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Abstract

Guided by the ecological systems perspective, the objective of the study was to examine whether caregivers' difficulty paying their child's health-care bills is associated with bullying victimization directly and indirectly through the mediating mechanisms of caregivers' frustration, adolescents' internalizing problems, and social difficulty focusing on adolescents with physical disabilities. The 2019 National Survey of Children's Health dataset, which collected data on adolescents' and caregivers' demographic characteristics and health and well-being, was used. The study sample consisted of 368 caregivers of adolescents, 12–17 years of age with physical disabilities. No direct association between caregivers' difficulty paying their child's health-care bills and bullying victimization was found. However, caregivers' frustration and adolescents' internalizing problems were shown to have an indirect association with bullying victimization, which was mediated by difficulty making friends. In addition, adolescents' difficulty making friends was positively associated with bullying victimization. Practitioners working with adolescents with physical disabilities are encouraged to foster collaborative processes across various ecological systems of the adolescent and family to address caregivers' frustration and promote positive social and emotional development of the adolescent with physical disabilities, which can decrease their risk of bullying victimization.

KEYWORDS

bullying, disabled persons, healthcare, parenting, socialization

INTRODUCTION

Bullying, defined as unwanted aggressive behavior perpetrated by another youth or group of youth who are not siblings or dating partners involving a power imbalance and is repeated multiple times (Gladden et al., 2014), continues to receive a significant amount of media and scholarly attention. An emerging body of research findings suggests that children who are perceived to be “different” are at an increased risk of bullying victimization (National Academies of Sciences, Engineering, & Medicine [NASEM], 2016; Wang et al., 2020). Children with physical, developmental, intellectual, emotional, and sensory disabilities, in particular, are confronted with bullying victimization in school due to vulnerability, social skills deficits, lack of peer support, and an intolerant school environment (NASEM, 2016; Rose et al., 2011). Studies on children with disabilities have yielded bullying victimization rates above 50%, which indicates that this subset of youth are bullied at a much higher rate than their peers without disabilities (Rose et al., 2011), and this discrepancy persists over time (Rose & Gage, 2017).

Although children with disabilities, in general, are at an escalated risk for bullying victimization (Rose & Gage, 2017), children with physical disabilities, which include hearing, visual, cognitive, ambulatory self-care, and independent living disabilities (Public Law 108-446, 2004), are at even higher risk. Early research established that children with noticeable or observable disabilities are at a considerably higher risk of victimization (Forber-Pratt et al., 2020; Rose et al., 2011; Swearer et al., 2012) as compared with youth with less observable disabilities (Dawkins, 1996). For example, children with difficulty in gross motor skills (e.g., walking) and fine-motor skills (e.g., writing or eating), altered muscle tone, paralysis, and inability to use one or more limbs (De la Vega et al., 2018) are victimized due to physical differences, being perceived as physically weaker, and reduced social functioning—all of which can generate negative reactions from their classmates and peers (Pinquart, 2017).

An accumulated body of research has largely focused on the prevalence and rates (Bear et al., 2015; Blake et al., 2012; Hartley et al., 2015; Maiano et al., 2016; Rose et al., 2009, 2011; Son et al., 2012; Sterzing et al., 2012; Swearer et al., 2012), correlates (Chu et al., 2018; Hartley et al., 2015; Maiano et al., 2016; Moffat et al., 2019; Rose et al., 2015; Sentenac et al., 2011; Sterzing et al., 2012), and psychosocial outcomes (Baumeister et al., 2008; King et al., 2018; Zhang & Wang, 2019) of bullying victimization involving children and adolescents with disabilities. Direct-level

influences in bullying victimization of children with disabilities, such as emotional and behavioral characteristics, family structure, parent–child communication, and peer interactions, for example, have been identified extensively in the research literature as predictors of bullying victimization (Blake et al., 2016; Rose et al., 2009, 2015; Sentenac et al., 2011). Little is known about the external factors, such as caregivers' difficulty paying their child's health-care bills and caregivers' frustration with parenting, which might be indirectly contributing to the risk of bullying victimization of youth with disabilities. This line of research inquiry is especially important, given that difficulty paying a child's health-care bills and associated stress and frustration are frequently experienced by the caregivers of children with physical disabilities who are likely to have the most intensive health-care needs (Heiman, 2002). Difficulty paying a child's health-care bills and caregivers' frustration are likely to adversely impact caregivers' parenting and relationships with their children, resulting in children's behavioral problems and social difficulty outside the home.

