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Social support: main and moderating effects on the relation between financial stress and adjustment among college students with disabilities

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Abstract Students with disabilities are underrepresented in 4-year colleges and universities in the United States and those that do attend are at an increased risk of performing poorly in these settings. These difficulties for college students with disabilities may be compounded by additional stress related to financial concerns. The current study was designed to investigate the effects of social support on the adjustment of college students with disabilities generally, and among college students experiencing financial stress specifically. Results indicated that two types of social support (total support and satisfaction with support) had positive effects on the post-secondary adjustment of college students with disabilities. Moreover, both forms of support moderated the effects of financial stress on some, but not all, indicators of adjustment. The implications of these findings for future research and practice are discussed.

Keywords Social support · College students · Disability · Financial stress

1 Introduction

Despite the growing importance of a college education, this opportunity remains elusive for large segments of the population. In the United States, approximately one in ten students in the K-12 public school system are labeled special needs and are receiving special education (U.S. Department of Education 2008). Recent national findings indicate that only 15 % of these youth have *ever* attended 4-year colleges or universities up to 6 years after high school as compared to 37 % of youth in the general population (Sanford et al. 2011). Moreover, at the time these data were gathered, less than one-tenth (9 %) of young adults with disabilities reported *current* enrollment

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in college whereas a third of young adults in the general population were currently enrolled (Sanford et al. 2011). Issues of access to postsecondary school for students with disabilities are compounded by issues related to difficulties adjusting to the academic and social demands of university life among those students with disabilities that do attend. Such difficulties are reflected in higher course failure rates, lower retention rates, and significantly lower rates of graduation as compared to their nondisabled peers (Hurst and Smerdon 2000; Murray et al. 2000; Sanford et al. 2011; Wessel et al. 2009).

1.1 Financial stress

In addition to the general challenges facing students with disabilities in post-secondary school, a growing number of college students experience additional difficulties that may inhibit effective performance within postsecondary settings. For example, increasing numbers of college students in the United States report experiencing financial stress during college (Nelson et al. 2008; Northern et al. 2010). Moreover, students with disabilities are disproportionately represented in low-income backgrounds, a factor that may inhibit access to college and may contribute to financial stress among those students that do attend (Aud et al. 2011; Sherman 1994). For example, recent data from the National Longitudinal Transition Study-2 indicates that whereas approximately 22 % of young adults with disabilities whose parents' income was above $50,000 have attended postsecondary school, only 8 % of students with disabilities whose parents income was $25,000 or below report having ever attended (Sanford et al. 2011).

Financial Stress among college students is predictive of a host of negative outcomes including poor academic performance (Baum and O'Malley 2003), mental health problems (Lange and Byrd 1998), and physical health (Nelson et al. 2008). Although the detrimental effects of financial stress on the adjustment of college students has been demonstrated among students without disabilities, less is currently known about the effects of such stress on the performance and adjustment of postsecondary students with disabilities. However, Newman et al. (2011) reported that the most common reason college students with disabilities do not finish their degree programs up to 8 years after high school is related to financial burdens. Thus, financial stress may be a compounding risk factor that has detrimental effects on the college adjustment of students with disabilities.

1.2 Social support

Although a growing body of research highlights the difficulties young adults with disabilities have accessing and succeeding in college, far less is currently known about factors and processes that may promote success among these youth. Although preventing exposure to stressors such as financial stress that may inhibit performance is undoubtedly the most efficacious approach, such an approach would seem unrealistic given current economic conditions and recent findings pertaining to the financial demands placed on college students within the United States (U. S. Government Accountability Office 2012). Therefore, identifying strategies to reduce or buffer the

negative effects of financial stress on student adjustment offers a potentially viable alternative approach for supporting youth with disabilities during college. According to Cohen and Willis (1985) experiencing high levels of social support may be related to psychological adjustment because (a) social networks provide individuals with regular positive experiences, (b) supportive social networks can help individuals avoid negative experiences, (c) socially supportive relationships may assist individuals when processing or appraising a stressful life event, and (d) socially supportive relationships may assist individuals in their reaction to an event that is appraised as stressful.

