

Metacognitive and Affective Factors of College Students With and Without Learning Disabilities

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Abstract

Metacognitive and attitudinal factors in the academic performance of college students with and without disabilities were assessed and compared. GPA, metacognitive knowledge and practice, resiliency, self-efficacy, locus of control, and need for achievement were examined. Similarities as well as notable differences were found between the LD (N=27) and non-LD (N=28) groups in perceptions and approaches to academic tasks. The LD group indicated a higher level of initiative than the non-LD group, which may be one of the factors helping contribute to their achievement. While the resiliency factor of initiative was higher for the LD group, self-efficacy in regard to coursework was significantly lower than that of the non-LD group. Even though by measures of aptitude and GPA the students with LD were not significantly different from their peers without LD, many indicated self-doubt about not being able to perform as well in academic coursework as their non-LD cohorts.

The term learning disability (LD) encompasses a relatively broad group of learning difficulties, involving a disorder in one or more of the basic psychological processes presumed to be related to a central nervous system dysfunction. The disorder creates problems in speaking, listening, writing, reading, and/or mathematics, and manifests in a severe discrepancy between apparent potential for learning and level of achievement (Lerner, 2000). It is estimated that more than 5% of school-age children have a learning disability and that their disability accounts for roughly half of the total number of students identified by public schools as needing special education (Hallahan & Kaufman, 1997).

Students with learning disabilities frequently experience a multitude of difficulties throughout their academic careers. They often face limitations in strategic knowledge and self-monitoring that can lead to academic difficulties (Allsopp, Minskoff, & Bott, 2005; Lerner, 2000). In addition, they typically encounter problems in motivation, attributions, self-esteem, and affective responses that can further impair academic difficulties (Borkowski, Carr, Pellingier, & Pressley, 1990; Borkowski, Johnston, & Reid, 1987; Borkowski & Murthukrishna, 1992). Beyond academic challenges,

students with LD may find themselves dealing with the shortcomings of the system, including access to services to postsecondary services, documentation requirements, and transition support from secondary to postsecondary (Gregg, 2007).

Borkowski and his colleagues (Borkowski et al., 1990; Day & Borkowski, 1987) proposed an integrated model of achievement that included executive functioning. Executive functioning focused on two distinct dimensions: metacognition and affective factors. In this model metacognition encompasses self-knowledge of learning strategies and the ability to use this knowledge in an efficient and effective manner. Ongoing self-regulation and monitoring of metacognitive strategies is necessary for this component to be effective. Closely aligned with the metacognitive is the affective component. Increased feelings of self-efficacy reinforce self-regulation and the use of cognitive strategies, which in turn strengthen self-esteem, motivation, and also lead to attributing success and failures to their own efforts. Through bi-directional relationship between metacognitive and affective factors strategic knowledge becomes related to self-efficacy (Borkowski, 1992; Borkowski et al., 1990).

Borkowski et al. (1990) proposed a causal, bidirectional link between these two factors. That is, when a student becomes more efficient in academic self-regulation, his or her self-efficacy begins to change as well. Self-efficacy in this context refers to the expectancy of how competently an individual will be able to perform a task (Bandura, 1997). If a student believes he/she will be able to perform academic tasks successfully, motivation increases. Increased motivation further strengthens the metacognition regulation and monitoring, which in turn leads to attributing successes to self-efforts and establishing a more internal locus of control with regard to academic successes.

Successes as well as failures in academic endeavors can be attributed to internal factors such as ability or effort, or to external factors such as of luck or help from others. A low perception of self-efficacy along with negative attributions frequently undermine academics (Butler, 1999; Butler, Elashuk, & Poole, 2000). According to Palladino, Poli, Masi, and Marcheschi (2000), competence improves through effort, and when students begin to enjoy learning and realize their own role in their successes, they develop an internal locus of control. This leads to attribution of success and failure to effort and experiencing feelings of self-efficacy. Research suggests that students in LD often face problems with both of these areas (Covington, 1992; Lerner, 2000).