Guided by the Ecological Systems Perspective, this study tests a proposed conceptual framework to investigate the direct, indirect, and mediating effects and relationships. In particular, we investigate whether caregivers' difficulty paying their child's health-care bills is directly related to bullying victimization involving adolescents with physical disabilities. Caregivers' difficulty paying their child's health-care bills, which represents caregivers' burden and stress, is a salient factor to consider because caregivers tend to provide long-term care that normally requires extraordinary emotional and financial resources (Murphy et al., 2006), which is likely to create a tremendous amount of frustration related to caregiving. Moreover, according to the Family Stress Model, economic stressors (e.g., difficulty paying child's health-care bills) can lead to an increase in caregivers' frustration and stress, which is likely to contribute to disrupted family relationships (Conger & Conger, 2002). Caregivers' frustration and disrupted family relationships can play a tremendous role in children's behavioral and developmental outcomes, which has been widely supported in the research literature (Aizer et al., 2016; Barry et al., 2005; Hentges et al., 2019). Therefore, we also explore whether the relationship between caregivers' difficulty paying their child's health-care bills and adolescents' bullying victimization is mediated by the caregivers' frustration, the adolescents' internalizing problems, and social difficulty.

ECOLOGICAL SYSTEMS PERSPECTIVE AS A GUIDING FRAMEWORK

Scholars have proposed that children develop in the context of their families, particularly their caregivers (Seliner et al., 2016). This proposition has been supported by Bronfenbrenner's (1977, 1979) ecological systems perspective, which focuses specifically on the interplay of individual characteristics within multiple contexts of development (Barboza et al., 2009; Bronfenbrenner, 1977, 1979). Bronfenbrenner (1977) argued that child development and socialization are influenced by the four nested layers of system levels: microsystem (immediate surrounding), mesosystem (a network of microsystems), exosystem (a remote setting that has an indirect effect on the microsystem), and macrosystem (social values, cultural beliefs, political ideologies, laws, and customs). Prior work on children's bullying victimization involves multiple individual and contextual factors. For children with physical disabilities, their risk of bullying victimization can be influenced by the occurrences in the microsystem (e.g., caregivers' frustration), mesosystem (e.g., the impact of caregivers' frustration on adolescents' socialization with their peers), and exosystem (e.g., the impact of caregivers' difficulty paying their child's health-care bills on caregivers' frustration).

Caregivers play an essential role in their children's psychosocial development, physical health, and well-being. However, as previously mentioned, caregivers of children with physical disabilities tend to bear a substantial burden of care in relation to difficulty paying their child's health-care bills (Murphy et al., 2006). Children with physical disabilities whose caregivers have difficulty paying their child's health-care bills can potentially be at an elevated risk of bullying victimization (NASEM, 2016; Rose et al., 2012). Researchers to date have yet to investigate whether caregivers' difficulty paying their child's health-care bills is a possible determinant of children's bullying victimization. For children with physical disabilities, their caregivers who have difficulty paying their health-care bills can contribute to their risk of victimization as their caregiver may find it financially difficult to provide all the necessary care, such as counseling and intervention services, which can potentially reduce the risk of bullying victimization.

In addition, caregivers' difficulty paying their child's health-care bills can indirectly be associated with bullying victimization through several pathways. Caregivers of children with physical disabilities are likely to bear a substantial amount of the burden of paying their child's health-care bills, as these children tend to have complex health

conditions and functional impairments that are dependent on costly technologies and recurrent hospitalizations (Murphy et al., 2011). Consequently, difficulty paying the child's health-care bills can produce parenting-related stress (Johnson, 2000), which might also further impair their children's emotions, behaviors, and socialization. As shown by research findings, children with disabilities and developmental problems are inclined to show lower self-esteem, higher depressive symptoms, and anxiety (Blanchard et al., 2006; Rose et al., 2013).

Furthermore, children who are exposed to caregivers' frustration related to parenting are especially prone to internalizing problems, such as depressive symptoms, anxiety, declining academic performances, and socially withdrawn behavior (Liu & Wang, 2015; Mullins et al., 2004), all of which reinforce social difficulty outside the home, such as school (Russo & Beidel, 1993). Children with internalizing problems are especially vulnerable to bullying victimization in school (Blake et al., 2016), as they tend to be withdrawn, nonassertive, overly compliant, and struggling with socialization and friendships (Karustis et al., 2000).

