RESEARCH ARTICLE

Peer Victimization and Academic Adjustment Among Early Adolescents: Moderation by Gender and Mediation by Perceived Classmate Support

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—————————————— ABSTRACT ——————————————

BACKGROUND: This study examined the moderating role of gender and the mediating role of perceived peer support in the association between peer victimization and academic adjustment.

METHODS: Data were obtained from adolescents in grades 7 and 8 in the US 2005/2006 Health Behavior in School-aged Children study (N = 3436; mean age = 13.6 years).

RESULTS: The magnitude of correlation between victimization and academic adjustment was −.155 for males and −.337 for females. After controlling for the socio-demographic variables, victimization had a significantly stronger influence on academic adjustment in females than in males. For both genders, perceived classmate support was negatively associated with peer victimization and positively associated with academic adjustment. Classmate support mediated the association between victimization and academic adjustment in males and was a partial mediator for females.

CONCLUSION: These results provide support for efforts reducing victimization of female adolescents and fostering peer support in the school setting.

Keywords: peer victimization; academic adjustment; peer support; gender differences.

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Victimization from different types of bullying at school is a threat to healthy child development. A recent study shows that prevalence rates of physical, verbal, relational, and cyber victimization among US adolescents are 12.8%, 36.5%, 41.0%, and 9.8%, respectively.[1] Previous research suggests that early adolescents who suffer from peer victimization are at elevated risk for poor academic adjustment.[2−4] In a recent meta-analysis, Nakamoto and Schwartz[5] found a small but significant association between peer victimization and low academic achievement. However, less is known about factors that moderate or mediate the negative influence of victimization on academic adjustment.

According to Nakamoto and Schwartz,[5] the majority of previous studies of the relation between victimization and academic adjustment among early adolescents did not examine the potential moderating role of gender. In the few studies that explored the role of gender, mixed findings have been reported. For example, Hoglund[6] reported that the strength of negative correlation between victimization and school function was stronger for girls (r = −.29) than for boys (r = −.12). Consistent with this finding, in a sample of rural African-American youth, Estell and colleagues[7] found that boys were more likely than girls to be peer-nominated as aggressive, whereas girls were more likely to have higher teachers' ratings of

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academic performance than boys. However, a recent study conducted in Hong Kong suggested that the association between victimization and academic functioning was moderated by gender and age, in which this relation was strongest among boys in younger age groups.[8] Together with other studies showing either a stronger effect among boys[9] or similar magnitudes for both genders,[10] it is unclear from the existing literature whether the magnitude of the inverse association between peer victimization and academic adjustment is similar for boys and girls. It is possible that inconsistencies in the findings are due to the use of different samples or dissimilar measures of victimization and academic adjustment, highlighting the need to use multiple indicators and to test the association in a diverse and representative national sample.

Peer relationships play a vital role in the development of academic adjustment during early adolescence.[11] Yet there is a gap in the literature regarding the potential mediating role of classmate support on the association between peer victimization and academic adjustment. Previous studies have demonstrated mediation effects on the association between peer victimization and academic adjustment through low perceived academic self-efficacy,[12] depression,[13] and other internalizing and externalizing problems.[6] However, the potential mediating role of perceived classmate support on the relation between peer victimization and academic adjustment is not well understood.

There is evidence that classmate support is positively linked to academic adjustment. For instance, in a longitudinal study, Roeser and colleagues[14] found that perceived school environment, which encompassed support for autonomy and competence, was predictive of later academic achievement. Conversely, peer rejection was associated with increased school avoidance, decreased school participation, and lower academic achievement among early adolescents,[15−17] suggesting the potential for low classmate support as a mediator between peer victimization and poor academic adjustment.

To our knowledge, only 1 published study by Wei and Williams[10] examined the mediating role of perceived classmate support in the association between peer victimization and academic achievement. In a national sample of sixth graders, classmate support mediated the association between peer victimization and academic achievement. The results suggested that classmate support is an important construct that may explain the relationship between victimization and academic adjustment. However, this finding has not been replicated and the study reported earlier was limited in 3 ways. First, the data were collected in 1996 and no recent published article has investigated a similar research question. Second, they used a single item to measure peer victimization. Because previous

studies have shown that a single item measuring general bullying may underestimate the prevalence or frequency of experience with bullying,[18] it would be important to identify and assess multiple types of bullying such as physical, verbal, and relational forms.[19] In particular, with the popularity of using cell phones and computers among early adolescents, cyber forms of bullying victimization should also be considered. Third, their sample was limited to sixth-grade adolescents only. It remains unclear if those findings could be generalized to early adolescents in other grades.

Using a nationally representative sample of US adolescents in grades 7 and 8, the purpose of the present study was to examine the potential moderating role of gender and the potential mediating role of perceived classmate support on the association between peer victimization and academic adjustment during early adolescence. Three specific hypotheses were evaluated. First, we hypothesized a significant inverse association between peer victimization and academic adjustment. Second, unlike previous research which had inconsistent findings, our measure included relational, verbal, and cyber victimization which have a higher prevalence in girls than boys;[20] therefore, we expected a gender difference in this association with a greater effect for girls than boys. Finally, we hypothesized that perceived classmate support would mediate the association between peer victimization and poor academic adjustment.

