Antecedents of Attachment among Education Center Participants

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School completion is the culmination of a long-term developmental process (e.g., Hymel, Comfort, Schonert-Reichel, & McDougall, 1996). Educators are learning to promote this process by fostering its antecedents and combating its risk factors. Attachment is clearly an antecedent to school completion among traditionally aged school children (Marcus & Sanders-Reio, 2001). Attachment can be viewed from a number of perspectives, including Ainsworth's attachment theory (1989) and Hirschi's social control theory (1969). Ainsworth's is a psychological theory that addresses attachment in one-on-one relationships, especially those involving infants and their mothers. Ainsworth saw the nature of the relationship between mother and infant as generalizing to the child's later relationships with other individuals, including friends and intimates. Her theory describes attachment in these relationships in terms of whether each person seeks the other when stressed; whether the relationship involves affection, security, and mutual pleasure; and whether the relationship offers both parties care and protection.

Hirschi's (1969) is a sociological theory that describes how children's attachment to their parents affects not only their relationships with subsequent intimates, but also their relationships with groups, society, and social institutions such as school. Hirschi focused on concern about the opinion of others, commitment to behaving in an acceptable manner, involvement of one's time and energy in positive behaviors, and belief that the principles fostered by social institutions are valid. According to Hirschi, when attachment is strong, the individual feels bonded to his or her family, school, and community.

In this study, we use a general definition of attachment that unites these theories. This broader frame allows us to draw on a larger body of literature and to generalize these findings to

older, nontraditional students and their relationship to the educational programs in which they participate.

Attachment and Social Support for Education

Research on friendship and school completion reveals that traditionally aged students who graduate have different types of peer relationships than those who do not complete school. One group of studies of peer relationships in school indicates that those who eventually drop out are loners with fewer school friends and less favorable relationships with the school friends they have. For example, Rumberger's study of the 1988 National Educational Longitudinal Study (NELS) data indicated that those students who thought other students saw them as troublemakers and/or poor students were 50% more likely to drop out. Similarly, in a five-year, longitudinal study using sociometric data, Ollendick, Weist, Borden, and Greene (1992) found that 18% of the rejected students but only 5% of the popular students dropped out of school. Similarly, a qualitative study by Mouton et al. (1996) reported that students who were low achievers felt lonely and isolated at school.

Another set of school-based friendship studies demonstrates that students who eventually drop out do actually have friends, but with peers who are not in school or who are less attached to school than are the friends of students who eventually graduate. In a study of adolescents in Montreal, Ellenbogen and Chamberland (1997) found that students who eventually dropped out had fewer school friends and more friends who had either dropped out themselves or who had completed school and were now working. The school friends they had were also more likely to drop out. Cairns, Cairns, and Neckerman (1989) similarly found that future dropouts tended to be friends with other future dropouts. This pattern led Hymel et al. (1996) to develop a model in

which children with poor attachment to school affiliate with similar children, after which time they all disengage from school together.

In his research on the relationships of very young children and the contribution of these relationships to school achievement, Ladd and his colleagues (Ladd, 1990, 1991, 2000; Ladd, Kochenderfer, & Coleman, 1996) found social adjustment to be the "glue" that holds the school experience together. In these studies, social well being was the best predictor of academic performance and attitudes toward school. Students with more school friends liked school more and performed better academically, while students who were rejected were excluded not only from games and play, but also from learning centers and academic activities.

Thus, the peer relationships of traditionally aged students contribute either to school completion or drop out. Secure affiliations with peers who are committed to school foster attachment to and engagement in school from the earliest grades. In elementary school, these friendships appear to foster school adjustment, while in middle and high schools, friendships foster comfort and motivation.

Attachment and Cognitive Support for Education

Attachment provides cognitive as well as social supports to education and schooling. According to Vygotsky's (1978) theory of the zone of proximal development, instruction occurs in the context of relationship. Among infants, the key educational relationship is with the primary caregiver. Pianta and Harbers (1996) found that children who interacted well in a problem-solving exercise with their mothers performed better academically in Grades 2 through 4, even after they controlled for the mothers' education level and the children's cognitive abilities and fine motor skills. Bus and van IJzendoorn (1988) found that literacy forms during interactions between caregivers and infants involving words written in books and on television.

During these interactions, caregivers instruct infants about words and reading, enabling infants to understand things that they could not grasp on their own. Children who were more securely attached were more focused and tried to perform better. In a similar vein, Moss, Gosselin, Parent, Rousseau, and Dumont (1997) observed that mothers of securely attached children engaged in more verbal monitoring and evaluation of their children's activities. These children later exhibited higher metacognitive skills.