THE CURRENT STUDY

To date, the pathways through which parent-level factors such as caregivers' difficulty paying their child's health-care bills might increase the risk of bullying victimization involving adolescents with physical disabilities have not been explored. This study addresses the following research question: Are caregivers' frustration, adolescents' internalizing problems, and difficulty making friends significant mechanisms of the pathways from caregivers' difficulty paying their child's health-care bills to adolescent bullying victimization? It is hypothesized that caregivers' difficulty paying their child's health-care bills would be positively associated with caregivers' frustration, adolescents' internalizing problems, and adolescents' difficulty making friends, which, in turn, would be associated with an increased risk of bullying victimization.

METHOD

Sample and data

This study used the 2016 National Survey of Children's Health (NSCH), conducted by the U.S. Census Bureau. This survey was aimed at collecting primary indicators for the health and well-being of children as well as their families and

communities. The survey used an address-based sample selection, covering the 50 states and the District of Columbia. The participants of the 2016 NSCH data consisted of caregivers of children who are 0–17 years old. Data were collected in two stages. Household screener survey included demographic information and health-care needs of any children (up to four children) in the household. The topical questionnaires tailored to age groups (0–5 years old, 6–11 years old, and 12–17 years old) included child health, birth-related health status, health-care services, child's learning/schooling activities, daily life, primary caregiver's and household information, selecting one child from each household ($N = 29,433$). This study used data from the topical questionnaires for the caregivers of adolescents aged 12–17 years old. The study only selected the caregivers of adolescents with serious difficulty walking or climbing stairs, dressing, bathing, or doing errands alone. Also, the study sample was limited to parents (biological/adoptive mother or father) who answered the caregiver's questionnaires ($n = 368$; 273 mothers and 93 fathers, two not identified).

Instruments

Adolescent bullying victimization was measured with a single question, which asked the caregiver: “During the past 12 months, how often was this child bullied, picked on, or excluded by other children?” This item has frequently been used as a means of understanding the occurrence of bullying victimization in several studies (Haegele et al., 2020; Jackson et al., 2019; Lebrun-Harris et al., 2019). The question was rated on a five-point scale: *never* (1), *1–2 times in the last 12 months* (2), *1–2 times per month* (3), *1–2 times per week* (4), and *almost every day* (5). A score ranges from 1 to 5, with a higher score indicating more bullying victimization ($M = 2.34$, $SD = 1.24$).

Caregivers were asked if their families had difficulty paying their child's health-care bills. This item has been utilized to measure caregivers' difficulty paying their child's health-care bills, which had been used in prior studies (Karpur et al., 2019; Kodjebacheva et al., 2016). The variable was coded as follows: *the caregivers did not have any difficulty paying their child's healthcare bills* (0) and *the caregivers had difficulty paying a child's healthcare bills* (1).

Caregivers' frustration was calculated from a sum of three items: (a) During the past month, how often have you felt that this child is much harder to care for than most children his or her age?; (b) how often have you felt that this child does things that

really bother you a lot?; and (c) how often have you felt angry with this child? These items had been used to measure care-givers' stress and frustration in other studies (Hsiao, 2016; Schneider et al., 2020). Each item was rated on a five-point scale: *never* (1), *rarely* (2), *sometimes* (3), *usually* (4), and *always* (5). The internal reliability for the summary score was $\alpha = 0.75$. A summary score of caregivers' frustration ranges from 3 to 15, with a higher score indicating a higher level of caregivers' frustration ($M = 7.56$, $SD = 2.74$).

Adolescents' internalizing problems were created from a sum of two items: "Has a doctor or other health care provider ever told you that this child has depression?" and "has a doctor or other health care provider ever told you that this child has anxiety problems?" These items had been used to measure children's and adolescents' internalizing problems in previous research (Cree et al., 2018; Elmore & Crouch, 2020). Response options for each item are dichotomous: *no* (0) and *yes* (1). A summary score ranged from 0 to 2, with a higher score indicating more internalizing problems ($M = 1.00$, $SD = 0.82$).

Adolescents' difficulty making friends was measured with a single question: "Compared to other children his or her age, how much difficulty does this child have making or keeping friends?" This item has been used to measure adolescents' friendship difficulties in other studies (Hilton et al., 2019; Rupp & McCoy, 2019). The item was rated on a three-point scale: *no difficulty* (1), *a little difficulty* (2), and *a lot of difficulties* (3). A score ranges from 1 to 3, with a higher score indicating more difficulty making friends ($M = 2.25$, $SD = 0.781$). Adolescents' age, adolescents' sex, caregivers' age, and care-givers' employment status were controlled for in the analysis.