Social support from parents, peers and others has been identified as an important protective factor that can enhance positive developmental outcomes among college students in the presence of known risks (Constantine et al. 2003; Sarason and Sarason 2009; Wilks and Spivey 2010). Other researchers have found that social support has a main or *promotive* effect on adjustment such that perceptions of support are beneficial to all individuals regardless of stress or risk status (Elliot et al. 1992; Yalcin 2011). According to this perspective, social support could potentially have beneficial effects on the adjustment of postsecondary students with disabilities *regardless* of their particular levels of stress. Although the beneficial effects of social support for college students in general have been well-established (Chao 2011; Smock et al. 2011; Rodriguez et al. 2003), less is currently known about the effects of social support on the adjustment of college students with disabilities, particularly in relation to financial stress. However, the findings from several qualitative and quantitative studies suggest that college students with disabilities *may* benefit from supportive relationships with others and such support appears to have both a main and moderating effect on a broad number of adjustment indicators. For example, Triano (2003) found that students who have strong support from parents and peers had less difficulty disclosing their disabilities and requesting accommodations within college. Cosden and McNamera (1997) found that student perceptions of social support were associated with perceptions of self-worth and self-esteem among college students with learning disabilities (LD). Moreover, several investigators have found that students with disabilities may derive greater benefits from social support than do adults without disabilities. Elliot et al. (1992) reported that social support moderated the effects of life stress on psychological adjustment among adults with disabilities but *not* among college students without disabilities. Similarly, Trainin and Swanson (2005) found that the effects of "help seeking" on positive academic achievement was moderated by disability status such that there was a positive relationship between these variables for college students with LD but not for students without disabilities. Based on these findings, one goal of the current study was to examine whether social support had a main, moderating, or no effect on the relation between financial stress and postsecondary adjustment among college students with disabilities.

1.3 Students with disabilities and adjustment to postsecondary school

College students with disabilities represent a unique population on college campuses and many of these students have unique needs. Prior evidence suggests that college students with disabilities often have lower reported self-esteem and self-efficacy with

regard to their academic skills and abilities than do their peers without disabilities (Dooling-Litfin and Rosen 1997). Self-efficacy, defined as judgments about an individual's capacity to perform (performance capabilities) specific tasks effectively (Bandura 1977; Zimmerman 2000) is associated with task performance and outcomes in a variety of domains including academic performance (Pajares 1996). Cosden and McNamera (1997) found that college students with LDs had lower self-perceptions of academic competence and a higher discrepancy between their own perceptions of the *importance* of scholastic competence versus their actual perceived competence in academic areas as compared to college students without disabilities. Given the academic challenges that many students with disabilities encounter during postsecondary school, another goal of the current investigation was to develop further understanding about course-related self-efficacy among students with disabilities and the relationship between social support and course self-efficacy.

In addition to students' perceptions of self-efficacy, we were also interested in examining associations between social support and self-advocacy. Unlike the K-12 public school system, college students with disabilities must self-disclose their disability to receive accommodations within postsecondary settings and they must self-advocate for themselves following disclosure by approaching individual faculty and requesting accommodations (Madaus and Shaw 2004). Recent findings indicate that over half of students with disabilities who attend postsecondary, *do not* disclose their disability within these environments and rates of non-disclosure are particularly high among students with the two most prevalent types of disabilities within 4-year colleges and universities (LD and ADHD; Newman et al. 2009). Due to low rates of disclosure, it is not surprising that only one-quarter of students with disabilities who attend postsecondary school report receiving accommodations (Newman et al. 2009). Thus, although the vast majority of students with disabilities receive accommodations during high school (approximately 85 %), less than one fourth of college students with disabilities (24 %) report receiving such supports. This pattern may be due in part to differences between K-12 and university systems and the very real differences between self-advocacy demands placed on students in these two systems (Madaus and Shaw 2004; Wolanin and Steele 2004). Therefore, it is important to develop further understanding about self-advocacy among college students with disabilities and factors or processes that may facilitate or inhibit self-advocacy among this population.

Once students with disabilities have requested accommodations, they still must utilize them. Prior findings suggest that receiving accommodations is predictive of success among postsecondary students with disabilities (Mull et al. 2001; Stodden et al. 2001), and accommodations are highly valued by postsecondary students with disabilities who receive them (Newman et al. 2009; Finn 1998). Common accommodations include extended time on exams, tutors, testing in alternative locations, classroom note takers, help with study strategies, and other classroom technologies or aids (Newman et al. 2009; Raue and Lewis 2011). Despite the importance and reported value of accommodations, some evidence suggests that students with disabilities and university faculty may have disparate views about accommodation requests. For example, some researchers have found that college students with disabilities perceive that university faculty are less willing to provide accommodations than

actually reported willingness among faculty within the same institution (Houck et al. 1992). Moreover, using hypothetical scenarios of positive and negative responses from faculty regarding accommodations requests, Hartman-Hall and Haaga (2002) found that students with disabilities were less willing to seek help following negative reactions from faculty. Thus, although such accommodations are beneficial and valued by students who self-disclose and request them, they still may experience ongoing difficulties in making accommodation requests from faculty which may inhibit future accommodation requests and consequent utilization of accommodations (Triano 2003).