Students with LD have been found to report lower levels of self-esteem, experiencing less emotional support, and having greater academic and personal-emotional adjustment dysfunctions than their peers without LD (Brinckerhoff, Shaw, & McGuire, 1993; Hill, 1996; Stolowitz, 1995). Feelings of social isolation and not fitting in with others may also present barriers (Hill, 1996; Reiff, Gerber, & Ginsberg, 1993, 1997). Limited protective factors that serve to aid in resiliency coupled with adverse experiences may serve to restrict and weaken academic performance for students with learning disabilities.

Due to the factors noted above, it is not surprising that have lower rates of postsecondary school attendance (Henderson, 2001; Madaus & Shaw, 2006; Wagner et al., 2005). Despite variations in the number of students with LD responded to pursue a postsecondary education, the overall consensus is that this group of college students is underrepresented. While there has been a slight increase in the number of students with LD who transition to community colleges since late 1980s to early 2000 (up from 20% to 23%), but the number of students with LD who go on to a four-year institution is around 11%. (Wagner et al., 2005) Ac-

cording to the National Longitudinal Transition Study – 2, 76.7% of high school students with LD expected to get some type of postsecondary education when surveyed, but only 19% were attending postsecondary school (Newman, 2005). Thus, although students with LD represent the largest group of college freshmen with documented disabilities (National Center for Education Statistics, 2005), they are faced with many challenges in pursuing postsecondary education (Gregg, 2007).

In a 10-year longitudinal study, Murray, Goldstein, Nourse, and Edgar (2000) found that students with LD were still less likely to attend any form of postsecondary school and were less likely to have graduated from postsecondary programs. Only 2.4% of individuals with LD had graduated from a four-year college compared to 45.5% of their high school peers without a disability.

Significant differences in metacognitive and affective factors have been reported during elementary and secondary schools between students with and without learning difficulties (Borkowski, et al., 1987; Palladino et al., 2000; Papetti et al., 1992). Palladino et al. (2000) found significant differences with metacognitive skills, internal attributions of effort related to personal success or failure, and self-reported depressive symptomatology, with the students with LD showing more difficulty in these areas than their counterparts without LD. As mentioned, the reciprocal influence between metacognitive and affective factors can undermine the ability to succeed academically. The question is how these metacognitive and affective factors affect students with LD who do pursue a higher education degree at a four-year college or university compare to their college counterparts who do not have a learning disability.

The differences between high school and college are many, and reflect major shifts from external to internal controls (e.g., independent living, class time, study time) and from more personalized attention to being one of many (e.g., class size 25-35 students to upward of 100 or more students in a class). In addition, there is a major shift from the public school maintaining the responsibility of finding and serving students with special needs to the college environment where the student takes on this responsibility (Wolanin & Steele, 2004).

College presents major adjustments to all students but especially to the student with a learning disability. As posited by Field, Sarver, and Shaw (2003), students with LD at the postsecondary level need to become more self-determined in order for them to be academically successful. At the postsecondary level students take on the responsibility of developing and

being aware of academic goals as well as the ability to use feedback to evaluate their performance relative to the academic goals they have adopted.

Given the smaller numbers of students with LD who pursue postsecondary education, the present study addressed the question: Are there differences in metacognitive and affective factors among college students with learning disabilities in comparison to their college peers without LD?

Method

Participants

The participants in the current study were 55 undergraduate students at a southeastern university. Twenty-seven of the students (12 men and 15 women) were identified by the university's Department of Disability Support Services (DSS) as having a learning disability, and 28 students (12 men and 16 women) were identified as never having been diagnosed, or ever receiving special services, as students with a learning disability.

