Doctoral Students' Perceptions of Advising Style and Development and the Relationship between Them

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Four advising styles, authoritative, authoritarian, permissive, and uninvolved, were identified according to doctoral students' perceptions of demandingness and responsiveness of their advisors. Doctoral students who perceive working with authoritative advisors reported the highest levels of perceived development in cognition, motivation, professional skills, satisfaction, and professional production.

KEY WORDS: advising approaches, advisor role, educational outcomes, graduate students, research instrument, student satisfaction with advising

Graduate education is meant to develop professional skills in students and to socialize students into the academic culture. Cangemi (1984) referred to this development process as "self-actualization." Their experiences during graduate school are not only significant for the students' professional development, but they also have a long-term effect on the career path of the young professionals after graduation (Brown-Wright, Dubick, & Newman, 1997; Friedman, 1987). However, research has shown that the years spent in graduate school are typically difficult and frustrating for the student (Friedman, 1987).

The main purpose of our research was to delineate four proposed advising styles along the dimensions of demandingness and responsiveness. After the advising styles were established based on the two dimensions, we explored the relationship between the advising style perceived by doctoral students and doctoral students' perceptions of their own development in the cognitive, affective, and professional skill domains, and satisfaction with their graduate advisors and their own professional productivity.

Researchers believe that various factors influence the experience and the development of graduate students. Among these factors, the relationship between a graduate student and his or her advisor is the most crucial component (Brown-Wright et al., 1997; Ender, Winston, & Miller, 1982; Heinrich, 1990; Isangedighi, 1985). Isangedighi (1985) postulated that graduate students go through the professional development process by sharing values and interests with their advisors and that they depend on their advisors' open communication and acceptance to become productive scholars. When facing tremendous pressure from academic requirements, interpersonal interactions, and financial difficulties, graduate students need good rapport with their advisors to function effectively in the higher education atmosphere (Isangedighi, 1985). A good advisor-advisee relationship, as Gilbert (1982) pointed out, can ameliorate the pressure experienced by graduate students, such as financial problems or marital strain, that may cause them to abandon their programs of study. However, a disappointing relationship with an advisor is directly related to disappointing experiences with graduate study (Heinrich, 1991). Friedman (1987) asserted that the poor quality of the advisor-advisee relationship was a major reason for students leaving graduate programs with unfinished dissertations.

Researchers have attempted to identify desirable qualities of advisors who facilitate students' development. For example, Crookston (1972) offered an early description of an advising style model. In his model, two types of advising are presented: prescriptive and developmental. The prescriptive style of advising is based on authority, meaning that the advisor is the authority figure and the student is expected to follow her or his advice without question. The advisor takes the responsibility for making decisions for the student, and the student is responsible for carrying out the prescription.

Developmental advising is not characterized by authority. Instead it is based on shared responsibility and negotiation between the student and the advisor. Using Crookston's (1972) model, researchers such as Ender et al. (1982) and Winston, Miller, Ender, & Grites (1988) asserted that the goal of higher education, "total development of students" (Winston et al., 1988, p. 17) or the development of students' full potential in both intellectual and affective areas, was much more likely to be met if advisors engage in developmental advising.

Schaefer and Schaefer (1993) queried doctoral students about their relationships with their advisors. Students' responses to the question "What behaviors by faculty indicate a caring attitude towards the students?" were organized into categories. The types of faculty behaviors that were most

often cited as favorites by the students fell into three categories: respecting them as people, respecting their intelligence, and being a responsive teacher. According to the study, doctoral students value casual, nonacademic conversations with their professors because such interactions show that their professors are interested in them as people not just as students. They also value their professors' encouragement to add their own opinions during class discussion and about classroom assignments. In addition, the students appreciate the professors who are well prepared for class and who could be counted on to be available for office meetings.

In considering the advisor-advisee relationship, Kalbfleisch (1997) focused on conflict events between an advisor and a student and the reconciliation strategies used by the student. When asked whether their advisors had ever said anything hurtful, had become angry with them, or had conflict with them, one half of the students in the investigation answered in the affirmative. Students reported four categories of unpleasant experiences with their advisors: disagreement, embarrassment, negativity, and unreasonable request. Disagreement was comprised of conflicts concerning differences in expectations between an advisor and a student and the student's noncompliance with advisor expectations. Embarrassment included conflicts where an advisor told a student his or her performance was disappointing. Negativity involved conflicts where an advisor accused a student of dishonesty. The last category of unreasonable request was evidenced when a student felt that the advisor had asked for an unreasonable amount of assistance from her or him.

