervention by students at different levels of academic probation. We asked whether students with learning disabilities at the highest degree of academic risk respond differently to the more intrusive forms of intervention, in terms of short- and long-term GPA/academic performance and retention rates/academic persistence, when compared to at-risk students without learning disabilities. Findings pertinent to this question are summarized in Figures 3 and 4.

Academic Performance by Probationary Status

Regarding the GPA of less at-risk may-result students, students without learning disabilities who participated in the fully intrusive intervention (see Figure 3) had a pre-intervention cumulative mean

² Because summer semester enrollment is typically perceived as optional for many students, the analysis only includes fall semester and spring semester enrollment forms.

Figure 3 GPA over time by student classification and full-intrusion intervention

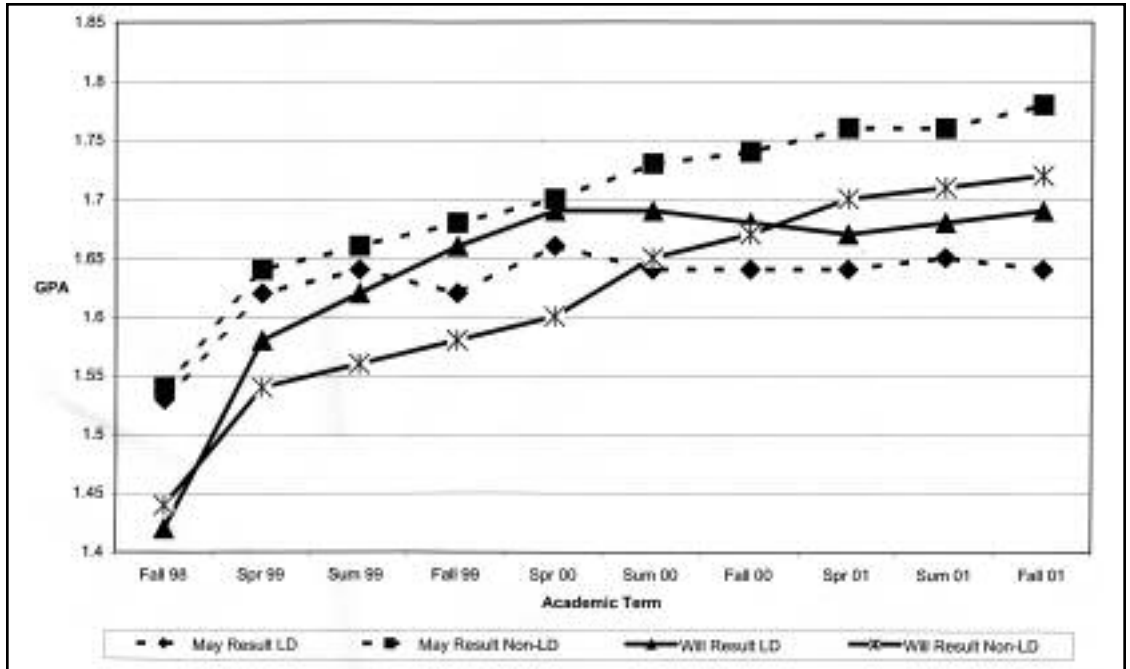
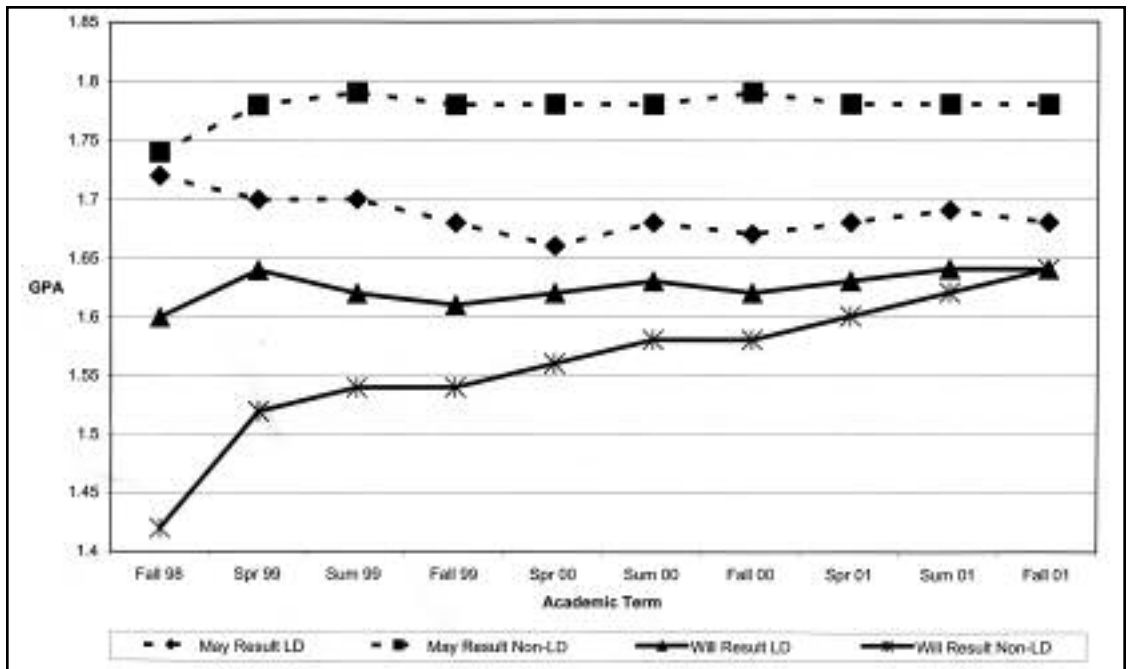