In elementary (Pianta, 1999) and middle school (Wentzel, 1997), the nature of children's attachment to their primary caregivers generalizes to their relationships with their teachers. To learn from a teacher, children must be able to enter a relationship with the teacher, focus on the teacher, and to respond to the teacher's cues (Pianta, 1999). In studies of children who fail early grades, Jimerson (1999) found that children who were not achieving academically were not all retained in grade. Those who were more socially competent and better liked by their classmates were much more likely to be promoted. Similarly, Pianta and Steinberg (1992) found that children who did not perform well on standardized tests were more likely to advance to the next grade if they had a positive relationship with their teacher.

In adult education, instruction tends to be less teacher-centered, and students' relationships with their classmates take on greater importance. According to Malcolm Knowles' (1990) theory of andragogy or adult learning, the adult learners themselves are often the most valuable resources in the classroom because of the breadth of their knowledge and experience. Thus, learning often involves group activities that elicit this expertise and experience (Brookfield & Preskill, 1999; Merriam & Caffarella, 1999; Mink, Mink, & Owen, 1987). In adult learning contexts, consisting of older, nontraditional learners, the teacher becomes a “facilitator” and there is a major emphasis on learning as a cooperative venture, as it reflects the nature of “real

world" learning more accurately. In other words, often in an individual's day-to-day life, learning is more likely to be cooperative, particularly in classroom and workplace settings (Knowles, 1990).

In situations where the adult learner has built positive relationships with his or her peers, one is more likely to feel a strong attachment to the group and social institution (e.g., school, organization). Conversely, difficult interactions between peers in learning contexts demanding cooperation might reflect the lack of relationship building, predicting poor attachment to the group and social institution. While there is substantial evidence that the presence of positive school relationships with traditionally aged students predicts secure attachment (e.g., Ladd, 2000), an important predictor of academic success, no information exists about this interesting notion with older, nontraditional students. Even less information exists about how individual differences (i.e., age, sex), certain emotional states (positive and negative affect), learning motivation (curiosity), and perception of learner improvement might impact feelings of secure attachment. Each variable has been shown to influence learning performance and attachment in a number of studies (e.g., Ladd, 2000; Marcus & Sanders-Reio, 2001; Merriam & Caffarella, 1999; Pianta & Harbors, 1996), but never combined in one study. Acknowledging that secure attachment has been demonstrated to be an important predictor of academic performance in K-12 settings, we chose to investigate instead the possible antecedents of secure attachment (friendship development, affect, curiosity, and perception of learner improvement) with adults participating in learning endeavors outside the traditional school setting.

Method

Participants.

The cross-sectional sample consisted of 111 participants, with 53 women and 58 men. The mean age was 30.5 years (SD = 15.4). Most (83 percent) of the participants were Caucasian, while 12 percent were African-American, 3 percent were Hispanic, and slightly less than 1 percent were Asian. Approximately 13 percent of the sample had at least some college education, 43 percent reported having a GED or high school diploma, and 44 percent had an eleventh grade education or less. The annual household income for the majority (71 percent) was less than $25,000. English was the preferred language of 95 percent of the sample.

Instrumentation. Each potential respondent received a stapled packet of the research instruments, which included a demographic measure (age, sex, annual income, highest education level, race, and preferred speaking language).

Affect. Positive and negative affect was measured by a short form of the Positive and Negative Affect Scale (PANAS; Watson, Clark, & Tellegen, 1988). The PANAS consists of 10 positive and 10 negative words where respondents are asked to indicate their level of agreement with each word. A 5-point Likert scale was used with responses ranging from 1 (*not at all*) to 5 (*extremely*). "Beginning" affect was measured by asking the respondents to indicate to what extent they agreed with the word when they began utilizing the service at the education center (PA and NA α = .86 and .82, respectively). "Current" affect was assessed by asking the respondent to indicate how they felt at the present moment (PA and NA α = .86 and .79, respectively).

Friendship. Friendship was assessed by Griffin's (2001) 4-item subscale measuring the degree to which respondents believed they had developed friendships while participating in activities at the education center (e.g., "**You have developed:** friends with whom you study and learn."). Griffin's friendship subscale is one of ten subscales developed specifically for use with

individuals participating in adult educational programs. Items were rated on a 5-point scale ranging from 0 (*strongly disagree*) to 4 (*strongly disagree*), and the internal consistency was acceptable ($\alpha = .72$).

Curiosity. Both the cognitive and sensation seeking kinds of curiosity were measured by the Two-Factor Curiosity Scale (TFCS; Ainley, 1987). Each respective subscale consists of 9 items with a 4-point Likert response scale ranging from 1 (*do not like at all*) to 4 (*like very much*). Cognitive curiosity is represented by items like "analyzing a theory to see if it is a good one"; while an example of sensation seeking curiosity is "taking up the sport of water-skiing." Each subscale demonstrated an acceptable internal consistency ($\alpha = .84$ and .85, respectively).