An additional challenge facing some college students with disabilities is related to feelings of stigma. Retrospective accounts of adults with disabilities suggest that they often feel stigmatized by their disability as children and these perceptions of stigma may extend into adolescence and adulthood. According to Green (2007), perceptions of stigma "resides in interactions *between* individuals (p. 329)" and stigma is not a fixed individual trait or attribute. Moreover, stigma includes potentially negative self-evaluations based on labeling, stereotyping, separation, and status loss and discrimination (Green 2007). In one qualitative study, Triano (2003) found that college students with disabilities reported feeling stigmatized by faculty and peers due to difficulties explaining their specific needs within postsecondary settings. Moreover, Hartman-Hall and Haaga (2002) found that students with disabilities who viewed their disability as more stigmatizing were less willing than students who viewed their disability as less stigmatizing to seek help for their disability following a hypothetical negative response to an accommodation request from a professor. Thus developing further understanding about stigma among college students with disabilities and factors or processes that may mitigate such perceptions is important.

1.4 Current study

The current study was undertaken in light of prior findings pertaining to low rates of postsecondary attendance and low rates of postsecondary success among students with disabilities, and the potential benefits of social support for students with disabilities. We were particularly interested in evaluating the extent to which financial stress and social support affected the adjustment of college students with disabilities and whether or not social support moderated the negative effects of financial stress on adjustment. We anticipated that financial stress would have a negative effect on the adjustment (i.e., course self-efficacy, self-advocacy, utilization of accommodations, and perceptions of stigma and campus climate) of college students with disabilities and we further expected that perceptions of social support would be positively associated with these same adjustment indicators for all students with disabilities regardless of their particular levels of financial stress. We also expected, however, that social support would moderate the negative effects of financial stress on the adjustment of college students with disabilities such that students with high levels of financial stress would have better adjustment in the presence of high levels of support than would similarly stressed students with lower levels of social support.

2 Methods

2.1 Study context

Participants were undergraduate students with disabilities at a 4-year public university located in the Pacific Northwestern region of the United States. During the year this study was conducted, there were 22,386 total students enrolled at the university where this study took place and approximately 83 % were undergraduate students. Approximately 49 % of students at the university were male, and the population was predominantly white (72 %). Other racial groups represented at the university included Asian/Pacific Islander (6 %), Hispanic or Latino (4 %), African American (2 %), Native American or Alaskan Native (1 %), Multi-ethnic (3 %) students, and decline-to-report racial identity (5 %).

At the time of study, approximately 4 % (N = 521) of students in the university had a self-disclosed disability. Although below national rates for all postsecondary schools (Horn and Nevill 2006), this proportion is consistent with the 7 % attendance rate among students with disabilities in 4-year colleges and universities reported in recent follow-along studies conducted in the United States (Newman et al. 2009). Among the 4 % of students with disabilities at this institution, 70 % were diagnosed with either attention deficit hyperactivity disorder (ADHD) or LD. Another 10 % were diagnosed with psychological disorders and the remaining 20 % were diagnosed with other disabilities including: physical, hearing, visual, medical/health conditions, brain injury, or seizure disorder. These proportions are consistent with recent federal reports which indicate that the largest disability categories receiving supports in university environments are students with LD, ADHD, and psychological disorders (Raue and Lewis 2011).

2.2 Participants

The current study focused on 179 students with disabilities at the university who responded to our survey and had complete data. This represents approximately 34 % of undergraduate students with self-disclosed disabilities at the university. The majority of these students were female (64 %), and mean age at the time of the study was 23 years old. Self-reported race indicated that 77 % of the participants were White, 6 % reported mixed race, 4 % were Latino/a, 3 % were Asian American, 2 % were African American, 2 % were Native American, and 6 % of students declined to respond the to the question about race. Primary disability classification was gathered from student records and included ADHD (38 %), LD (25 %), psychological/mental health (11 %), Health Conditions (5 %), Hearing Impairments (5 %), Mobility/physical (4 %), Visual Impairments (3.5 %), Head Injuries (2 %), and disabilities that were not specified in student records (5.5 %). Approximately 53 % of these students reported receiving financial aid. Information pertaining to student major indicated that students represented a broad number of majors throughout the university (45 departmental majors) with the largest percentage reporting an undeclared major (18 %), Psychology (8 %), Sociology (5 %), Business Administration (4 %), and Pre Business Administration (4 %).

2.3 Measures

2.3.1 Financial stress

Financial stress was measured using an adapted version of the measure developed by Kohn et al. (1990). This subscale contains four items that ask students to rate the intensity of financial stressors during the past month (e.g., "Financial conflicts with family members"). Ratings are provided on a 4-point scale ranging from "1" (not at all a part of my life) to "4" (very much a part of my life). On the current sample, the alpha coefficient on this measure was .88

