In a recent report, the authors showed that the academic intervention process, rather than the specific intervention content, was responsible for a short-term influx in at-risk student performance and persistence. Students in varying degrees of academic probation were randomly assigned to one of three intervention strategies that incorporated controlled content but divergent levels of intrusiveness. Results showed that the most intrusive intervention produced higher cumulative grade-point averages and retention rates for all at-risk students. This follow-up study on the long-term impact of these one-time interventions confirms results regarding performance and persistence: Some intrusion is better than none in academic advising.

Since the 1990s, the field of academic advising has been in a state of transition, as prescriptive models of academic intervention have given way to more developmental methodologies (Fielstein & Bush, 1998; Laff, 1994; Miller & Alberts, 1994). Numerous researchers have advocated the developmental approach by supporting one functional application (e.g., Ruddock, Hanson, & Moss, 1999), information-based innovation (e.g., Schultz, Dickman, Campbell, & Snow, 1992), or advising strategy (e.g., Hyers & Joslin, 1998) over another. We recently introduced the notion that the manner of information presentation, rather than the information itself, is a contributing and potentially consequential factor to the success of any developmental advising intervention (Molina & Abelman, 2000).

Indeed, when substance was held constant, we found that “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). The more intrusive the intervention—that is, if it included personal contact, generated student responsibility for problem solving and decision making, assisted the student in identifying resolvable causes of poor academic performance, and offered negotiated agreements for future actions (Earl, 1988)—the more it outperformed interventions that were impersonal, prescriptive, and nonnegotiable. In addition, we found that regardless of level of intervention intrusiveness, at-risk students generated a greater increase in mean grade-point average (GPA) when compared with the GPA means of the nonprobationary/nonparticipatory sample. This suggests that some intrusion is better than none.

The positive impact of advising interventions for at-risk probationary students has been well established in the literature (Garnett, 1990; Heerman & Maleki, 1994; Steinmiller & Steinmiller, 1991), as have the effects of intrusive advising strategies (Garing, 1992; Glennen & Baxley, 1985). However, we suggested that not all probationary students are equally motivated, and thus, not equally responsive to academic interventions in general or intrusive interventions in particular: Students in the most severe state of academic risk were the greatest beneficiaries of the more intrusive academic intervention. They were best positioned to understand and assume responsibility for the causes of their poor academic performance, engage in an appropriate academic adjustment, and improve their academic performance and persistence (Molina & Abelman, 2000).

In the original study, we only assessed short-term benefits, those reflective of performance and persistence rates in the semester immediately following the intervention. Whether or not a one-time intervention has long-term implications regarding GPA and retention, or whether different levels of intrusiveness have divergent longitudinal consequences, were yet to be determined. Creamer and Creamer (1994, p. 17) noted, “Little experimental or quasi-experimental research exists…[and] creative and reliable methods of assessing developmental outcomes are still in their infancy.” To expand the scope of our earlier study, we empirically explored the potential longitudinal impact of style over substance in interventions for academically at-risk students.

The personal contact in the most intrusive interventions affords students the greatest opportunity to identify problems and generate responsibility for problem solving and decision making. It also offers negotiated agreements or contracts for future actions. These factors have been identified as being significant predictors of future academic success by Crookston (1994) and Kelley (1996), among oth-
ers, although none of these researchers pursued longitudinal investigations. Based on the results of our short-term study and related research, we expected the following results from this follow-up investigation:

1. The most intrusive form of the intervention will produce consistently higher cumulative GPAs for all at-risk students, over time, than will less-intrusive interventions.

2. The most intrusive form of the intervention will generate a higher retention rate for all at-risk students, over time, than will less-intrusive interventions.

Probationary students at different levels of risk of academic dismissal are not equally responsive to interventions in general (Fielstein & Bush, 1998; Gerardi, 1990) or intrusive interventions in particular (Austin, Cherney, Crowner, & Hill, 1997). However, because we (Molina & Abelman, 2000) found that students in the most severe state of academic risk were the greatest and most immediate beneficiaries of intrusive academic intervention, the following long-term impact was expected:

3. Students at the highest degree of academic risk will be the most responsive, in terms of GPA and retention rate over time, to the more intrusive form of intervention.

**Methods**

**Participants**

The research study was conducted at a midwestern, 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’s population). Students are placed on academic probation if their term or cumulative GPA falls below 2.00 (on a 4.00 scale). 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; that is, 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 the investigation, may-result (n = 105) and will-result (n = 105) sophomore and junior students were selected, with 35 of each randomly chosen for the nonintrusive/control, moderately intrusive, and fully intrusive interventions. The student sample composition was as follows: nonintrusive/control participants (56% female, 25.2 years average age [SD = 3.7]), moderate-intrusive participants (51% male, 26.9 years average age [SD = 4.1]), and fully intrusive participants (52% female, 25.8 years average age [SD = 4.4]). Approximately 54% of the overall undergraduate student population of the institution is female and the average age is 28 years.