The students with LD were receiving support services through the DSS office at the time of the study. Sixteen reported having a disability in reading, 7 in reading/writing, and 4 in math. Six students indicated a co-morbid diagnosis of learning disabilities and attention deficit hyperactivity disorder. Services through the DSS office for these students varied from extended time on tests, being able to take an exam in a room with limited distractions, help in note taking, and tutoring services. The students with LD initially had been identified under the Individuals with Disabilities Education Act (IDEA) as having a learning disability during their primary-school years (grades 1-5), and they registered with DSS as university students with a disability. They sought support services and accommodations and provided the necessary documentation of their disability to the DSS office for verification purposes.

As part of this documentation, students must show that they have a disability as defined by Section 504 of the Rehabilitation Act and the Americans with Disabilities Act. If the documentation of the disability is deemed insufficient, the student is required to undergo additional evaluation. The DSS office also reserves the right to consult with university professionals in reviewing and assessing documentation when necessary for approving accommodations. Part of the required documentation for a learning disability is a comprehensive psychoeducational evaluation that includes an individually administered intellectual assessment.

The non-LD group was comprised of volunteers who agreed to participate in the study as a result of a general announcement in their psychology courses at the university. These students were not receiving, nor had they ever received, special education services. None of them reported having experienced learning problems. The two groups were matched as closely as possible on age, gender, and class status. Demographic information for participants is presented in Table 1.

Instruments

A short-form of the Wechsler Adult Intelligence Scale-III (WAIS-III) was administered to all participants to control for the effects of intelligence (Wechsler, 1997). Combining the Vocabulary and Picture Completion subtests of the WAIS-III provides a valid screening for intelligence and yields a Deviation IQ score (DIQ). The validity coefficient for this short form is reported to be .88 (Sattler, 1999). The short form of the WAIS-III was administered to ensure both groups were equivalent in aptitude. The students with LD had an individually administered intellectual assessment on file with the DSS office, and although this score could have been used as a measure of aptitude, there were variations in time since evaluation, types of measures administered (i.e., Wechsler, Stanford-Binet, or Woodcock-Johnson), as well as potential variations in testing conditions and test administrators. Consequently, it was decided that a short-form of the WAIS-III would be given to both groups. If there were significant differences between the two groups in regard to intelligence, an analysis of co-variance would have been used in the statistical procedures in order to control for aptitude as a confounding variable.

The Executive Process Questionnaire (EPQ; Hall, 2005) consists of 40 statements specific to metacognitive behaviors that respondents using a 4-point Likert scale ranging from "almost never" to "almost always." Areas addressed include planning strategies, effort expended, inconsistency between plans and behaviors, metacognitive applications, and the impact and control of external variables. The scale demonstrated reasonable internal consistency ($\alpha = .72$). Cochran's Q yielded a value of 1671.77 with a probability of less than .001. These results indicated a strong relationship among the items as well as a strong consistency of responding across test items.

The 40 items from the EPQ were analyzed using factor analysis. Results did not indicate any specific subsets for the overall EPQ. Eigenvalues above 1 were seen for 15 factors accounting for 62.5% of the variance. A sharing of values was seen across factors 1 through 15. The analysis indicated the overall score

Table 1*Students With LD and Without LD with Respect to Age, Gender, Classification, and Major*

	Students With Learning Disability	Students Without Learning Disability
Age		
Mean	22.26	21.82
Standard Deviation	4.81	4.28
Range	18-44	18-38
Gender		
Men	12	12
Women	15	16
Classification		
Freshmen	2	3
Sophomore	14	13
Junior	10	11
Senior	1	1
Reported Majors*		
Anthropology	3	2
Biology	1	0
Chemistry	2	1
Education	6	7
Physics	0	1
Psychology	11	13
Social Work	4	4

*These were the self-reported majors at the time the study was conducted.

of the EPQ was the most reasonable solution (Hall, 2005). In order to assess the reliability of the EPQ data were collected over a five-week time span and subjected to tests of reliability. Results supported the test-retest reliability of the EPQ with a coefficient of determination of .80 between the first and second testings. (Hall, 2005).