Analytic techniques

A path model was constructed to examine the pathways from the caregivers' difficulty paying their child's health-care bills to the adolescents' risk of bullying victimization. Pathways specify the causal sequence of factors, including caregivers' frustration, adolescents' internalizing problems, and adolescents' difficulty making friends. The direct, indirect, and total effects of care-givers' difficulty paying their child's health-care bills on bullying victimization were examined simultaneously. Data preparation, screening of normality and collinearity

assumption, and preliminary analysis were performed using SPSS 25. Path analysis was conducted using Mplus Version 8 (Muthén & Muthén, 2010) with a bootstrap technique. Two cases (< 1%) were excluded from the final model estimation due to the missing data.

RESULTS

Preliminary analyses

Table 1 describes the sample characteristics (N= 368). The adolescents' age ranged from 12 to 17, with an average age of 15.01 (SD= 1.61). Over half (59.5%) of the adolescents were male, and 72.3% were White. Slightly over one-third (34.2%) of caregivers experienced difficulty paying their child's health-care bills. The caregivers' average age was 46.81 (SD= 6.91, range: 31–70). About three-fourths (74.7%) of the caregivers were employed. The variables included in the model were modestly correlated with the degree of bullying victimization ($r = -0.06$ – 0.40 ; see Table 2). There was no difference in the degree of bullying victimization between male and female adolescents ($p > 0.05$). No difference was shown in the degree of bullying victimization between adolescents whose caregivers had difficulty paying their child's health-care bills and those whose caregivers did not have difficulty paying their child's health-care bills ($p > 0.05$).

Testing the hypothesized model

Model fit

A path analysis was conducted to test the path model of the association between caregivers' difficulty paying their child's health-care bills and bullying victimization through the mediating variables: caregivers' frustration, adolescents' internalizing problems, and adolescents' difficulty making friends. The fit indices indicated that the estimated path model fits the data well ($\chi^2(2) = 0.72, p > 0.05$; CFI = 1.00, TLI = 1.00, SRMR = 0.01; RMSEA = 0.001, 90% CI [0.000–0.007]).

Direct effects

Table 3 provides the standardized direct, indirect, and total effects for the relationship between caregivers' difficulty paying their child's health-care bills, caregivers' frustration, adolescents' internalizing problems, adolescents' difficulty making friends, and bullying victimization. Results

indicated that adolescents' difficulty making friends. Figure 1 was directly associated with bullying victimization ($\beta = 0.298, p < 0.001, 90\% \text{ CI } [0.221-0.373]$; see Figure 2). Caregivers' frustration also was directly associated with bullying victimization ($\beta = 0.167, p < 0.01, 90\% \text{ CI } [0.081-0.251]$). In addition, adolescents' internalizing problems were directly associated with bullying victimization ($\beta = 0.177, p < 0.001, 90\% \text{ CI } [0.094-0.261]$). Caregivers' difficulty paying their child's health-care bills was directly associated with adolescents' internalizing problems ($\beta = 0.104, p < 0.05, 90\% \text{ CI } [0.023-0.186]$) but was not significantly associated with caregivers' frustration ($\beta = 0.059, p > 0.05$). As we hypothesized, caregivers' frustration was positively associated with adolescents' internalizing problems ($\beta = 0.235, p < 0.001, 90\% \text{ CI } [0.146-0.320]$) and difficulty making friends ($\beta = 0.336, p < 0.001, 90\% \text{ CI } [0.257-0.415]$). In addition, adolescents' internalizing problems were significantly associated with adolescents' difficulty making friends ($\beta = 0.177, p < 0.001, 90\% \text{ CI } [0.096-0.257]$).