To deal with the conflicts, students reported three categories of strategies: provocative/distancing, affable appeasement, and pragmatic appeasement. Provocative/distancing strategies included arguing with, yelling at, and avoiding the advisor. Those practicing affable appeasement complimented the advisor and did favors for him or her. Pragmatic appeasement involved students' admission of wrongdoing and trying to work harder. Kalbfleisch (1997) also found that student use of provocative/distancing strategies worsened the relationship and reduced the likelihood of reconciliation, and the most common student responses to conflict with their advisors fell in the pragmatic appeasement category.

Friedman (1987) attempted to include both advisors' and advisees' perspectives in her study of the relationship between the two. Interviewing 13 advisors and 33 graduate students, she found that most students cited neglect as the main complaint for the advisement provided by their advisors. Students who were not satisfied with the relationship with their advisors perceived their advisors as uninterested, uncaring, unapproachable, and failing to give guidance and feedback, whereas students who were satisfied with their relationship with their advisors described their advisors as interested in their concerns, willing to offer advice and guidance, and serving as excellent role models. From the advisors' perspective, advisors who perceived advising as largely an unwelcome part of their job tended to appreciate students who required only minimal guidance and directions. Friedman (1987) also noticed that all students of each advisor described the advisor in a similar way, which supported the idea that advising style was applied consistently to all of the advisor's students.

The literature reveals a great amount of information pertaining to the advisor-advisee relationship. However, our review also revealed that the variables investigated are scattered throughout different dimensions and aspects of the relationship and that the theoretical cohesiveness that would provide a comprehensive view of the current findings of the research is lacking. In the present study, we use a parenting-style model developed by developmental psychologist Baumrind (1971, 1991) as a theoretical framework to synthesize findings of the studies in the advisor-advisee relationship.

From her research on parental attitudes, practices, and nonverbal expressions that characterize the parent-child interaction, Baumrind (1971) identified two dimensions of parenting style: demandingness and responsiveness. According to Baumrind (1971, 1991), demandingness and responsiveness are both necessary to children's development. A demanding parent provides a child with an orderly and safe environment where the child gains some measure of autonomy by exercising her or his own decision-making skills under the guidance of the parent. Demandingness also means the parent is willing to confront the child who misbehaves. Responsiveness reflects the parent's propensity for warmth and sensitivity and his or her willingness to participate in the relationship. A responsive parent is one who is attuned, supportive, and acquiescent to the child's needs and demands. Combining the dimensions of demandingness and responsiveness, Baumrind (1971, 1991) described four parental styles: authoritative (high on both demandingness and responsiveness), authoritarian (high demandingness and low responsiveness), permissive (low demandingness and high responsiveness), and uninvolved (low

on both demandingness and responsiveness).

Braumrind's typology of parenting style intrigued researchers and created intense interest in investigating the relationship between parenting style and child development. For example, Lamborn, Mounts, Steinberg, and Dornbusch (1991) surveyed 4,100 adolescents on the parenting style they experienced and psychosocial development (e.g., social competence, work orientation, and self-reliance), internalized distress and health problems, and psychological symptoms of anxiety, tension, and depression. They found that adolescents from authoritative families scored highest in psychosocial development and lowest in internalized distress. In contrast, adolescents from the uninvolved families were the least competent, had the lowest self-perception, and the highest levels of distress. The researchers (Steinberg, Lamborn, Darling, Mounts, & Dornbusch, 1994) conducted a 1-year follow-up study on the same group of adolescents and found that the outcomes seen in the previous study were either stable or more pronounced after a year had passed. Kurdek and Fine (1994) reported similar findings on the relationship between parenting style and adolescents' psychosocial development.

Dornbusch, Ritter, Leiderman, Roberts, and Fraleigh (1987) investigated the relationship between parenting style and academic performance of students. With a sample of more than 7,000 high school students with diverse ethnic backgrounds, they found that while the authoritarian and permissive styles were negatively related to grades, the authoritative style had the strongest positive correlation with grades. Steinberg, Elmen, and Mounts (1989) found that students of authoritative parents achieved higher grades than did children who had experienced other parenting styles. They further suggested that authoritative parenting fosters achievement by helping adolescents to develop a healthy sense of autonomy and a healthy attitude toward work. In summary, research has demonstrated a consistent pattern of the relationship between parenting style and child development. That is, authoritative parents who have high expectations for their children and respond to their children's needs tend to produce well-rounded children who optimize their opportunities for psychological and academic development.