The Hall Resiliency Scale (HRS; Hall, 2004) is a 15-item self-report measure of resiliency. For each item the individual responds to the statement as 'not true,' 'somewhat true,' or 'very true.' Results of a principal-components factor analysis yielded an overall general factor of resiliency (30.8% of the variance) as well as three additional factors of Autonomy (11.5% of vari-

ance), Initiative (7.4% of variance), and Trust (7.2% of variance) (Hall, 2004). Eigenvalues for the four factors were 4.61, 1.72, 1.15, and 1.07, respectively. The Autonomy factor relates to a strong sense of self and one's abilities. The ability to marshal one's resources and apply them to the problem at hand is the focus of the Initiative factor. Finally, the Trust factor relates to having a support system and believing one can access this system in a time of crisis. Test-retest reliability of the scale over a five-week interval (Hall, 2004) yielded .80 for the overall factor. The test-retest reliability for the three factors was as follows: Autonomy - .89, Initiative - .69, and Trust - .67. Repeated-measures ANOVAs were performed on the factor scores for the

two administrations (Hall, 2004). Testing sessions and gender comprised the independent variables, and the factor scores served as the dependent variables. There was not a significant main effect for testing sessions or gender or a significant gender by testing interaction effect. Results supported the consistency of the scale across two testing session.

The College Self-Efficacy Inventory (CSEI) (Solberg, O'Brien, Villareal, Kennel, & Davis, 1993) consists of 20 items designed to measure an individual's confidence in performing tasks typically associated with college success (i.e., talking with one's professors, managing time effectively). The scale follows a 10-point rating ranging from 0 ("not confident at all") to 9 ("very confident"). Construct validation of the scale indicated a three-factor solution. The three factors were identified as Course Self-Efficacy, Roommate Self-Efficacy, and Social-Efficacy. Coefficient alpha estimates for the total scale were .93 and .88 for each subscale (Solberg et al., 1993). Reliability was established using internal consistency estimates. Subsequent research has shown that the CSEI is significantly related to persistence intentions (Torres & Solberg, 2001).

The Nowicki-Duke Locus of Control Scale (ND-LOC; Nowicki & Duke, 1974) was used to assess internal versus external attributions. The scale consists of 40 "yes" or "no" items that are summed to indicate one's perceptions of external controlled attribution. Higher score reflect a more external locus of control with lower scores connoting a more internal locus of control. In an analysis of 12 studies, Nowicki and Duke (1974) reported that reliabilities of the scale ranged from .74 to .86. The same study reported test-retest reliability of .83 over a six-week period. Validity of the scale was also supported with a correlation of .68 on Rotter's scale of internal-external control.

Mehrabian's Need for Achievement (nAch) scale (Mehrabian, 1968; Mehrabian & Ksionzky, 1974) is a well-known measure of achievement motivation. The nAch scale consists of 26 statements that an individual responds to using a Likert-scale format (+4 "very strong agreement" to -4 "very strong disagreement"). Lower scores indicate a higher need for achievement. Separate scales were originally designed for male and female participants. The scale designed for male participants was used for all participants in the current study for reasons of parsimony; in addition, several questions on the female scale seemed outdated (e.g., question specific to rooming with a number of *girls* and whether you would prefer to plan a party yourself or have one of other *girls* organize it). Concurrent valid-

ity measures have shown significant correlation with Herman's achievement motivation scale (Mehrabian & Ksionzky, 1974).

Procedure

The university DSS office sent information to the students with LD about the study and the researchers' contact information. Students with LD who wished to participate contacted one of the researchers to schedule an appointment to complete the study. The students without LD were undergraduate students in psychology courses who volunteered to participate in the study. The decision to participate or not participate in no way influenced the students' course grades, and participation was voluntary. The study received approval from the Institutional Review Board (IRB) and complied with ethical standards of APA for research involving human subjects.