2.3.2 Social Support Questionnaire-Breif

The SSQ-B (Sarason et al. 1987) is a six-item measure of social support that is based on the well-validated Social Support Questionnaire (Sarason et al. 1983). Items assess the availability of support from others by asking respondents to list up to nine people who they can rely on for each of six item prompts. Sample items include "Whom can you really count on to care about you, regardless of what is happening to you?" and "Who accepts you totally, including both your best and worst points?" When listing sources of support, respondents are asked to describe the person's relationship to them (e.g., mother, friend, grandparent, etc.) and they also provide initials (i.e., C.M, K.J.) to reduce the potential for multiple listings of the same source of support *within* each item. Thus, responses for each respondent to the first prompt include a list of individuals (up to 9) including relationship type and initials for each person listed. After listing sources of support, respondents are then asked to rank their satisfaction with *overall* support received for each item. Ratings are provided on a six-point scale ranging from "1 = very unsatisfied" to "6 = very satisfied." Sarason et al. (1987) reported that total support on this instrument was highly correlated with overall support on the broader SSD (r = .97) and satisfaction ratings on the two measures were also highly correlated (r = .96). Moreover, similar correlations were observed between the SSQ-B and the broader SSQ in terms of their relationship with constructs pertaining to social and emotional health (Sarason et al. 1987). In the current sample, Cronbach's alpha on responses to the six satisfaction items was .94.

2.3.3 Course efficacy

Student perceptions of their own self-efficacy in courses were measured with a 20-item scale designed to measure level of confidence in performing various tasks associated with college student success. Respondents were asked to rate their level of confidence for each item on a 10-point scale from "0" (not at all confident) to "9" (very confident). Solberg et al. (1993) validated the CSEI three-factor structure, one of which was used in this study: (a) Course Efficacy (7 items, e.g., "research a term paper"). This factor represents facets of self-efficacy as they relate to college student experiences in academic performance. On the current sample, the alpha coefficient on the Course Efficacy factor was .85.

2.3.4 College students with disabilities campus climate

The CSDCC (Lombardi et al. 2011) is a 43-itemself-report measure designed specifically for use with college students with disabilities. Items are related directly to individual student perceptions pertaining to postsecondary adjustment. Responses are provided on a six-point scale ranging from "1" (never true) to "6" (always true). In a prior study, Lombardi et al. (2011) reported that this instrument contained nine factors pertaining to the adjustment of postsecondary students with disabilities. In the current study, we utilized four of these factors: Utilizing Accommodations (5 items, α = .74, e.g., "I do not utilize accommodations unless absolutely necessary (reversed)."; Self-Advocacy (6 items, α = .80, "I feel comfortable advocating for myself and my needs at this university."); Stigma (5 items, α = .63, e.g., "I feel my instructors doubt my ability to succeed even when accommodations are provided"); and Campus Climate (4 items, α = .81, e.g., "I feel comfortable on this campus."). These four factors were selected in the current study because they represent important facets of adjustment among college students with disabilities.

2.4 Procedures

An email list of undergraduate students with disabilities was obtained from the Director of Disability Services. All students on the list received a recruitment email that described the research project and a link to an online survey that began with a consent form. If participants selected "no" to the consent form, they were unable to advance to the survey. Participants were asked to complete the survey on a voluntary basis and were offered a $5 gift certificate to Amazon.com upon completion of the survey. Following the initial contact, three additional follow-up requests were sent spaced approximately 2 weeks apart. At the conclusion of data collection, all data were exported into SPSS 15.0 (SPSS 2006).

2.5 Analyses

A Mutivariate Analysis of Variance (MANOVA was conducted to evaluate potential group differences (disability and gender) on predictor variables that were used in later regression equations. Next, we calculated zero-order correlations between all study variables and hierarchical regression analyses were conducted to evaluate both the main effects of social support and financial stress on student adjustment indicators, and to evaluate potential moderator effects. All predictors were mean centered prior to creating interaction terms for the moderator analysis and moderation effects were tested and evaluated using the strategy outlined by Baron and Kenny (1986). Last, to evaluate potential disability group differences in the relation between social support and criterion variables, we calculated correlations between these variables by disability status.

3 Results

Initial analyses were conducted to examine potential group differences on predictor variables. For these analyses, students were grouped by gender and by broad disability categories (ADHD, LD, PSYCH, All Other) and a MANOVA was conducted using financial stress, total number of supportive individuals listed across the six social support items, and mean satisfaction with social support (across all six items) as criterion variables. Raw means and standard deviations for groups are presented in Table 1. Results of the multivariate test were marginally significant for gender *Wilks' Lambda* $F = 2.53\,(3, 169)$ $p < .059$ and indicated that females reported a greater total number of individuals for whom they relied on for support than males, $F = 4.82\,(1, 171)$ $p < .029$. There were no differences between males and females on the financial stress or satisfaction with support factors. Results of the disability comparison was significant, *Wilks' Lambda* $F = 2.73\,(9, 411)$ $p < .004$ and indicated differences on the financial stress variable, $F = 3.15\,(3, 171)$ $p < .026$. Bonferonni adjusted post-hoc tests indicated that students in the "Other Disability" category reported greater financial stress than students in the LD category ($p < .019$).