Because of the similarities in goals and processes between parenting and advising, the adaptation of Baumrind's model of parenting style to the research of advising style should not be seen as a great leap. Those practicing parenting and advising share many common goals. The psychological attributes of children and adolescents that are influenced by parenting style (self-confidence, self-respect, psychological health, purposefulness, and self-reliance) bear a strong resemblance to the attributes graduate education is expected to develop in graduate students such as the ability to be fully functioning, independent, career-oriented, self-confident, self-respectful, psychologically healthy, and knowledgeable in a particular discipline (Cangemi, 1984). Baumrind's (1966) description of parental authority, "a person whose expertness befits him to designate a behavioral alternative for another where the alternative is perceived by both" (p. 887), accurately defines the role an advisor plays in the advisor-advisee relationship. Although current educational settings have abandoned one-to-one interaction that resembles the way a parent interacts with a child, the format of apprenticeship still exists in graduate education between mentor and protégé. In fact, researchers have noticed that the same fundamental dimensions, demandingness and responsiveness, have broad utility in disciplines and situations other than parenting, such as counseling (Strong, 1991), management (Hersey & Blanchard, 1993), and school education (Wambach, Brothen, & Dikel, 2000).

Method

Participants

The sample in our study consisted of doctoral students recruited from the seven academic colleges of Agriculture, Arts & Sciences, Business Administration, Education, Engineering, Human Sciences, and Architecture on a large, southwestern, state-university campus. Students enrolled in the schools of law and medicine were assumed to be involved in more practice-oriented educational experiences than doctoral students in the seven other colleges. Therefore, to preserve the internal validity of this study, students in the schools of law and medicine were not invited to participate.

A sampling frame of 957 currently enrolled doctoral students was obtained from the campus Office of Institutional Research. Three hundred students were selected to participate, and to insure proportionate representation, we conducted systematic sampling that was stratified both by gender and by college. We accomplished stratification by first determining the percentage of the total number of doctoral students represented by each college and then choosing that percentage of students, within the sample of 300, from each college. After determining the number of students needed from each college, systematic sampling was conducted

by choosing every *k*th student from each college where *k* was determined by the number of students needed from the college.

The selected students were mailed a packet containing a cover letter, a questionnaire, and a return envelope. The cover letter explained the nature of the research and invited the student to participate. The students were informed of the confidentiality of the study and that participation was voluntary. The return envelope displayed a number for tracking nonrespondents. Follow-up packets were mailed to nonrespondents 3 weeks after the initial mailing. Two weeks after the second mailings, follow-up postcards were sent to the remaining nonrespondents to solicit their participation. Because of the inaccuracy of addresses, packages sent to some students were undeliverable and returned. The final sample population was 289. With 131 students returning their completed questionnaires, the return rate was 45%.

The final sample of 131 was found to be proportionately representative in college and in gender of the overall doctoral student population within the university. The final sample consisted of 68 females (52%) and 62 males (48%), with 1 unknown. The respondents were between 22 and 57 years old (M = 34.96). The ethnic composition of the sample was 1.5% African American (n = 2), 77.1% Caucasian (n = 101), 2.3% Hispanic (n = 3), 16.8% Asian (n = 22), and 1.5% other (n = 2), with 1 who declined to report ethnicity.

We decided to focus the study on only doctoral students' perceptions of their advisors' advising style. Faculty members of the selected students were not surveyed for their perception of their own advising practice. The decision was based on the following reasons: First, researchers interested in parenting style have noticed differences in perceptions of parenting practice between parents and children, but they do not believe that parents' reports were more accurate than those of the children; rather they felt that they simply represented a different perspective (Muller, 1998). Second, studies showed that between parents' and students' perceptions of parenting style, only students' perception showed predictive validity on children's behaviors and academic performances (Dornbusch et al. 1987; Lamborn et al., 1991; Steinberg et al., 1994). Researchers believe that environmental factors, including parenting influences, "affect students through students' perceptions of the environment" (Lan & Lanthier, 2003, p. 331). Third, we were also concerned that students would be reluctant to be honest in their responses, or reluctant to participate, if they knew their advisors were also being asked about the advising relationship.

Measures

Measures of advising style. Two separate instruments were developed to measure advising style in terms of the two dimensions (demandingness and responsiveness) and the four advising styles (authoritative, authoritarian, permissive, and uninvolved), respectively. To ensure face validity of both instruments, we asked five doctoral students (not in the original sample) and two faculty members of the Higher Education program to check the relevance of items regarding the advisor-advisee relationship.