Figure 4 GPA over time by student classification and moderate-intrusion intervention



GPA of 1.54, and by fall semester 2001, a GPA of 1.78. This is an increase of 13.48%. In contrast, the more at-risk will-result participants without learning disabilities had pre-intervention and fall semester 2001 cumulative mean GPAs of 1.44 and 1.72, respectively, which is an increase of 16.28%. We performed a *t* test to examine these differences in long-term performances between may-result and will-result students without learning disabilities in the fully intrusive interventions; we found that the differences between cohorts were statistically significant ($t = 3.78$, $df = 12$, $p < 0.001$).

Regarding students with learning disabilities, the GPA of those who were may-result classified and participated in the fully intrusive intervention had a pre-intervention cumulative mean GPA of 1.53 and by fall semester 2001, a GPA of 1.64. This is an increase of 6.71%. In contrast, the more at-risk will-result participants with learning disabilities had pre-intervention and fall semester 2001 cumulative mean GPAs of 1.42 and 1.69, respectively, which is an increase of 15.98%. We performed a *t* test to examine these differences in long-term performance between may-result and will-result students with learning disabilities in the fully intrusive interventions; we found that the differences between cohorts were statistically significant ($t = 18.32$, $df = 12$, $p < 0.001$).

For may-result students without learning disabilities participating in the moderately intrusive intervention (see Figure 4), their pre-intervention cumulative mean GPA was 1.74, and by fall semester 2001, their cumulative GPA was 1.78. This is an increase of 2.25%. The will-result students without learning disabilities had pre-intervention and fall semester 2001 cumulative mean GPAs of 1.42 and 1.64, respectively, which is an increase of 13.41%. The differences in long-term performance of these students were statistically significant: ($t = 3.54$, $df = 12$, $p < 0.001$). For may-

result students with learning disabilities participating in the moderately intrusive intervention, their pre-intervention cumulative mean GPA was 1.72, and by fall semester 2001, their cumulative GPA was 1.68. This is a decrease of -2.38%. The will-result students with learning disabilities had pre-intervention and fall semester 2001 cumulative mean GPAs of 1.60 and 1.64, respectively, which is an increase of 2.43%. The differences in long-term performance of these students were not statistically significant.

Academic Persistence by Probationary Status

May-result and will-result students' short-term (spring semester 1999), mid-range (fall semester 2000), and long-term (fall semester 2001) retention rates are presented in Table 4. For the students without learning disabilities, the fully intrusive intervention generated consistently higher retention rates across time for both may-result, $\chi^2(2, N = 95) = 5.32$, $p < 0.0354$, and will-result, $\chi^2(2, N = 95) = 12.21$, $p < 0.001$, students when compared to the moderately intrusive intervention. GSK analyses of the data from the fully intrusive intervention bring to light several interesting differences. In particular, will-result student retention was significantly higher than may-result student retention in the short- (86 and 75%, respectively; $\chi^2(1) = 9.33$, $p < 0.001$) and mid-range terms (63 and 43%, respectively; $\chi^2(1) = 12.81$, $p < 0.001$), but not over the long-term. It is interesting that may-result students without learning disabilities were more responsive than will-result students to the moderately intrusive intervention, but only for the short-term (69 and 59%, respectively; $\chi^2(1) = 8.98$, $p < 0.001$).