Indirect effects

Three indirect effects were primarily tested using bootstrapped standard errors: (a) the indirect effect of caregivers' difficulty paying their child's health-care bills on bullying victimization, (b) the indirect effect of caregivers' frustration on bullying victimization, and (c) the indirect effect of the adolescents' internalizing problems on bullying victimization. For the first indirect effects, the total indirect effect of caregivers' difficulty paying their child's health-care bills on bullying victimization was significant ($\beta = 0.043, p = 0.05, 90\% \text{ CI } [0.007-0.079]$). More specifically, the indirect effect through adolescents' internalizing problems was marginally significant ($\beta = 0.018, p = 0.09, 90\% \text{ CI } [0.003-0.038]$). Also, the indirect effects through two mediators, adolescents' internalizing problems and adolescents' difficulty making friends, were marginally significant ($\beta = 0.006, p = 0.09, 90\% \text{ CI } [0.001-0.011]$). Second, the total indirect effect of caregivers' frustration on bullying victimization was significant ($\beta = 0.154, p < 0.001, 90\% \text{ CI } [0.114-0.198]$). More specifically, the indirect effect through adolescents' difficulty making friends was significant ($\beta = 0.100, p < 0.001, 90\% \text{ CI } [0.066-0.139]$). The indirect effect via adolescents' internalizing problems was also significant ($\beta = 0.042, p < 0.01, 90\% \text{ CI } [0.019-0.069]$). The indirect effects through both two mediators, adolescents' internalizing problems and adolescents' difficulty making friends, were also significant ($\beta = 0.012, p < 0.05, 90\% \text{ CI } [0.005-0.021]$). Lastly, the indirect effect of adolescents' internalizing problems on bullying victimization through adolescents' difficulty making friends was significant

($\beta = 0.053$, $p < 0.01$, 90% CI [0.027–0.081]). In turn, the degree of adolescents' difficulty making friends mediated the association between adolescents' internalizing problems and bullying victimization.

TABLE 1 Descriptive statistics ($N = 368$)

Variables	<i>n</i>	% ^a	<i>M</i>	<i>SD</i>	<i>Min</i>	<i>Max</i>
Bullying victimization	365		2.34	1.24	1	5
Adolescents' difficulty making friends	366		2.25	0.781	1	3
Adolescents' internalizing problems	367		1	0.816	0	2
Caregivers' frustration	365		7.56	2.74	3	15
Difficulty paying their child's health-care bills						
Yes	123	34.2				
No	237	65.8				
Adolescents' age	368		15.01	1.61	12	17
Adolescents' sex						
Male	219	59.5				
Female	149	40.5				
Adolescents' race/ethnicity						
Hispanic	43	13.2				
White	266	81.8				
Black	24	7.4				
Asian	13	4.0				
Native Hawaiian	0	0				
Two or more races	22	6.8				
Caregivers' relationship with a child						
Mothers	273	74.18				
Fathers	93	25.27				
Caregivers' age	367		46.81	6.91	31	70
Caregivers' employment status						
Yes	274	74.7				
No	93	25.3				

Abbreviations: M, mean; SD, standard deviation.

^aMissing values were excluded.

TABLE 2 Correlation among the variables ($N = 368$)

	1	2	3	4	5
Bullying victimization					
Adolescents' difficulty making friends	0.393**				
Adolescents' internalizing problems	0.295**	0.222**			
Caregivers' frustration	0.318**	0.396**	0.213**		
Adolescents' age	-0.088	-0.061	0.089	-0.054	
Caregivers' age	-0.071	0.049	-0.017	0.070	0.233**

* $p < 0.05$.

** $p < 0.01$; *** $p < 0.001$.

Total effects

Caregivers' difficulty paying their child's health-care bills was significantly associated with bullying victimization ($\beta = 0.043$, $p = 0.05$). In addition, caregivers' frustration ($\beta = 0.321$, $p < 0.001$), adolescents' internalizing problems ($\beta = 0.230$, $p < 0.001$), and adolescents' difficulty making friends ($\beta = 0.298$, $p < 0.001$) were significantly associated with bullying victimization. The relationships in the model explained 25.1% of the variance in bullying victimization, 21.8% of the variance in adolescents' difficulty making friends, and 11.5% of the variance in adolescents' internalizing problems.