Advising Style Questionnaire I (ASQ-I) consists of 20 items, 10 each designed to measure levels of demandingness and responsiveness of advisors as perceived by students. The items were created from two sources of information. First, we utilized demanding- and responsive-type behaviors demonstrated by advisors as described in the literature (Friedman, 1987; Kalbfleisch, 1997). Second, we conducted qualitative interviews with five doctoral students who were in various stages of their programs but not part of the sample pool.

The students were asked to describe their experiences with their advisors in terms of how much the advisors expected of them and how supportive the advisors were of their needs. One item was negatively stated, and all items were answered on a 5-point Likert scale. Two examples of items in the ASQ-I are "My advisor has high expectations of me" (demandingness) and "My advisor is willing to spend time and effort to develop a mentor-mentee relationship with me" (responsiveness). The ASQ-I generated two scores for each subject: a demandingness score and a responsiveness score. After the negative item was reversed, the mean of items in each subscale was calculated, with higher values indicating higher levels of each dimension. At the end of the instrument, we allowed students to freely describe "any other aspect of your relationship with your advisor (i.e., anything else you would like to say about your experiences with your advisor)."

By rewording the statements to reflect the advisor-advisee relationship, we adapted the Parenting Style Questionnaire (Buri, 1991) into Advising Style Questionnaire II (ASQ-II). Additional items from the qualitative interviews with the five doctoral students were added to the instrument. The ASQ-II consisted of 40 questions, 10 each designed to assess the proposed advising styles of authoritative, authoritarian, permissive, and uninvolved as perceived by the students. Sample items from the ASQ-II are "My advisor helps me to understand the

reasoning behind academic decisions and activities" (authoritative), "My advisor expects me to follow his/her advice without question" (authoritarian), "My advisor is interested in my academic progress, but he/she doesn't have any particular expectation about how that progress occurs" (permissive), and "When I need advice, I typically ask another professor rather than my advisor" (uninvolved). All items were answered on a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). Scores on the four advising styles were determined by the mean of each set of 10 items for the subscale.

Measures of student development. A Graduate Student Development Scale (GSDS) was developed to measure graduate students' perceptions of their own development in the cognitive, affective, and professional skill domains during graduate studies. The instrument consisted of 30 items, 10 each for the three domains. The items were based on the expected development of graduate education noted in the literature (e.g., Evans, Forney, & Guido-DiBrito, 1998; Hurst & Pratt, 1988).

The subscale for the cognitive domain was used to measure students' perceptions of their own development of knowledge in the discipline, critical thinking ability, and information organization skills. Examples of items included are "I am knowledgeable in my academic area" and "I am able to think critically in my area of research."

The subscale for the affective domain was used to measure students' own motivation for graduate study, enthusiasm toward the discipline, and level of stress experienced. "I am enthusiastic about my program of study" and "I enjoy my experiences in graduate school" are examples of items included.

Another subscale was used to measure doctoral students' perception of their own development of skills, such as those in writing, data analysis, and communication, that they would need in their future profession. Sample items included from the professional skills subscale include "I have noticed improvement in my technical writing skills" and "I know how to find information sources for my research."

All items were answered on a 5-point Likert scale that ranged from 1 to 5. After we reversed negatively stated items, low values signaled a low or undesirable level of perceived development, and high values signaled a high and desirable level of perceived development. Student-perceived development in each of the three domains was determined by the mean of each set of 10 items.

As another measure of doctoral students' development, we inserted three questions at the end of the GSDS to assess students' professional productivity. Students were asked to report the numbers of presentations at professional conferences, manuscripts submitted to professional journals for publication, and publications in professional journals.

Measure of student satisfaction. A Graduate Student Satisfaction Scale (GSSS) was developed to measure the satisfaction of students with their relationship with advisors. The instrument consisted of 10 items created from literature describing the advisor-advisee relationship (Friedman, 1987; Kalbfleisch, 1997; Romberg, 1993) and the qualitative interviews with the five doctoral students. Examples of items include "I'm satisfied with my advisor's level of interest in my academic progress" and "I wish I could have a different advisor." All items were answered on a 5-point Likert scale. After reversing scores of the negatively stated items, we calculated a mean of the 10 items as the measure of graduate student satisfaction. Low scores signaled low satisfaction and high scores signaled high satisfaction.