**Measures**

**Mean GPA.** The cumulative GPA for each student was calculated by the university registrar. The mean sample GPAs for fall 1998 and subsequent terms up to and including fall 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 noncontrol 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 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. The existence of the expected relationship
between the interventions and academic performance and persistence was 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**

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/Control Group**

The students that were in the nonintrusive/control 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 students’ 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 the students identify those resources most relevant to their academic problems and develop a plan of action. The brief reports of the students’ academic standing, progress toward graduation, outstanding requirements, and individual course responsibilities were reviewed and the students were queried with regard to their actions to maintain satisfactory academic progress. In the course of the conversation, the students were 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 full-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. Students were made to understand that the interview was largely a self-assessment of academic performance, and based on this self-assessment, they 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 students identified those resources most relevant to their 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 students’ academic performance and progress were reviewed, and the students 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

Through the first hypothesis, we addressed whether an at-risk student’s academic performance would continue to increase after an academic intervention and whether the increase would be associated with the level of intervention intrusiveness. Students who received a fully intrusive intervention had a cumulative mean GPA of 1.48 at the time of the intervention and a 1.56 at the end of the following term, which is a short-term increase of 5.13%. By comparison, students who received a moderately intrusive intervention or a nonintrusive intervention generated a less impressive short-term increase in GPA, 0.61% (1.64 to 1.65) and 3.83% (1.51 to 1.57) respectively.

Three years later, at the end of fall 2001, the cumulative mean GPA of the students in the fully intrusive intervention was 1.70. This reflects a statistically significant increase ($t = 2.52$, $df = 37$, $p < 0.05$) of 12.95% from the term immediately prior to the intervention and an increase of 8.24% from the term immediately following the intervention. These findings (see Figure 1) are in contrast to the long-term improvement in GPA among students assigned to the nonintrusive intervention (1.59 GPA, a 5.14% increase from pre-intervention levels; 1.26% increase from immediate postintervention measures) and those assigned to the moderately intrusive intervention (1.71 GPA, a 4.09% increase from pre-intervention levels; 3.51% increase from postintervention measures).

These findings support the expected outcome that the most intrusive form of the intervention would produce a higher cumulative GPA for at-risk students, over time, when compared to interventions that were less intrusive. Although the nonintrusive intervention proved more immediately effective than did the moderately intrusive intervention, the longitudinal analysis suggests that the more intrusive the intervention the greater the long-term impact on academic performance. Mean GPAs were not significantly different between males and females, sophomores and juniors, or across age levels in any of the interventions.

Through the second hypothesis, we addressed whether the retention of at-risk students would...
continue after an academic intervention\(^1\) and whether retention rates would be associated with the level of intrusiveness of an intervention. As can be seen in Table 1, retention rates for the term immediately following the intervention were highly variable and were dependent on whether the student participated in an intervention that was fully intrusive (83%), moderately intrusive (65%), or nonintrusive (57%).\(^2\)

Findings from the longitudinal analysis suggest that persistence continues to be higher for students engaged in the more intrusive interventions. A chi-square analysis reveals these differences to be statistically significant: \(\chi^2(5, N = 201) = 24.33, p < 0.0001\). The more specific GSK analysis suggests that the fall 2001 retention rate was significantly higher for at-risk students participating in the fully intrusive intervention than for those participating in the moderately intrusive \(\chi(1) = 9.345, p < 0.001\) and nonintrusive \(\chi(1) = 12.56, p < 0.001\) interventions.

These findings support the expected outcome 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, the more intrusive the intervention, the higher the retention rate immediately and 3 years after the intervention. Although retention rates dropped significantly (18–26%) 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. Retention rates were not significantly different between males and females, sophomores and juniors, or across age levels in any of the interventions.

The final hypothesis addressed the issue of long-term responsiveness to intrusive intervention by students at different levels of academic probation. Regarding GPA (see Figure 2), less at-risk may-result students who participated in the fully intrusive intervention had a pre-intervention cumulative mean GPA of 1.54 and, by fall 2001, a GPA of 1.81. This is an increase of 14.92%. In contrast, the more at-risk will-result participants had pre-intervention and fall 2001 cumulative mean GPAs of 1.43 and 1.60, respectively, which is an increase of 10.61%. We performed a \(t\) test to examine these differences in long-term performance between may-result and will-result students in the fully intrusive interventions; we found that the differences between cohorts were statistically significant \((t = 2.38, df = 12, p < 0.001)\). Regarding the moderately intrusive intervention, the may-result students had a pre-intervention cumulative mean GPA of 1.72, and by fall 2001, their cumulative GPA was 1.78. This is an increase of 3.37%. The will-result students had pre-intervention and fall 2001 cumulative mean GPAs of 1.54 and 1.63, respectively, which is an increase of 5.51%. The differences in long-term performance of these students were not statistically significant. No sex, class standing, or age differences were identified.