Student Improvement. Perception of student improvement was measured by another of Griffin's (2001) subscales (4 items). The 5-point Likert response scale ranged from 0 (*strongly disagree*) to 4 (*strongly agree*). An example of an item includes "**Attendance in your program is helping improve your:** job skills." Again, the internal consistency of the scale was acceptable ($\alpha = .83$).

Attachment. Type of attachment was determined by utilizing a modified version of Hazan and Shaver's (1990) forced-choice instrument. Attachment type was measured by asking the respondent to circle one of three choices: (a) "*I find it relatively easy to get close to others and am comfortable depending on them and having them depend on me. I don't often worry about someone getting too close to me*" (the secure type); (b) "*I am somewhat uncomfortable being close to others; I find it difficult to trust them completely and to allow myself to depend on them. I am nervous when anyone gets too close*" (the avoidant type); (c) "*I find that others are reluctant to get as close as I would like"* (the anxious/ambivalent type). As the original measure was designed to measure love relationships, we modified the instrument to delete any specific

reference to love and partners. The secure attachment type question remained the same as Hazan and Shaver's, however.

Procedure. Participants were obtained from seven adult education centers in the mid-central region of the United States (N = 129). A battery of tests, of which the instruments examined in this study were a large part, and demographic data were collected at the respective education centers, with an overall administration time of roughly 30 minutes. All instruments examined in this study were paper-and-pencil questionnaires. Further research was conducted through semi-structured individual and group interviews; the analysis of this data is still in process.

Results and Discussion

The means and standard deviations for each scale are presented in Table 1. Zero-order correlational analyses are to be found in Table 2. Age had a positive, but statistically significant relation with current positive affect and cognitive curiosity, indicating that is was more likely that the older participants felt enthusiastic, active, alert (positive affect) and curious. Sex had a statistically significant relationship with friendships and current positive and negative affect, meaning that the female participants were more likely to report forming friendships at the education center. Further, they would be more likely to be enthusiastic, active, and alert and less likely to be angry, nervous, and contemptuous (negative affect). Friendship development had a positive, moderate statistically significant relation with positive affect, cognitive curiosity, perception of improvement, and attachment, suggesting that if positive friendships developed while attending the education center, the learner would be more likely to possess a positive affect, be curious, perceive program learning success, and feel securely attached. Moreover, current positive affect had a positive statistically significant relationship with perception of

learning improvement, logically suggesting that is was more likely that learners in a positive affective state would perceive that program participation was useful. Current negative affect had a statistically significant, but negative relationship with attachment, signifying that if one were in a negative affective state at the time of completing the test battery, they would be less likely to feel securely attached. Cognitive curiosity had a positive, moderate statistically significant relationship with perception of learner improvement, indicating that a learner's curiosity (desire to learn) level is positively associated with learner improvement. Finally, perception of student improvement had a moderate statistically significant relationship with attachment, meaning that learners who believed that participation at the education center was helpful would be more likely to feel securely attached.

The curiosity measure (TFCS) was factor analyzed to investigate the subscale stability and generalizability of the instrument. A number of researchers (e.g., Byman, 1993; Reio, 2003) have noted that a two-dimensional depiction of curiosity, while parsimonious, might not be sufficiently representative of the construct. Our factor-analytic work indicated that there were three curiosity factors, not two. After a principal component analysis, both the Kaiser criterion and the scree plot indicated the presence of three rotatable factors. With a varimax rotation, three clear curiosity factors emerged, explaining 54.5% of the variance. The first factor, cognitive curiosity, explained 22.1% of the variance ($\alpha = .84$). Consistent with previous research (e.g., Reio, 2003), the sensation seeking curiosity scale split into two scales: physical sensation seeking (items 1, 3, 7, 11, 14, and 15; $\alpha = .84$) and risk-taking (items 9, 10, and 17; $\alpha = .70$). For the purposes of this study, our further analyses concerning curiosity only includes the cognitive curiosity factor scores.

The majority of the participants classified themselves as secure (58%), 42% as avoidant, and 1% anxious/ambivalent. The relative number of secure and avoidant attachment types is roughly consistent with previous research (e.g., Hazan and Shaver, 1988), yet the anxious/ambivalent type is underrepresented. This result might reflect the lack of sufficient clarity between the anxious and avoidant styles as reported by a number of previous researchers (Bifulco, Moran, & Berzazzani, 2002; Feeney, Noller, & Callan, 1994). Indeed, Stein, Jacobs, Ferguson, Allen, and Fonagy (1998) argue that only a secure-insecure measurement dimension remains stable across measurement systems. With this observation in mind, we re-coded the attachment variable and made it dichotomous (coded 1 = secure; 0 = non-secure). We believe this change is warranted in light of the very low number of anxious types (one) represented in this study and Stein et al's call for more clarity. To reflect the coding modification of the dependent variable, the final analyses were conducted through hierarchical logistical regression techniques.