Results

Psychometric Characteristics of the Measurement Instruments

Reliability for the ASQ-I and ASQ-II was assessed using the internal consistency method. Reliability coefficients for the two subscales of demandingness and responsiveness in the ASQ-I were .81 and .87, respectively. Reliability coefficients for the four subscales of authoritative, authoritarian, permissive, and uninvolved were .87, .91, .68, and .87, respectively. With the exception of the subscale of Permissive, which had a relatively low reliability (.68), reliability coefficients for other subscales in the two instruments of advising style were satisfactory.

We developed the ASQ-I and ASQ-II as measures of the same construct of advising style for the specific purpose of assessing both discriminant and convergent construct validity (Carmines & Zeller, 1979; Cohen, Swerdlik, & Phillips, 1996; Leong & Austin, 1996). For the discriminant validity, the two scores of demandingness and responsiveness in the ASQ-I were correlated: $r = .51$, $p < .01$. The midrange correlation was expected because the two constructs pertained to the same relationship between a doctoral student and her or his advisor, but they were designed to measure two different aspects of the relationship.

The pattern of the correlation between the dimension scores in the ASQ-I and categorical style scores in the ASQ-II showed convergent validity. According

to theory, the authoritative advising style is expected to be positively correlated with both dimensions of demandingness and responsiveness; the authoritarian style is expected to be positively correlated with demandingness and negatively correlated with responsiveness; the permissive style is expected to be negatively correlated with demandingness and positively correlated with responsiveness; the uninvolved style is expected to be negatively correlated with both dimensions. As shown in Table 1, with the exception of the correlation between demandingness and the authoritarian style, all correlation coefficients between the dimensions and styles were significant and in the predicted direction.

The GSDS also showed satisfactory reliability. Cronbach alpha coefficients were .75, .75, and .82 for the subscales of Cognitive Development, Affective Development, and Professional Skill Development, respectively. The reliability coefficient for the GSSS was .95. The content validity of the instruments was assumed because of the careful formation and selection of the items that were a) supported by literature, b) based on interviews with a sample of the doctoral students, and c) judged by doctoral students and experts in the area.

Relationships between Advising Style and Students' Development and Satisfaction

To examine the relationship between advising style and students' development and satisfaction, we needed to identify groups of students who perceived different advising styles, so we grouped the 131 participants into groups. The z-scores of students' perceptions of their advisors' demandingness and responsiveness were the bases for cluster formation. We chose Ward's method with squared Euclidean distance as the measure of similarity because it was "one of the more effective methods for recovering underlying structure" (Borgen & Barnett, 1987). Judging from the dendrogram of the analysis, we found that both four- and five-group models seemed appropriate. However, the five-group model contained a cluster of only two participants; therefore, it was appropriate to include it in one of the clusters within the four-group model. Furthermore, from the theoretical framework of the study, we would expect a four-group model of the four advising styles of authoritative, authoritarian, permission, and uninvolved. Therefore, the four-group model was selected.

Group 1 cluster participants ($N = 68$) had high z-scores of demandingness ($M = .68$) and responsiveness ($M = .59$), which signified that it consisted of participants who perceived that their advisors had the authoritative advising style. Group 2 members ($N = 10$) had high z-scores in demandingness ($M = .40$) and low z-scores in responsiveness ($M = –.13$), which characterized a perception that the advisors practiced the authoritarian advising style. Group 3 participants ($N = 12$) had low z-scores in both demandingness ($M = –1.46$) and responsiveness ($M = –2.06$), which fit the description of a perceived uninvolved advising style. Group 4 participants ($N = 40$) had low z-scores in demandingness ($M = –.87$), but their z-scores on responsiveness were average ($M = .10$), meaning that Group 4 members perceived their advisors as having the permissive style described in the literature. One student was excluded from the cluster analysis because of a missing value in responsiveness.

Table 2 presents descriptive statistics, grouped by the clusters, of students' perceived development in the cognitive, affective, and professional skill domains, satisfaction with the relationship with their advisors, and self-reported professional productivity as the sum of numbers of presentations, submissions, and publications. To justify the use of the multivariate analysis (MANOVA), we examined the correlation among the five variables. Except for the relationship of satisfaction with the development in the affective domain and student productivity, all correlation coefficients were significant at the .05 level and ranged from .24 to .72. Therefore, the five variables of perceptions of development in cognitive, affective, and professional skills, satisfaction, and productivity were used as the dependent variables in the MANOVA with the independent variable group generated from the cluster analysis.