DISCUSSION

Guided by the ecological systems perspective, this exploratory study proposed and tested a pathway model by examining whether caregivers' difficulty paying their child's health-care bills would be positively associated with caregivers' frustration, adolescents' internalizing problems, and adolescents' difficulty making friends, which, in turn, would be positively associated with bullying victimization. Findings from the proposed pathways appear to correspond with Bronfenbrenner's (1977, 1979) ecological systems perspective. As reported by Bronfenbrenner (1977, 1979), adolescent behavior and socialization, such as bullying victimization, are influenced by individual traits (e.g., adolescents' internalizing problems) as well as interpersonal factors (e.g., caregiving, relationships with friends, and peers). Our results suggest that bullying victimization of adolescents with physical disabilities is influenced by the etiological factors at the microsystem, mesosystem, and exosystem levels. At the microsystem level, the pathways suggest that both caregivers' frustration and adolescents' difficulty making friends are independently associated with adolescent bullying victimization. At the mesosystem level, our findings suggest that caregivers' frustration (one microsystem)

is positively related to adolescents' difficulty in making friends (another microsystem), which contributes to an increased risk of bullying victimization. At the exosystem level, although difficulty paying the child's health-care bills was not directly linked to adolescent bullying victimization, it was correlated with internalizing problems, which was positively related to difficulty making friends and subsequently, adolescent bullying victimization.

This study hypothesized a direct and positive relationship between caregivers' difficulty paying their child's health-care bills and bullying victimization. Although the study found a total effect, there was no direct association, which was contrary to past findings (NA-SEM, 2016; Rose et al., 2012). This finding points to the importance of understanding the pathways by which caregivers' financial difficulty may be related to adolescents' bullying victimization. Also, this finding is consistent with Bronfenbrenner's (1977) exosystem level in that caregivers' financial difficulty, which does not directly relate to the individual's bullying victimization, can still have an indirect impact on the said individual's bullying victimization experiences. In addition, caregivers' difficulty paying their child's health-care bills was hypothesized to be associated with the caregivers' frustration, which was not supported and was inconsistent with other findings (e.g., Johnson, 2000). These nonsignificant findings may reflect that the caregivers' frustration is not a direct consequence of the caregivers' financial constraints, such as difficulty paying their child's health-care bills. Caregivers' frustration, which was measured with perceived difficulty caring for the child and feeling bothered and angered by the child in the present study, is likely determined by caregivers' psychological characteristics, such as depressive symptoms, which can exert greater feelings of frustration than financial difficulty.

Our findings, however, suggest that adolescents with physical disabilities whose caregiver is experiencing financial constraints related to their health-care bills are likely to experience internalizing problems, which would have a negative impact on their socialization and increase the likelihood of bullying victimization. Unlike younger children who typically require round-the-clock care and supervision from their caregivers, adolescents, in general, tend to be more autonomous and often do not require as much of their caregivers' time and attention. Although possibly beyond the scope of the present study, adolescents with physical disabilities are less likely to attain autonomy as they depend on their caregivers' care and support. Witnessing caregivers' financial constraints related to their health care can potentially reinforce feelings of guilt, which can contribute to internalizing problems, such as depressive symptoms.

	Direct effects	Indirect effects	Total effects
Bullying victimization			
Difficulty paying their child's healthcare bills	-	0.043*	0.043*
Caregivers' frustration	0.167**	0.154***	0.321***
Adolescents' internalizing problems	0.177***	0.053**	0.230***
Adolescents' difficulty making friends	0.298***	-	0.298***
Adolescent age	-0.054	-0.013	-0.067
Adolescent male	-0.102*	0.028	-0.074
Caregivers' age	-0.096	0.026	-0.069
Caregivers' employment status	-0.076	-0.050*	-0.126*
Difficulty making friends			
Difficulty paying their child's healthcare bills	-	0.041	0.041
Caregivers' frustration	0.336***	0.042**	0.378***
Adolescents' internalizing problems	0.177***	-	0.177***
Adolescents' age	-0.044	-0.008	-0.053
Adolescents' male	0.166**	-0.006	0.160**
Caregivers' age	0.043	0.022	0.065
Caregivers' employment status	-0.108*	-0.015	-0.123*
Internalizing problems			
Difficulty paying their child's healthcare bills	0.104*	0.014	0.118*
Caregivers' frustration	0.235***	-	0.235***
Adolescents' age	0.092	-0.014	0.078
Adolescent male	-0.204***	0.016	-0.187***
Caregivers' age	-0.056	0.012	-0.044
Caregivers' employment status	-0.055	-0.010	-0.064
Caregivers' frustration			
Difficulty paying their child's health-care bills	0.059	-	0.059
Adolescents' age	-0.067	0.001	-0.066
Adolescent male	0.084	-0.002	0.082
Caregivers' age	0.095	-0.005	0.089
Caregivers' employment status	-0.007	-0.004	-0.011
Difficulty paying their child's health care bills			
Adolescents' age	0.018	-	0.018
Adolescent male	-0.027	-	-0.027
Caregivers' age	-0.086	-	-0.086
Caregivers' employment status	-0.066	-	-0.066

*p < 0.05.

p < 0.01; *p < 0.001.