May-result and will-result students’ short-term (spring 1999), mid-range (fall 2000), and long-term (fall 2001) retention rates are presented in Table 2. As expected, the fully intrusive intervention generated consistently higher retention rates across time for both may-result, \(\chi^2(2, N = 201) = 7.15, p < 0.0289\), and will-result, \(\chi^2(2, N = 201) = 10.51, p < 0.0069\), students, when compared to the moderately intrusive intervention. However, GSK analyses of this data bring to light several interesting differences. In particular, will-result student retention was significantly higher than may-result student retention in the short- \(91\%\) and \(77\%\), respectively; \(\chi(1) = 9.37, p < 0.0022\) and mid-range terms \(58\%\) and \(40\%\), respectively; \(\chi(1) = 10.08, p < 0.0015\), but not over the long-term. May-result students were more responsive than

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\(^1\) Because summer semester enrollment is typically perceived as optional for many students, the analysis only includes fall semester and spring semester enrollment figures.

\(^2\) As a point of comparison, approximately 68% of students who were not subject to probation at the end of fall 1998 returned the following term, a rate exceeded only by students in the fully intrusive group.

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### Table 1 Postintervention retention rates (%)

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<tbody>
<tr>
<td>Control</td>
<td>57</td>
<td>39</td>
<td>34</td>
<td>25</td>
<td>20</td>
<td>16</td>
</tr>
<tr>
<td>Moderate</td>
<td>65</td>
<td>39</td>
<td>34</td>
<td>27</td>
<td>32</td>
<td>19</td>
</tr>
<tr>
<td>Full</td>
<td>83</td>
<td>63</td>
<td>58</td>
<td>48</td>
<td>41</td>
<td>32</td>
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</tbody>
</table>
will-result students to the moderately intrusive intervention, but only in the short-term (72% and 58%, respectively; \( \chi^2(1) = 4.06, p < 0.0440 \)). No sex, class standing, or age differences were identified.

These findings lend only partial support to the third hypothesis, which stated that students at the highest degree of academic risk would be the most responsive, in terms of GPA and retention rate over time, to the more intrusive form of intervention. Will-result students were consistently and significantly more responsive to fully intrusive intervention than moderately intrusive intervention in terms of retention but not in terms of GPA. Indeed, the long-term improvement in academic performance of may-result students who participated in the fully intrusive intervention exceeded that of will-result participants. In addition, while will-result students were more responsive to the fully intrusive intervention than were may-result students in terms of retention, as time progressed, the difference became relatively insignificant.

### Discussion

Although the concept of developmental advising has been met with general approval, Creamer and Creamer (1994) contended that scholars and practitioners have not adequately demonstrated how advisors were to move from theoretical context to functional application. Developmental academic advising has been characterized as being primarily focused on creating specific goals for student growth (Miller & Alberts, 1994), but how are those goals to be articulated? According to Laff (1994), if advisors are to implement developmental advising as a practical technique for promoting student learning and development, then they must have a concrete tool that can facilitate the developmental advising process.

### Table 2 Retention rates by probationary status (%)

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<thead>
<tr>
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<th>May Result</th>
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<th>Will Result</th>
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<tbody>
<tr>
<td></td>
<td>Spring 1999</td>
<td>Fall 2000</td>
<td>Fall 2001</td>
<td>Spring 1999</td>
</tr>
<tr>
<td>Fully intrusive</td>
<td>77</td>
<td>40</td>
<td>30</td>
<td>91</td>
</tr>
<tr>
<td>Moderately intrusive</td>
<td>72</td>
<td>24</td>
<td>20</td>
<td>58</td>
</tr>
</tbody>
</table>

### Figure 2 GPAs over time by intervention level
Our study suggests that intrusion is an effective mechanism of improving student performance. According to Earl (1988), advising is intrusive if it results in an academic adjustment; that is, by offering an intrusive strategy, advisors give students the ability to self-refer and assume responsibility for their academic performances, and this advising is not characterized by the provision of specific information about academics and performance. To a great extent, intrusive advising is also invasive because it is personal rather than merely professional. The success of the technique is dependent on how information is relayed rather than the information itself. We put these observations into practice and found an immediate and dramatic impact on at-risk students’ academic performances and short-term retention rates (Molina & Abelman, 2000). Through this follow-up investigation, we suggest that intrusion makes a lasting impression as well.

The possible contaminants in a longitudinal investigation are worthy of discussion when considering the above results. For example, many lifestyle changes could have transpired over the course of this time-span analysis. These changes had nothing to do with academic intervention but nonetheless impacted on students’ priority setting, time management, or commitment to education. Although the interventions may have pointed a student in the right direction, life in general could certainly account for some variation in this study’s findings (for example, the fall 2001 to spring 2001 retention rate increases for students in the moderately intrusive intervention). However, the fact that the most intrusive intervention consistently produced greater results suggests that the interventions were largely instrumental in student performance and persistence.

Another possible contaminant could be the one-time nature of the intrusive interventions employed in this investigation. Intrusiveness is intended to generate personal contact between the student and academic advisor, student responsibility for problem solving and decision making, the identification of resolvable causes of poor academic performance, and a plan for future actions (Grites & Gordon, 2000). However, once the intervention reported here concluded, no tracking of subsequent advising sessions was undertaken, and modifications in course load, tutoring, counseling, or the employment of other student services that might have facilitated academic performance and fostered retention remain unknown. We cannot determine whether postintervention activities or the one-time intervention had the greatest impact, particularly when comparing may-result and will-result students. One could argue that the additional activities were inspired by intrusion and were a normative residual effect of developmental intervention.

References


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