The results of the MANOVA indicate that significant differences in dependent variables exist

Table 1 Convergent validity coefficients for ASQ-I and ASQ-II

	Demandingness	Responsiveness
Authoritative	.47**	.83**
Authoritarian	–.26**	–.68**
Permissive	–.21**	.16*
Uninvolved	–.54**	–.85**

Note. * $p < 0.05$; ** $p < 0.01$.

among the four perceived advising styles, $\Lambda = .37$, $F(15, 334) = 9.68$, $p < .001$, $\eta^2 = .28$. According to Cohen's (1977) classifications, an η^2 of .01 indicates a small effect; an η^2 of .06 reflects a medium effect; an η^2 of .14 is a large effect size. Therefore, the size of advising style effect was large.

We conducted ANOVAs on each dependent variable as follow-up tests for the significant findings of the MANOVA. Due to the multiple dependent variables, the Bonferroni adjustment was applied, and each ANOVA was tested at the .01 level. The analyses revealed significant group effects on the variables of cognitive development, $F(3, 125) = 6.29$, $p = .001$, $\eta^2 = .13$; affective development, $F(3, 125) = 24.03$, $p < .001$, $\eta^2 = .37$; professional skills, $F(3, 125) = 7.49$, $p < .001$, $\eta^2 = .15$; satisfaction, $F(3, 125) = 46.99$, $p < .001$, $\eta^2 = .53$; and productivity, $F(3, 125) = 3.76$, $p = .001$, $\eta^2 = .08$. The coefficients of effect size, η^2, indicate that the effects of the perceived advising style on the perceived development, satisfaction, and self-reported productivity ranged from medium to large.

Post hoc comparisons, via Tukey HSD test, were conducted to investigate pair-wise differences among the advising style groups on the five dependent variables. An alpha level of .05 was used for the comparisons. For the variable of perceived cognitive development, the authoritative group had a significantly higher mean score than did the other three groups. For perceived affective development, the mean of the authoritative group was significantly higher than that of the other three groups, and the permissive group had a mean higher than that of the authoritarian and the uninvolved groups. The mean of the perceived development of professional skills of the authoritative group was significantly higher than that of the permissive and uninvolved groups. For the variable of satisfaction, the authoritative group had the highest level of satisfactory relationship with their advisors, followed by the permissive, authoritarian, and uninvolved groups. All pair-wise comparisons on satisfaction were significant. Finally, students who perceive that they are working with authoritative advisors reported higher numbers of publications, submissions, and presentations than did those who identified their advisors as permissive. These results show a clear pattern that students who perceive the authoritative advising style of their advisors claimed the highest levels of development, satisfaction, and productivity during their graduate studies.

To understand the mechanism through which advising style is associated with doctoral students' experiences during graduate study, canonical correlation was performed between a set of advising style variables, demandingness and responsiveness, and a set of perception variables: perceived development in cognitive, affective, and professional skill domains; satisfaction of the relationship with the advisor; and self-reported productivity. Through the analysis, we calculated two eigenvalues, one for each variable in the smaller set of variables reflecting advising style. The first eigenvalue was 0.73, which corresponded to a canonical coefficient of .85, $\chi^2(10) = 183.90$, $p < .001$, indicating the first pair of canonical variates was reliable. The second eigenvalue was 0.16, corresponding to a canonical coefficient of .40, $\chi^2(4) = 21.20$, $p < .001$, indicating the second pair of canonical variates, which was orthogonal to the first one, was significant. Counting the second eigenvalue as the proportion of variance extracted from the residual after the first pair of canonical variates was extracted, we found that a total of 77% of variance was overlapped between the set of advising style variables and the set of perception variables.

To assist us in interpreting the meaning of the canonical variates, we summarized the loading matrix for the two pairs of canonical correlations. See Table 3. In the first pair of the canonical variates, low demandingness and low responsiveness were correlated to the perceptions of low affective development and satisfaction, indicating that students' affective experiences (motivation for graduate study, enthusiasm about the discipline, and satisfaction) were related to both dimensions of demandingness and responsiveness. In the second pair of the canonical variates, low demandingness

Table 2 Descriptive statistics for GSDS, GSSS, and professional productivity

	Cognitive		Affective		Professional Skills		Satisfaction		Presentation		Publications		Submissions	
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Authoritative	4.37	0.39	4.32	0.43	4.47	0.38	4.89	0.11	3.70	4.39	1.75	2.47	2.45	3.12
Authoritarian	3.96	0.50	3.62	0.40	3.88	0.69	3.36	1.07	2.50	4.19	1.70	3.05	1.55	1.96
Permissive	4.10	0.42	3.92	0.66	4.12	0.48	4.37	0.61	0.95	1.23	0.70	1.69	1.30	2.27
Uninvolved	3.75	0.52	3.49	0.47	3.77	0.61	2.92	0.93	2.68	3.70	0.74	0.93	1.37	1.86

was associated with the perceptions of low cognitive development, professional development, and productivity, which implies that the dimension of demandingness is associated with doctoral students' perceptions of development in the cognitive and psychomotor domains. However, demandingness is not necessarily related to advisee satisfaction with graduate study or their relationship with their advisors.