TABLE 3 Standardized direct, indirect, and total effects of the relationship among the variables (n = 366)

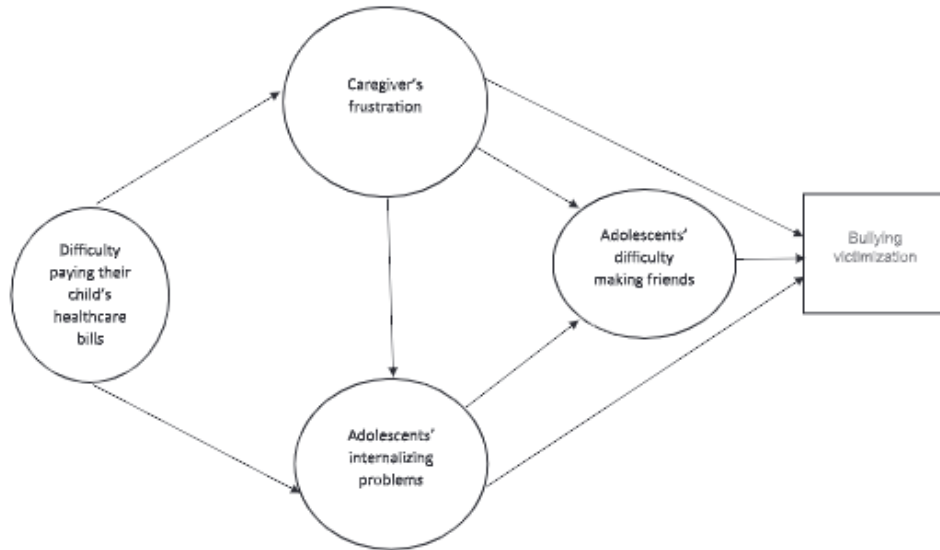


FIGURE 1 A proposed conceptual framework

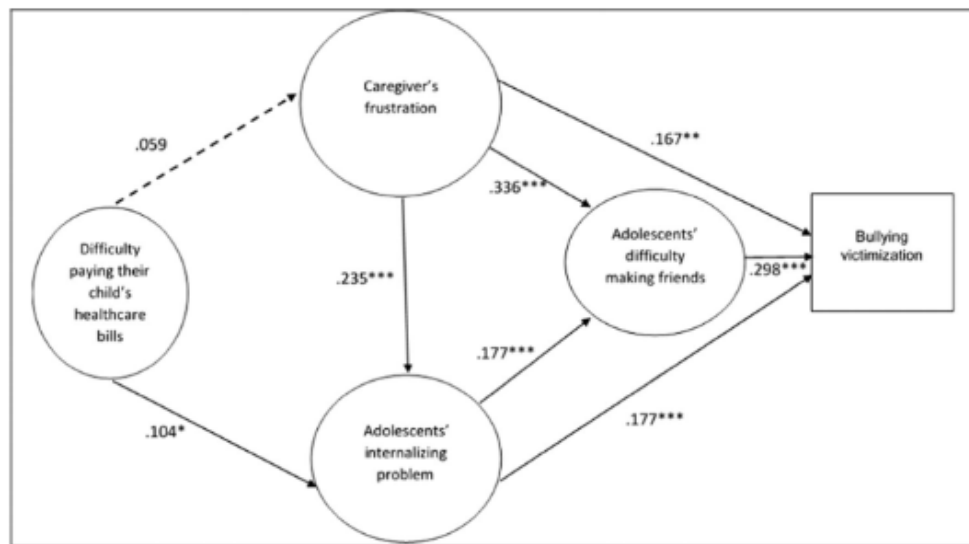


FIGURE 2 A path model with standardized estimates. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Moreover, the present study's findings supported the proposed hypothesis that caregivers' frustration and adolescents' internalizing problems were indirectly associated with bullying victimization, mediated by adolescents' difficulty making friends. The finding also demonstrated that adolescents' difficulty making friends was positively associated with bullying victimization. These findings also corroborated prior research findings, which documented that caregivers' stress and frustration are significantly related to children's behavior and socialization (Liu & Wang, 2015; Mullins et al., 2004), and adolescents' internalizing problems are significantly linked to their socialization and