The study assessed a heterogeneous group of students with LD with no distinctions made among types of learning disabilities. While the students with LD were a heterogeneous group, the majority noted that they had been diagnosed as having a LD in reading. The study was primarily interested in the actual performance, metacognitive, and affective factors of students with learning disabilities in comparison to their peers without a learning disability.

Results

A series of ANOVAs and MANOVAs were performed to determine if significant differences existed between the LD and non-LD groups on various measures. The ANOVAs and MANOVAs used the $p = .05$ level of significance. In addition, effect size (partial eta squared - η_p^2) was computed to assess the degree of association between an effect and the dependent variable to determine the proportion of total variability attributable to a factor. Effect sizes were considered small ($\leq .2$), moderate (.5), and large ($\geq .8$).

A short form of the WAIS-III was administered to determine if there were significant differences between the LD and non-LD groups in terms of aptitude. If significant differences were found, aptitude could be a confounding factor on some of the variables and would need to be co-varied out in further inferential analyses. Estimated Full Scale Scores were computed from the short form, and these scores (DIQ) served as the dependent variable in an analysis of variance with exceptionality (LD vs. non-LD) as the independent variable. No significant difference was found between the students with and without LD on DIQ, $F(1,53) = 0.92$, $p = .34$, $\eta_p^2 = .01$. DIQ means and standard

deviations for the LD and non-LD groups were 108.18 (9.13) and 105.32 (12.67), respectively. Based on this finding it was concluded that the two groups did not differ significantly in aptitude or intellectual abilities, and analyses of covariance with aptitude as covariate were not used in subsequent analyses.

An ANOVA with exceptionality as the independent variable and GPA as the dependent variable failed to reach significance, $F(1,52) = 1.45, p = .23, \eta_p^2 = .03$. There was not a significant difference between the two groups in grade point averages in college. There was also no significant difference between the LD and non-LD groups based on EPQ scores, $F(1,52) = 2.13, p = .15, \eta_p^2 = .04$. There was not a significant difference between the two groups in how they reported using metacognitive skills.

A MANOVA was conducted with exceptionality as the independent variable and scores on the three subscales of the HRS as dependent variables. A significant difference was found between the students with and without LD based on Wilks' lambda, $\Lambda(3, 51) = 2.78, p = .05, \eta_p^2 = .14$. Follow-up tests of between-subject effects indicated a significant difference between LD and non-LD students on the Initiative subscale, $F(1, 53) = 4.24, p = .03, \eta_p^2 = .08$. LD students obtained significantly higher scores on the Initiative component than their non-LD peers, suggesting that they devoted more effort to managing their personal resources to solve a problem or complete a task. While significant, the effect size was weak, accounting for only 8% of the overall variance. There were no significant differences between the LD and non-LD students on the Autonomy or Trust subscales, $F(1, 53) = 0.31, p = .58, \eta_p^2 < .01$, and $F(1, 53) = 0.83, p = .37, \eta_p^2 = .02$, respectively.

Next, a MANOVA was computed with exceptionality as the independent variable and scores on the three subscales of CSEI measure serving as dependent variables. A significant difference was found between the LD and non-LD groups based on Wilks' lambda, $\Lambda(3, 51) = 2.73, p = .05, \eta_p^2 = .13$. Follow-up tests to identify the focus of effects indicated significant between-groups difference on the Course and Social subscales, $F(1, 53) = 4.57, p = .03, \eta_p^2 = .08$, and $F(1,53) = 4.22, p = .05, \eta_p^2 = .07$, respectively. The non-LD group obtained significantly higher scores on both subscales, which suggests higher levels of confidence to perform well in each of these areas. Again, while these differences were significant, the strength of the effects remained weak, accounting for only 8% and 7% of the variance for Course and Social subscales, respectively. There was not a significant difference between the LD and non-LD students for Roommate

Self-Efficacy, $F(1, 53) = 1.51, p = .22, \eta_p^2 = .02$.