Discussion

Adapting a theoretical model of parenting style, we developed a model depicting the typology of advising style and investigated the relationship between the advising style and graduate students' satisfaction with their graduate experiences and perceptions of their development. We also developed instruments to measure advising styles based both on the continuous dimensions of demandingness and responsiveness and on the categorical styles of authoritative, authoritarian, permissive, and uninvolved advising. In addition, we developed instruments designed to measure graduate students' perceptions of their development in cognitive, affective, and professional skills domains as well as their satisfaction with their graduate advisors. With satisfactory levels of reliability and validity, these instruments could be useful in future research on advising and doctoral student development.

As evidenced by doctoral students' perceptions, advisors manifested four advising styles, authoritative, authoritarian, permissive, and uninvolved, based on the two dimensions of demandingness and responsiveness. The study showed that students who felt their advisors set a high standard for their academic pursuits and at the same time were supportive had the most positive perceptions of their own learning outcomes from the graduate education and were most satisfied with their experience in the graduate program.

Information we collected from students' voluntary responses to the open-ended question in the ASQ-I verified the typology of advising style and illustrated how the style influenced student satisfaction and development. For example, the following student gave a description of an authoritative advisor:

> She's very demanding, and sometimes I feel like I'm just holding onto her hand and she's just racing around, but she's put me in a good place. . . . She's always available, you know, accessible. She's a mentor and a mentor's job is to facilitate your progress and make [you] as marketable as possible. I know the things she's made me think about, and that I've gotten exposed to because of her. I'm really, really lucky.

Another student talked about his advisor with less enthusiasm. In his description, the authoritarian nature of his advisor's style is evident as is the student's dissatisfaction with the relationship:

> She doesn't really provide any guidance. I went to her for advice and help and her response to me was well, you're a big boy you can handle it, which was totally inappropriate. . . . Some days you could say something that was really stupid and all of the sudden you were the golden child. Other times you could say brilliant things and do brilliant work, and you were still just dirt. I've had a lot of demands placed on me because no matter what I did it was never, in her eyes, good.

The following student described the low demandingness of his advisor:

> My advisor has not pushed me. I believe I could have used more structure from him. . . . My advisor did not adequately prepare me for qualifying exams and discuss with me what is necessary to be successful.

Table 3 Loading matrix of pairs of canonical variates

		Canonical Variates Pairs	
	Variable Sets	First	Second
First	Demandingness	–.54	–.84
	Responsiveness	–.99	.04
Second	Cognitive	–.29	–.73
	Affective	–.66	.27
	Professional Skills	–.34	–.73
	Satisfaction	–.99	.03
	Productivity	–.08	–.84

Also, some students reported experiencing the uninvolved advising style:

> My advisor seems preoccupied most of the time—like he doesn't really have time for me. He often fails to even acknowledge my presence in the lab. He expects my [dissertation] proposal even though my [lab] work takes as much as 14 hours a day. Most of the time, I feel like I am floundering.

It is encouraging to see that most professors of the respondents (52%) are practicing the authoritative advising style. However, approximately one half of professors described by respondents in our sample might not benefit the students they are guiding. The results of the canonical correlation of this study show the importance of coexisting demandingness and responsiveness for the well-rounded development of doctoral students who not only possess the knowledge and skills needed to be productive in their professions but also are intrinsically interested and enthusiastically devoted to their disciplines.

In theory, we have offered a framework of advising style to interpret and integrate findings of previous research in the area. For example, high demandingness and high responsiveness are characteristics of developmental advising whereas high demandingness and low responsiveness are exemplified in prescriptive advising (Crookston, 1972). In Schaefer and Schaefer's (1993) study, the favorite behaviors manifested by advisors, such as respect, caring, encouragement, sharing input, and negotiation in decision making, reflect both high demandingness and responsiveness. In Kalbfleisch's (1997) study on reconciling and resolving conflicts between advisors and graduate students, one can see that conflicts occur when advisors and students are mismatched on dimensions of demandingness or responsiveness. For example, conflicts of disagreement and unreasonable requests, as described by Kalbfleisch (1997), reflect advisor and student disagreements in expectations. Conflicts of embarrassment and negativity are caused by an advisor's low responsiveness (neglect or ignorance) to a student's needs. Similarly, advisors in Friedman's (1987) study who were perceived by their students as being uninterested, uncaring, and unapproachable demonstrated typical behaviors of an uninvolved advisor. In contrast, advisors who were perceived by students as being interested in their concerns and willing to offer advice and guidance as role models demonstrate many positive advising characteristics associated with the authoritative style depicted in our study.