A hierarchical logistic regression (with attachment as a dichotomous dependent variable) of the contribution of friendship development, positive and negative affect, curiosity, and student improvement was statistically significant once all of the variables had been entered. The results are presented in Table 3. The overall model was statistically reliable ($\chi^2 = 29.4$, $p < .001$) and the classification rate was 85.7%. The demographic variables (age, sex, and household income), entered as a block in the first step in the regression, did not reach statistical significance. In the second step of the analysis, the friendship development variable was a significant positive and unique predictor of secure attachment. Further, in the third step of the regression, current positive and negative affect made unique statistically positive and negative contributions, respectively, to predicting the dependent variable. Finally, the fourth block variables (cognitive

curiosity and perception of student improvement) contributed unique positive variance to the regression model as well. Overall, the conceptual model demonstrates that friendship development, positive and negative affect, the desire to learn (operationalized as curiosity), and perception of improvement are important predictors of secure/non-secure attachment.

These findings support the notion, as Knowles (1990) claimed, that adult learning has a substantial social or cooperative nature. While we do not discount the significance of individual learning, this study points to the relevance of considering the social context when trying to best understand adult learning as it relates to secure attachment. In the same vein, Vygotsky's (1978) notion that learning and development must be understood within the context of social relationships is extended in this research as it investigates adults operating in nontraditional learning contexts. Our findings also support his view that the nature of learning and development consists of learning that is promoted through curiosity and peer relationship development. Attachment theory has been extended in that curiosity has been successfully found to predict secure attachment, a new notion. Ainsworth (1989) predicts that curiosity should follow once the infant feels securely attached; our work indicates that feeling curious can also predict secure attachment independently and through the mediation of a learning variable. Thus, there is evidence that the curiosity-attachment relation is bi-directional.

In summary, this new information demonstrates the importance of forming relationships in adult learning contexts, which in turn supports the increase and decrease of positive and negative affect, respectively, thereby encouraging learning motivation (curiosity) and learner improvement, ultimately resulting in the perception of being securely attached. The next research direction would be to focus on the independent variables as they predict secure attachment *and* eventual program completion, of vital importance in any adult education center.

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Table 1.

Means and Standard Deviations of the Research Variables

Variable	Mean	Standard Deviation	n
Age	30.49	15.48	125
Income	3.82	1.81	118
Friendships	14.03	2.97	94
Positive Affect	35.23	8.59	113
Negative Affect	17.39	6.76	113
Cognitive Curiosity	24.63	5.38	106
Improvements	15.34	3.25	98

Table 2.

Intercorrelations Among the Demographic, Friendship, Affect, Curiosity, Learner Improvement, and Attachment Variables.

Variable	1	2	3	4	5	6	7	8	9
Age (1)	-----								
Sex (2)	.35	-----							
Income (3)	.04	-.11	-----						
Friends (4)	.04	.31	.18	-----					
PA (5)	.19	.30	-.08	.32	-----				
NA (6)	-.16	-.24	-.16	-.11	-.07	-----			
Curiosity (7)	.41	.09	.03	.25	.18	-.07	-----		
Improve (8)	.15	.13	.02	.32	.22	-.13	.33	-----	
Attach (9)	.14	.21	-.14	.34	.16	-.25	.04	.42	-----

Note. $N = 93$. Correlations ranging from $\pm$ .19 - .24, $p < .05$; correlations ranging from $\pm$ .25 - .42, $p < .01$. PA = Positive Affect; NA = Negative Affect.

Table 3.

Hierarchical Logistic Regression with Age, Sex, and Household Income as Control Variables: Predicting Secure/Non-Secure Attachment.

Variable	*Beta*	*Wald*	*df*	χ^2	*p* value
Step 1					
Age	.03	.01	1		.939
Sex	.57	.39	1		.532
Income	.40	2.42	1		.120
Block			3	2.21	.531
Step 2					
Friendship	.38	3.99	1	3.80	.050
Step 3					
Positive Affect	.06	1.60	1		.040
Negative Affect	-.19	6.73	1		.009
Block			2	9.33	.001
Step 4					
Cognitive Curiosity	.69	5.71	1		.017
Learner Improvement	.61	9.37	1		.002
Block			2	14.08	.001
Model			8	29.42	.000

Note. $N = 93$ due to listwise deletion.