Table 2 contains the zero-order correlations for all variables included in these analyses. As shown in the table, the majority of the associations between factors were

Table 1 Means and standard deviations on predictor variables

	Gender		Disability			
	Female	Male	ADHD	LD	PSYCH	Other
Variable	*M* (SD)	*M* (SD)	*M* (SD)	*M* (SD)	*M* (SD)	*M* (SD)
Financial stress	9.51 (3.86)	8.69 (3.58)	9.29 (3.73)	7.79 (3.77)	10.00 (3.60)	10.13 (3.64)
Social Support Questionnaire						
Total social support	28.78 (14.42)	21.78 (14.35)	26.93 (14.95)	26.93 (14.95)	17.15 (12.13)	29.91 (14.40)
Sat. with support	4.64 (1.06)	4.60 (1.09)	4.68 (.97)	4.37 (1.32)	4.35 (.91)	4.91 (.96)

Table 2 Correlation matrix, raw score means, and standard deviations for all variables

	1	2	3	4	5	6	7	8
1. Financial stress	–	−.09	−.19*	−.19*	−.29***	.12	−.18*	.12
2. SSQ total support		–	.29***	.23**	.30***	.08	.33***	−.18*
3. SSQ satisfaction			–	.19*	.30***	−.02	.23**	−.07
4. Course efficacy				–	.68***	.06	.31***	−.26**
5. Self-advocacy					–	.14	.41***	−.39***
6. Utilize accommodations						–	−.10	−.19*
7. Campus climate							–	−.38***
8. Stigma								–
Raw score mean	9.22	26.28	4.63	6.73	3.73	3.58	4.63	2.79
Standard deviation	3.78	14.74	1.07	1.75	.95	.88	.84	.61

* $p < .05$, ** $p < .01$, *** $p < .001$

Table 3 Hierarchical multiple regression analyses on total social support, financial stress, and adjustment

Variable	B	SE B	β	ΔR^2	B	SE B	β	ΔR^2	B	SE B	β	ΔR^2
	Course efficacy				Self-advocacy				Utilization of Acc			
Step 1				.03				.03				.06**
Gender	−.01	.27	−.00		.07	.14	.04		.09.14	.05		
Disability	.27	.10	.19**		.13	.05	.17**		.15.05	.21**		
Step 2				.08***				.16***				.01
Financial stress	−.08	.03	−.18*		−.07	.02	−.29***		.02.02	.09		
Total social support	.26	.01	.22**		.02	.01	.26***		.00.01	.07		
Step 3				.03*				.00				.00
Fin. stress × total support	.01	.00	.18*		.00	.00	.05		.00.00	−.04		
	Campus climate				Stigma							
Step 1				.01				.01				
Gender	−.03	.13	−.02		.04	.10	.03					
Disability	−.07	.05	−.10		−.05	.04	−.10					
Step 2				.13***				.04*				
Financial stress	−.03	.02	−.14		.02	.01	.11					
Total support	.02	.00	.33***		−.01	.00	−.17*					
Step 3				.00				.01				
Financial stress × total support	.00	.00	.02		.00	.00	.08					

*$p < .05$, **$p < .01$, ***$p < .001$.

in the low to modest range. Financial stress was negatively associated with several predictor and criterion variables including satisfaction with social support, course efficacy, self-advocacy, and perceptions of the campus climate. In contrast, the two social support variables were positively associated with course efficacy, self-advocacy, and perceptions of campus climate. Moreover, total support was inversely related to student perceptions of stigma. Of interest, the correlation between total social support and satisfaction with support was modest ($r = .29$) suggesting that the total number of individuals perceived to be available for support was only moderately associated with student perceptions of satisfaction with this support.

To evaluate both main and interactive effects of the relationships between financial stress, social support and students' postsecondary adjustment, we conducted a series of hierarchal regression analyses. For these analyses, dummy coded gender and disability status were entered on the first step of each equation as covariates, followed by financial stress and social support variables on step two, and the financial stress by social support interaction term on step three of each equation. Results of the regressions involving total support are shown in Table 3, and analyses involving satisfaction with support are shown in Table 4.

After controlling for gender and disability status (step 1), financial stress and total support (step 2) accounted for approximately 8 % of the variance in students' course efficacy scores, $R^2change = .084$, $F(2, 174) = 8.27$, $p < .001$. Financial stress ($\beta = -.18$, $p < .05$) and total support ($\beta = .22$, $p < .01$) were both statistically related to students' perceptions of course efficacy. In addition to these main effects, the interaction between financial stress and social support was also significant, $R^2change = .031$, $F(1, 173) = 6.26$, $p < .05$, suggesting that total support

Table 4 Hierarchical multiple regression analyses on satisfaction with support, financial stress, and adjustment