Although our study showed the relationship between advising style and doctoral students' perceived development, we are not clear on the mechanism through which demandingness and responsiveness affect student development. Because of the similarities between the two bodies of research on advising and parenting style, findings from literature of the latter may shed light on the means through which advising style affects student development. Baumrind (1991) posited that demandingness is important because development is only possible when a parent demands responsible and mature behavior of a child/adolescent. Over time, children internalize parental demands so that they become the basis of their own expectations for their own behaviors. Meanwhile, children under high demands need parents' support to internalize successfully the set standard. Emotional responsiveness from the parents enables the child/adolescent to understand and learn coping skills that enhance his or her emotional maturity. Cognitive responsiveness from the parents encourages the child/adolescent to express her or his views and ideas. Therefore, children from families where demandingness and responsiveness coexist will be most likely to develop autonomy, self-reliance, self-assertiveness, self-confidence, and purposefulness. If researchers of advising style agree that graduate education bears a certain degree of similarity in goals and processes as parenting, Baumrind's postulation of the mechanism through which demandingness and responsiveness influence children's development could be a useful reference for understanding why authoritative advising style is perceived to be the most beneficial style for doctoral students' development.

Students' experiences with their advisors during the most significant task of the doctoral study, to complete a dissertation, illustrate the importance of demandingness and responsiveness coexistence. As the final project of a doctoral program, the dissertation provides a doctoral student with the most comprehensive experience as a budding scholar and the best opportunity to develop knowledge and skills for the student's future profession. Because of the significance of the task, many students in our study described problems they had experienced with their advisors while they were completing dissertations. One student commented, "I was told that 'we like for you to come up with your own idea for a dissertation.' I have been worrying about a dissertation topic ever since. Right now, my motiva-

tion level is very, very low." Demandingness without proper support on the advisor's part appears to be perceived by the student as either an insurmountable obstacle, as evidenced in the previous student's comment, or as overly controlling, as demonstrated in the following comment from a graduate student: "My advisor appointed herself as my dissertation committee chair. She also told me who else would be on the committee. I had no say in the matter."

However, low demandingness can be just as harmful to student development as is authoritarian demandingness. One student declared, "I have procrastinated on my dissertation. . . . My advisor has not pushed me." Progress toward completion of the dissertation, and the degree itself, appears to be dependent in part on the advisor's ability to communicate his or her expectations, respond to students' needs, and motivate them.

Parenting-style researchers found several beneficial parental practices in which demandingness and responsiveness are combined. These findings can be applicable in the interaction between advisors and advisees. For example, according to Baumrind (1991), through monitoring, parents provide an orderly and safe environment in which children are allowed to exercise or form their own opinions. When parents and children disagree, the parents should not use their authority to restrict the child's choices or behaviors, a parental practice called "intrusive directness" by Baumrind (1991), rather they should allow the child to express his or her opinion and practice her or his choice under the supervision of the parents. The differences between monitoring and intrusive directness can be seen in the difference between the developmental and prescriptive advising styles described by Crookston (1972). Advisors who maintain open communication with their advisees and allow the students to exercise a certain degree of autonomy under their supervision may be monitoring in the advising context.

Baumrind (1991) also identified conditional acceptance as a beneficial form of parental responsiveness. According to Baumrind, the child needs to earn acceptance from the parents with approved or improved behavior. However, she criticized parental unconditional acceptance of children because the child does not learn the consequences of his or her behavior. Conditioned acceptance is a practice that combines demandingness and responsiveness, and unconditional acceptance is a typical behavior of professors with the permissive advising style.

We believe the typology of advising style based on demandingness and responsiveness can have broad utility in studying interactions in many areas of education. It can apply to relationships between any person with authority and a subordinate, such as between a teacher and her or his teaching interns, a counselor and her or his counseling clients, a coach and her or his players. Each of these cases could be described with dimensions of demandingness and responsiveness and therefore be evaluated for effectiveness using the advising style model presented in this study.

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