Between-groups ANOVAs were computed using locus of control and need for achievement (nAch) as the dependent variables. A significant difference between the groups were not found related to feelings regarding their degree of personal control over life circumstances or self-reported nAch, $F(1,53) = 0.63, p = .43, \eta_p^2 = .01$ and $F(1,53) = 0.59, p = .45, \eta_p^2 = .01$, respectively. Means and standard deviations for the various measures are presented in Table 2.

Discussion

No significant statistical differences were found between the students with LD and their non-LD cohorts on overall aptitude as measured by a short form of the WAIS-III and overall college GPA. Thus, the students with LD were achieving at a level commensurate with their non-LD peers in regard to intellectual skills as well as academic performance.

There was also no significant statistical difference between the students with LD and their peers on their responses to the EPQ, indicating that both groups were consistent with one another in their reported use of metacognitive skills in the academic setting. Reiff (2004) identified engaging in goal-directed and self-regulated autonomous behaviors as measures of self-determination that help ensure academic success for students with LD at the postsecondary level. The students with LD in the current study were utilizing these types of skills as effectively as their non-LD counterparts. While problems with metacognitive factors may impede the academic success of students with LD, especially in elementary and secondary school, it may be that the students with LD who develop those skills are the ones who are able to succeed in higher academia. As noted by Brinckerhoff, McGuire, and Shaw (2002), the differences between high school and college requirements are many, and the students who go on to college may be those who have developed the skills necessary to "monitor their own work, reflect on its quality, predict academic outcomes, or adjust or adapt their approach to academic tasks in order to achieve their goals" (p. 30).

The students with LD obtained significantly higher scores on the Initiative subscale on the HRS than students without LD. While overall scores for both groups were high on this measure, the students with LD seemed to be willing to expend extra effort and time to attain goals. This may have been an influential factor in how these students were able to achieve at a successful level. Since academics typically have not

Table 2

Means and Standard Deviations for LD Group for Grade Point Average (GPA), Executive Process Questionnaire (EPQ), Autonomy, Initiative, Trust Hall Resiliency Scale (HRS Total), Course, Roommate, Social, Self-Efficacy Total, Nowicki-Duke Locus of Control Scale (ND-LOC), and Need for Achievement (nAch)

	LD Students		non-LD Students	
	Means	Standard Deviations	Means	Standard Deviations
GPA	2.80	0.55	2.99	0.59
EPQ	105.38	11.36	109.64	10.09
HRS				
Autonomy	13.29	1.41	13.50	1.32
Initiative	14.56	0.84	14.00	1.01
Trust	12.22	2.24	12.75	2.07
Total	40.03	3.22	40.32	3.66
Self-Efficacy				
Course	42.19	11.92	48.14	8.51
Roommate	26.29	7.55	28.57	7.14
Social	48.88	10.64	54.46	9.48
Total	138.07	18.80	154.86	23.27
ND-LOC	12.11	5.51	10.92	5.69
nAch	12.29	11.67	9.82	12.18

come as easily to them as to their peers, the LD group may have more readily acknowledged that extra time and effort were necessary to master certain academic tasks and were willing to expend this time and effort. This is a highly adaptive belief and may reflect their ability to reframe their learning disability and take greater control over their successes (Reiff, 2004).

When the measure of Self-Efficacy was analyzed for the two groups, the students without LD obtained higher scores on both the Course and Social subscales than their LD peers. Although the groups did not differ in overall GPA, the students without LD reported a greater sense of trust in their abilities to handle both course and social issues associated with the academic setting. By contrast, even when they were academically successful, the students with LD demonstrated

a lower sense of self-efficacy with regard to their capabilities in these areas than their counterparts. This was in direct opposition to the findings noted above of similar intellectual abilities, college GPA, and metacognitive skills. Even in settings where they were successful, they seemed to have lingering doubts. Thus, the successes obtained through effort did not lead fully to them experiencing feelings of positive self-efficacy, as proposed by Palladino et al. (2000). The findings were consistent with prior research suggesting that even though the students with LD were performing at a level of academic success commensurate with their non-LD peers, there may still be a lingering self-doubt about their own abilities (Field et al., 2003; Reiff, 2004).