relations with their peers (Blake et al., 2016). These findings appear to demonstrate that caregivers' frustration can reinforce adolescents' internalizing problems, which was consistent with other study findings (Liu & Wang, 2015; Mullins et al., 2004). Caregivers who are frustrated tend to feel more irritable and angrier, and adolescents with physical disabilities are more frequently exposed to their caregivers' feelings of frustration, which, in turn, may increase the chance of developing internalizing problems. Also, as previously stated, adolescents with physical disabilities might find it psychologically distressing or feel a sense of guilt when they constantly witness their caregiver feeling frustrated in the home. Furthermore, given their vulnerable state, adolescents with physical disabilities who are psychologically distressed tend to exhibit socially withdrawn behavior, which would make socialization and friendships quite challenging (Russo & Beidel, 1993). As a consequence, these adolescents are at an elevated risk of bullying victimization (Blake et al., 2016) due to social difficulty and a lack of friends.

Limitations and implications for research

Several limitations of the study findings warrant further explorations. First, because the study design employed is cross-sectional, we were unable to make causal inferences, as the time ordering between the predictors and outcome variable could not be established. Researchers need to consider a longitudinal study design to investigate the causal mechanisms by which bullying victimization might be reinforced or maintained. Second, although bullying victimization is conceptualized as multidimensional and includes physical, verbal, emotional, relational, and cyber forms, it was measured with a single item, which precluded an in-depth examination of this phenomenon. Researchers are strongly advised to measure bullying victimization with multiple items that reflect various forms, which would increase the reliability of the measures. Third, also related to the measures, adolescents' internalizing problems, difficulty making friends, and bullying victimization in the study were reported by the caregivers, which might have introduced measurement biases. To increase validity, researchers are suggested to consider youths' self-report, parents' reports, and teachers' reports in the measures. Fourth, another limitation pertains to the conceptual framework. Macrosystem-level factors were not accounted for in the analysis, although macrosystem-level factors have an impact on the micro-systems, mesosystems, and exosystems, as Bronfenbrenner (1977) had originally proposed. For instance, cultural beliefs and

policies, both macrosystem-level factors, can impact family financial struggles and caregiving behavior, which might indirectly influence the behavior and socialization of adolescents with physical disabilities.

Future researchers are encouraged to test this conceptual framework with a longitudinal study design with more robust measures that represent each system level of Bronfenbrenner's (1977, 1979) ecological systems perspective. Future studies should also consider measures of bullying victimization that are consistent with the definition of bullying (see Gladden et al., 2014) and from multi- informants, which is likely to increase the reliability and validity of the findings. It is also imperative that future studies building on the current findings consider other relevant theoretical perspectives. For instance, the routine activities theory (Cohen et al., 1981) suggests that vulnerable adolescents are likely to be suitable targets of bullying due to frequent interactions with bullies in schools (presence of motivated offenders) in certain areas of the school (e.g., hallway, cafeteria) where capable guardians (e.g., caregivers) are unavailable.

Implications for practice

The findings of the current study highlight the importance of considering the ecological systems perspective in addressing the unique needs of adolescents with physical disabilities. The findings have implications for developing future interventions.

Practitioners, such as psychologists, counselors, and nurses, are advised to first consider both individual factors (e.g., the adolescents' internalizing problems) and interpersonal factors (e.g., social difficulty with peers) when developing prevention and intervention programs. Prevention and intervention efforts should also consider assessing the caregivers' financial and emotional states. Given that caregivers' frustration and family's difficulty paying a child's health-care bills can contribute to the elevated risk of adolescents' bullying victimization, practitioners should consider an intervention that engages the family in the intervention process and establish a partnership between the helping professionals, school, family, and community (An & Palisano, 2014; Haines et al., 2015; Murphy et al., 2011). Specifically, practitioners are recommended to play a direct role in recognizing the unique caregiver challenges of children with physical disabilities and helping build self-care strategies to improve their psychological well-being. Intervention efforts that consider the financial and emotional well-being of caregivers can alleviate adolescents' internalizing problems, which would ultimately lead to a decreased risk of bullying victimization. In developing an intervention, practitioners need to foster collaborative processes across different ecological systems surrounding the adolescent and family to mitigate the caregivers' frustration and promote positive social and emotional development of the adolescent with physical disabilities, which can ultimately reduce the risk of bullying victimization.

CONFLICT OF INTERESTS

The authors declare that there are no conflict of interests.

DATA AVAILABILITY STATEMENT

No data are available.

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