Variable	B	SE B	β	ΔR^2	B	SE B	β	ΔR^2	B	SE B	β	ΔR^2
	Course efficacy				Self-advocacy				Utilization of Acc			
Step 1				.03				.03				.06**
Gender	.10	.27	.03		.17	.14	.09		.12	.14	.06	
Disability	.26	.11	.18*		.12	.06	.15*		.17	.06	.24**	
Step 2				.06**				.16***				.01
Financial stress	−.08	.04	−.18*		−.07	.02	−.27***		.02	.02	.07	
Satisfaction w/support	.24	.12	.15*		.21	.06	.24***		−.03	.06	−.03	
Step 3				.00				.00				.01
Fin. stress × satisfaction	.02	.03	.06		.01	.02	.03		−.02	.02	−.11	
	Campus climate				Stigma							
Step 1				.01				.01				
Gender	.10	.13	.06		−.02	.10	−.01					
Disability	−.09	.05	−.13		−.06	.04	−.11					
Step 2				.07***				.02				
Financial stress	−.03	.02	−.11		.02	.01	.13					
Satisfaction w/support	.17	.06	.22**		−.02	.04	−.04					
Step 3				.02*				.01				
Financial stress × Satisfaction	.03	.02	.15*		.01	.01	.08					

*$p < .05$, **$p < .01$, ***$p < .001$

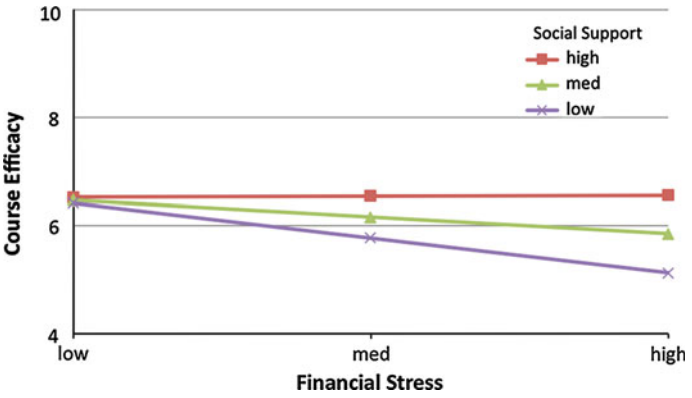

Fig. 1 Two-way interaction between financial stress, total social support, and course efficacy

partially moderated the effects of financial stress on course efficacy. This interaction was plotted for high (+1SD), medium (M), and low (−1SD) levels of financial stress and three levels of total support (see Fig. 1). As shown in the Figure, high levels of support *buffered* the negative effects of financial stress on course efficacy.

After controlling for gender and disability, financial stress and total social support (step 2) were predictive of students' perceptions of self-advocacy, $R^2change = .16$, $F(2, 174) = 17.50$, $p < .001$. Both financial stress ($\beta = -.29$, $p < .001$) and total support ($\beta = .26$, $p < .001$) were statistically related to students' perceptions of self-advocacy. The change between steps 1 and 2 was also significant in the equations

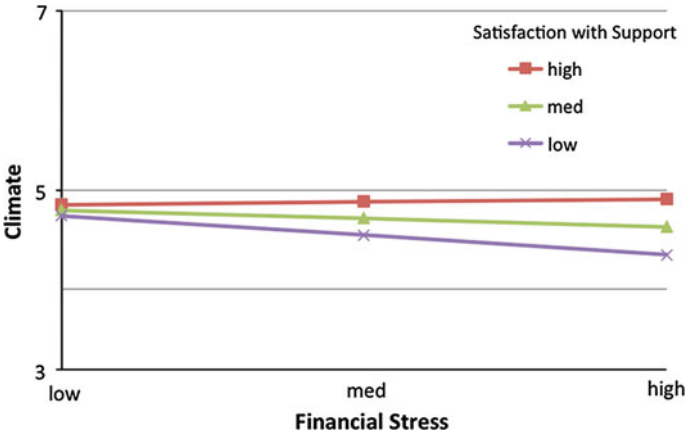

Fig. 2 Two-way interaction between financial stress, satisfaction with social support, and perceptions of campus climate

involving campus climate [$R^2change = .13, F(2, 174) = 13.55, p < .001$] and stigma [$R^2change = .04, F(2, 174) = 4.08, p < .05$]. Total support was the only variable that was statistically related to campus climate and stigma ($\beta = .33, p < .001, \beta = -.17, p < .05$, respectively).

A similar pattern of findings emerged from the analyses involving students' *satisfaction* with social support (Table 4). In these analyses, step 2 (i.e., financial stress and satisfaction with support) accounted for between 6 % and 16 % of the variance in student adjustment including: course efficacy [$R^2change = .06, F(2, 174) = 6.12, p < .01$], self-advocacy [$R^2change = .16, F(2, 174) = 16.50, p < .001$], and campus climate [$R^2change = .07, F(2, 174) = 6.70, p < .001$]. Moreover, only one (i.e., Campus Climate) of the five interactions was significant, $R^2change = .02, F(1, 173) = 4.37, p < .05$. This interaction was plotted (Figure 2) and shows that students with high levels of satisfaction with their support had more positive perceptions of campus climate than did students with medium and low levels of satisfaction, even at high levels of financial stress.