The groups did not differ significantly from one another on the need for achievement or locus of control. Both groups reported strong needs to achieve and both groups tended toward a more internal locus of control. As such, all the students believed their personal actions were influential in bringing about successful outcomes. The students with LD were consistent with their non-LD peers in a sense of being in control of outcomes by virtue of effort and acknowledging their own role in success (Palladino et al., 2000), but they seemed to maintain a level of skepticism in holding on to success, as noted by their lower self-efficacy in regard to coursework and higher reported levels of initiative. It seemed to be reflective of a belief that success for them came from working harder and was more tentative than for their peers. This may be an accurate perception for many students who deal with a learning disability. Trainin and Swanson (2005) found that the achievement level of college students with LD was comparable to that of their counterparts without LD. The college students with LD demonstrated weaker skills in processing of information (i.e., processing speed, semantic processing, and short-term memory), but they had learned to compensate by using metacognitive skills effectively.

Limitations

Several limitations of the study need to be noted. Participation was by choice for both groups. The students with LD were notified about the study by DSS, and they had to initiate contact directly and schedule appointments. This process is very likely resulted in participation by students with LD who were more self-determined and accustomed to taking an active role with their learning needs than those who did not respond. In addition, the fact that these students represented a college base of students with LD make then unique in their motivation and perseverance with respect to taking charge of their academic learning and seeking out services through DSS (Wolanin & Steele, 2004).

While the two groups were matched as closely as possible on age, gender, and classification, it was not possible to match fully in terms of financial parental support or specific academic major. As noted previously, the students with LD were also a heterogeneous group and not specific to only one type of learning disability, with six students also indicating a co-morbid diagnosis of ADHD. The study looked at two different populations (LD and non-LD) and compared them on a number of variables. However, not all variables that may have impacted college success were assessed, nor is it the authors' opinion that it is ever possible to

include all potential variables. The sample size, by the very nature of the study, was also limited. The above may influence the generalizability of the study to other academic settings as well as other population groups of students with learning disabilities. Therefore, interpretation of the findings from this study need to be done with the above limitations in mind.

Future Research

Future research needs to focus on differences that may exist between students with LD who decide to pursue postsecondary education and those who do not. It would also be beneficial to obtain a participant pool where better matches could be made with respect to types of learning disabilities, levels of accommodations, and chosen majors. Further, it would be highly informative to follow longitudinally a group of entering students with LD and monitor their progress through college. As noted above, the students with LD who participated in this study were apprised of the research by DSS, and the students made a choice to contact one of the researchers. The question remains whether there were differences between the students who chose to participate and those who did not. Further complicating this is the fact that not all students with LD contact the DSS office when they enter postsecondary institutions (Newman, 2005).

Summary

While both groups demonstrated strong abilities and positive academic achievement at the college level and were able to utilize metacognitive processes effectively, the students with LD seemed to harbor more self-doubt about their own abilities. They also seemed to take a stronger initiative in making sure of their success by self-determination. The students with LD who participated in this study may be an exceptional group when compared to the general population of LD students, but the results point out that even when these individuals are doing well, they may still have underlying self-doubt and feelings that they are not as successful as their counterparts.

This study also has potential implications for students with LD who are thinking about pursuing college-level academics. These students need to have an understanding of metacognitive processes and be encouraged to take an active role in their education. Students with LD who are considering postsecondary education benefit from a strong basic academic framework, but they can also benefit from help with reframing their learning disability and building course-specific strategies (Allsopp et al., 2005; Field et al., 2003; Gregg, 2007; Reiff, 2004).

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