For the students with learning disabilities, the fully intrusive intervention generated slightly higher retention rates across time for both may-result, $\chi^2(2, N = 25) = 5.09$, $p < 0.0475$, and will-result, $\chi^2(2, N = 25) = 4.43$, $p < 0.056$, students when

Table 4 Retention rates by probationary status (%)

Group	May Result			Will Result		
	Spring 1999	Fall 2000	Fall 2001	Spring 1999	Fall 2000	Fall 2001
Moderate						
LD ($n = 10$)	62	25	17	56	30	16
Non-LD ($n = 50$)	69 _c	27	25	59 _c	32	24
Full						
LD ($n = 17$)	80 _d	32	24	92 _d	34	20
Non-LD ($n = 45$)	75 _a	43 _b	38	86 _a	63 _b	41

Note. Results with common subscript letters differ significantly across may-result and will-result term cells at $p < 0.001$.

compared to the moderately intrusive intervention. GSK analyses of the data bring to light several interesting differences. For the fully intrusive intervention, will-result student retention was significantly higher than may-result student retention in the short-term only (92 and 80%, respectively; $\chi^2(1) = 14.08, p < 0.001$).

Findings suggest that students at the highest degree of academic risk are the most responsive, in terms of GPA and retention rate over time, to the more intrusive form of intervention. For the general at-risk student population, will-result students were consistently and significantly more responsive to the fully intrusive intervention than the moderately intrusive intervention in terms of retention and GPA. It should be noted, however, that the moderately intrusive intervention generated positive and long-term results. It is interesting that will-result students with learning disabilities were highly responsive to the fully intrusive intervention, but improvements in GPA and retention were short-term. Although may-result students with learning disabilities were also responsive to the fully intrusive intervention in the short-term, the results were less significant and as equally short-term as they were for will-result students.

Discussion

Laff (1994) suggested that if academic advisors are to implement developmental advising strategies as a practical technique for promoting student learning and development, then they must have a concrete tool that can facilitate the developmental advising process. Numerous investigators over the past decade have verified this statement by assessing the efficiency of an array of methodologies and programs. This study suggests that one tool is not necessarily sufficient for addressing the many needs of a diverse at-risk student population.

Even when levels of intrusiveness are manipulated, which according to Earl (1988) give a wide range of students the ability to self-refer and assume responsibility for their academic performances, some students do not benefit. In this investigation, the most intrusive intervention produced higher cumulative GPAs and retention rates for all at-risk students, and most dramatically, for the more at-risk will-result students. In addition, all levels of intrusiveness were found to be effective for the general at-risk student population. However, students with learning disabilities were *only* responsive (albeit *highly* responsive) to the individual attention and personalized accommodation provided under a highly intrusive model. Furthermore, the impact of

this intervention was temporary in terms of both GPA and retention; it dissipated after several terms.

These findings reinforce the Vallecorsa et al. (2000) observation that providing appropriate accommodations for students with disabilities entails much more than simply selecting from a list of suggested adaptations. It requires planning and an assessment of the student's ability and skills. Indeed, effective academic advising and intervention for at-risk students with learning disabilities requires adjusting proven methodologies to accommodate the needs specific to intrinsic processing deficits. This investigation suggests that the components found in the more intrusive intervention—personal contact, the generation of student responsibility for problem solving and decision making, assisting the student in identifying resolvable causes of poor academic performance, and offering negotiated agreements for future actions—can be used as a good starting point. It also suggests that one-time interventions may prove to be effective for the general at-risk student population, but it is inadequate for maintaining the academic performance and persistence of students with learning disabilities.

It should be noted that the one-time nature of this intervention may very well have served as a contaminant in this longitudinal study (see Schultz, Dickman, Campbell, & Snow, 1992). Once the academic intervention concluded, no tracking of subsequent advising sessions was undertaken, and modifications in course load, tutoring, or counseling that might have facilitated academic performance and fostered retention went unnoted. Similarly, because we were blind to the inclusion of students with learning disabilities in the sample at the time of the intervention, we did not account for students' employment of other student services. We cannot determine whether postintervention activities or the one-time intervention had the greatest impact, particularly when comparing may-result and will-result students. However, students with learning disabilities who are placed on academic probation are typically subjected to the same advising protocols as other at-risk students and provided few additional resources (Finn, 1999; Hurst & Smerdon, 2000; Lynch & Stucky, 2001). Indeed, one could argue that any additional advising activities were inspired by intrusion and were a normative residual effect of developmental intervention.

One noteworthy limitation of this investigation was the small sample size of students with learning disabilities, the result of post hoc exploration of an existing data set rather than pre-investigative stratified selection. The inequity between sample

sizes of students with and without learning disabilities calls into question the generalizability of research findings. However, the sample size was sufficient enough to have no impact on the statistical analyses, was more than representative of the population of students with learning disabilities on this campus, and was proportional to the general college-attending special student population (see Thomas, 2000; Vallecorsa et al., 2000).

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Authors' Note

Robert Abelman, Ph.D., is Professor of Communication at Cleveland State University. Interested readers may contact the senior author at r.abelman@csuohio.edu.

Anthony Molina is a Ph.D. candidate and Director of Sophomore and General Studies at Cleveland State University.