Although the primary purpose of the investigation was to examine the relationship between financial stress, social support, and adjustment among college students with disabilities *after* controlling for specific disability classifications, we conducted a secondary analysis to examine potential differences in associations between the two social support constructs and college adjustment variables for students in each of our disability categories. For this analysis, students were grouped by disability and Pearson correlations between the predictor and criterion variables were calculated for each group (see Table 5). Results of this analysis should be interpreted in light of the fact that there were varying numbers of participants in each category and the significance of correlation coefficients is influenced by sample size. As shown in the Table, some differences in associations were evident. For example, total support was moderately associated with four of the five adjustment indicators among students with ADHD but fewer significant correlations were observed between total support and adjustment

Table 5 Correlations between social support and adjustment by disability status

Variable	Total support				Satisfaction with support			
	ADHD	LD	PYCH	Other	ADHD	LD	PYCH	Other
Course efficacy	.31 ∗ ∗	.00	.37	.13	.17	.00	.50∗	.26
Self-advocacy	.36 ∗ ∗	.24	.00	.20	.34∗∗	.13	.53∗	.32∗
Utilize accommodations	.09	.13	−.04	.01	−.00	.00	−.16	−.15
Campus climate	.38 ∗ ∗∗	.30∗	.27	.34∗	.34∗∗	−.04	.37	.41∗∗
Stigma	−.26∗	−.22	−.11	−.04	−.15	.02	−.32	.01

$^{*}p < .05$; $^{**}p < .01$; $^{***}p < .001$.

for the other disability groups. However, among students with LD and students in the "Other" category, total support was associated with perceptions of the supportiveness of the campus climate.

Satisfaction with support (columns 5–8) was associated with two adjustment indicators for students with ADHD (Self-Advocacy, Campus Climate), students with Psychological disorders (Course Efficacy and Self-Advocacy), and students with "Other" disabilities (Self-Advocacy and Campus Climate). However, satisfaction with support was not associated with adjustment indicators among students with LD.

4 Discussion

The purpose of the present study was to develop further understanding about the adjustment of college students with disabilities. We were particularly interested in developing insight regarding the role of social support in promoting positive adjustment among college students with disabilities generally, and the moderating effects of such support on the relationship between financial stress and college adjustment. Our findings indicated that social support primarily had main effects on the adjustment of college students with disabilities. That is, significant main effects were observed in 7 of the 10 regression analyses and significant moderation was observed in only 2 of 10 analyses. Thus, in general, although these findings support both a main effect and buffering hypotheses they are more heavily weighted towards main effects. This finding is consistent with other research on social support among college students without disabilities (Elliot et al. 1992; Hinderlie and Kenny 2002), but extends previous findings by showing that social support is a salient predictor of adjustment among college students with disabilities. Moreover, the beneficial effects of this support were apparent for all students with disabilities, regardless of their particular levels of financial stress.

Consistent with the work of Sarason et al. (1987), we evaluated two types or forms of social support in the current study. *Total support* represented the sum of all socially supportive individuals identified for each student across all six item prompts. *Satisfaction with support* was the average of students' satisfaction ratings across six-items rated on a Likert type scale. Importantly, these two types of support were only modestly associated ($r = .29$) suggesting that they were somewhat independent of one another. That is, the size of students' total support networks did not correspond directly to their

satisfaction with the support received. Moreover, both forms of support appeared to be important predictors of adjustment among college students with disabilities. Total social support was statistically associated with students' course efficacy, self-advocacy, perceptions of campus climate, and negatively associated with stigma. Satisfaction with support was significantly related to these same adjustment indicators with the exception of stigma. One implication of these findings is that efforts to build social support should concurrently focus on providing students with access to socially supportive individuals as well as on the qualitative dimensions of these relationships to ensure that such support is meaningful and satisfying to students.

In addition to our findings pertaining to the main effects of social support on adjustment, we did observe moderation for two of our analyses. These findings are consistent with prior research on students without disabilities indicating that social support moderates the negative effects of *academic* stress on the adjustment of college students (Constantine et al. 2003). However, our findings are unique in that they were focused on financial stress among students with disabilities. We observed a negative relationship between financial stress and course self-efficacy for students with low levels of total support but not for students with high levels of total social support. This finding suggests that high levels of total support served to buffer the negative effects of financial stress on course-efficacy among students with disabilities. Similarly, financial stress had a negative effect on student perceptions of the supportiveness of the campus climate among students with disabilities who had lower levels of satisfaction with social support, but high levels of satisfaction appeared to buffer these negative effects. Together, these findings suggest that efforts to build social support networks as well as the quality of these networks may, in some cases, serve a protective function for students exposed to financial stress. Given the costs of a postsecondary education, increases in the numbers of students who report experiencing financial stress (Northern et al. 2010), and growing evidence regarding the detrimental effects of such stress (Baum and O'Malley 2003; Lange and Byrd 1998; Nelson et al. 2008) social support interventions for students with disabilities in post-secondary settings may become increasingly important.

Several recent efforts to promote social support among college students without disabilities offer viable approaches to improving students' perceptions of social support in university settings (Chen and Katz 2009; Mattanah et al. 2010). Although these interventions were implemented with college students without disabilities they provide direction to those interested in implementing similar efforts among students with disabilities. For example, Mattanah et al. (2010) implemented a 9-week, 90-min per-session, peer led social support intervention for first year college students that included semi-structured activities pertaining to (a) creating new social ties; (b) balancing work, academics, and a social life; (c) peer pressure, values, and college life; (d) residential issues, and (e) examining old social ties. Peer groups also included a "check-in" and "wrap-up" session during each meeting. Each group included 6–10 students and students were randomly assigned to participate in intervention (n = 88) or control (n = 83) peer support groups. The control condition received one "college information session" during the 9-week intervention period. Results of this study indicated that first-year college students participating in the intervention group reported significantly lower levels of loneliness and greater social support following the intervention

than did students in the control group. Thus, although not designed specifically for students with disabilities, this relatively brief, cost-effective intervention could potentially be implemented by staff in Disability Services Offices for university students with disabilities.

A second example is provided by Chen and Katz (2009) who studied students' mobile phone use with family members and the effects of frequent phone contacts on students' adjustment to postsecondary school. Although not specifically designed as an intervention, the results of this qualitative investigation suggested that students who used mobile phones to maintain consistent contact with family members reported that this contact allowed them to remain connected with family members, allowed them to share important experiences with family members', and provided them with opportunities to receive emotional and instrumental support when needed. Because cellular phones are now widely available, providing students with disabilities strategies for eliciting specific types of support from family, peers, and others using cellular phones may provide important opportunities for developing and maintaining supportive relationships among students with disabilities. Such efforts could target critical transition periods (e.g., beginning and end of the semester) or could target ongoing supports throughout the postsecondary experience.

In the primary analyses conducted in this investigation we controlled for gender and disability status because these variables were associated with some of our predictor variables. However, in an attempt to more fully understand the relationship between social support and adjustment for students in specific disability categories, we also calculated correlations between our two social support variables and adjustment indicators for students in each disability grouping. Several patterns were evident in this analysis. First, total support and satisfaction with support were associated with numerous indicators of adjustment among college students with ADHD. Second, relatively strong correlations between satisfaction with support and course efficacy and self-advocacy (r's = .50 and .53, respectively) were observed for students with mental health needs. This finding is interesting in light of the fact that students with mental health needs reported the lowest number of people in their listing of total support (M = 17.15) but did not differ from the other groups in terms of the overall mean level of satisfaction with support (M = 4.35). Thus, students with mental health needs were relatively satisfied with a smaller social support network and their satisfaction with this support was positively associated with their perceptions of course efficacy and self-advocacy. Together, these findings pertaining to "for whom social support mattered" may be important for future efforts targeting specific disability groups for social support interventions.

A third interesting pattern that emerged from our analysis of specific disability groups was that both total support and satisfaction with support were associated with student perceptions of campus climate across disability classifications. This suggests that social support may be associated with campus climate regardless of specific disability classification. Therefore, efforts to build positive perceptions of campus climate across all disability groups may consider social support interventions as a viable approach. Such research should take into consideration specific sources of support. For example, support from peers or faculty may be more strongly associated with student perceptions of climate than support from parents. Although we did not examine the

sources of social support that may have been most meaningfully related to perceptions of campus climate in the current study, such questions should be incorporated into future investigations.

4.1 Limitations

This study suffers from a number of important limitations that should be considered with the findings. First, these data were gathered at one point in time and therefore provide no evidence of causality. Future intervention efforts designed to promote social support in the lives of college students with disabilities are needed and emerging research in this area among students without disabilities suggests that such efforts are both feasible and promising in terms of their effectiveness (Mattanah et al. 2010). Second, this study was conducted with students at one university and should be replicated with additional samples prior to generalizing the findings. A third concern is that we did not gather data from college students without disabilities. Future efforts that evaluate the effects of social support on adjustment among students with and *without* disabilities would be informative. Fourth, although the predictor variables (financial stress and social support) included in this study accounted for significant amount of variance in a number of the criterion variables, there was considerable unexplained variance in these analyses as well. Therefore, future research should continue to explore factors and processes that may be predictive of the postsecondary adjustment of college students with disabilities. A fifth limitation is that we did not distinguish between sources of social support. Prior research suggests that support from friends is more strongly associated with college adjustment than support from families (Rodriguez et al. 2003). Future studies that analyze the importance of specific sources of support among students with disabilities are needed.

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