METHODS

Sample and Procedures

Health Behavior in School-aged Children (HBSC) is a World Health Organization collaborative cross-national study which aims to examine health behaviors and their social determinants among children and adolescents. In the US HBSC, data were collected during the 2005/2006 school year from a nationally representative sample of students in grades 6 to 10 obtained with a multiple-stage stratified sampling design, with clustering by school districts and stratification by census regions and grades. In addition, to obtain better estimates for minority groups, African-American and Hispanic students were oversampled. Students completed anonymous self-report questionnaires administered in the classroom by trained research assistants. Participants in grades 7 and 8, when victimization peaks, were included in this study. Youth assent and parental consent were obtained as required by the participating school districts. This study was approved by the Institutional Review Board of the Eunice Kennedy Shriver National Institute of Child Health and Human Development.

Measures

Peer Victimization. Peer victimization was measured by the revised Olweus bully/victim instrument,[19]

with 2 additional items to assess adolescents' experience with cyber victimization. Adolescents were asked "how often have you been bullied at school in the past couple of months" in the following ways: (1) I was bullied hit, kicked, pushed, shoved around, or locked indoors; (2) I was called mean names, was made fun of, or teased in a hurtful way; (3) I was bullied with mean names and comments about my race or color; (4) I was bullied with mean names and comments about my religion; (5) Other students left me out of things on purpose, excluded me from their group of friends, or completely ignored me; (6) Other students told lies or spread false rumors about me and tried to make others dislike me; (7) I was bullied using a computer or e-mail messages or pictures; and (8) I was bullied using a cell phone. For each item, 3 response options were derived: "never," "once or twice," and "more than twice."

The first 6 items measured experience with victimization through traditional bullying and the last 2 items measured cyber victimization. As preliminary analyses showed that traditional and cyber victimization were highly correlated (.849 for male and .814 for female), a single construct, ie, overall victimization, was used for this study.

Perceived Classmate Support. Students were asked about their perception of their classmates' support with 3 items: (1) Most of the students in my classes are kind and helpful; (2) Other students accept me as I am; and (3) The students in my class(es) enjoy being together. Response options ranged from strongly disagree (1) to strongly agree (5).
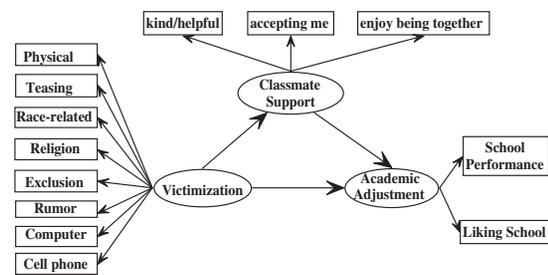
Academic Adjustment. Academic adjustment was measured by 2 items, with 4 response options for each: (1) In your opinion, what does your class teacher(s) think about your school performance compared to your classmates? The response options ranged from "below average" to "very good"; and (2) How do you feel about school at present? The response options ranged from "I don't like it at all" to "I like it a lot."

Demographic Variables. Demographic variables included gender (male and female), race/ethnicity (Caucasian, African American, Hispanic, and others), and family affluence. The family affluence scale, FAS, was developed especially for the HBSC, as the proxy for socioeconomic status. It consists of 4 items assessing family material wealth (ie, having own bedroom, number of times on a traveling vacation in a year, number of home computers, and number of cars owned). This scale has been shown to have desirable reliability and validity.[21] The 4 items were combined to produce a linear composite score, with a range from 0 (lowest affluence) to 9 (highest affluence).

Data Analyses

A series of multiple-group latent variable models, with gender as the grouping variable, were conducted

Figure 1. **Theoretical Model: The Mediation Role of Classmate Support in the Association Between Victimization and Academic Adjustment**

Note: The variables of victimization (predictor), classmate support (mediator), and academic adjustment (outcome) are latent variables. The latent variables are indicated by oval shapes, whereas the indicators are indicated by rectangle shapes.

following 3 steps. The first step was to test the factor structure and measurement invariance of the items, using a multiple-group confirmatory factor analysis (CFA) model. The second step was to examine the association between victimization and academic adjustment using a multiple-group structural equation model (SEM). To test if the association differs by gender, a separate model with fixed path weights across gender was tested. The 2 models, ie, with free or fixed path weights were compared with the restricted chi-square test.[22] The third step was to test the mediating role of perceived classmate support in the association between experience with peer victimization and academic adjustment. For both SEM models, socio-demographic variables, including grade, race/ethnicity, and FAS, were included as covariates, with academic adjustment as the outcome variable. The theoretical mediation model on the relationship between bullying victimization, perceived classmate support, and academic adjustment is shown in Figure 1.

The analysis was conducted with the software package Mplus.[23] The complex survey feature of Mplus fully took into account the sampling design of the current study, which included stratification, clustering, and weighting. In addition, as Mplus allows the use of ordinal indicators as dependent variables, the skewed distributions of the items measuring victimization were considered. Another advantage of using Mplus is that it enables us to make use of all available data, including cases with some missing responses, through the estimation of full information maximum likelihood, FIML.[24] We used 3 goodness-of-fit indexes, the Comparative Fit Index (CFI), the Tucker-Lewis Index (TLI), and the Root Mean Square Error of Approximation (RMSEA).[25] Usually CFI and TLI values above .90 and RMSEA less than or equal to .06 indicate acceptable fit.[26] Chi-square statistics were less suitable in our study, given the large sample size.

Table 1. Prevalence of Victimization in the Past Couple of Months*

Victimization Items	All (N = 3436)	Male (N = 1584)	Female (N = 1852)
1. Physical			
Never	0.838	0.782	0.889
Only once or twice	0.089	0.122	0.058
More than twice	0.073	0.095	0.053
2. Verbal-teasing			
Never	0.650	0.634	0.664
Only once or twice	0.191	0.187	0.195
More than twice	0.159	0.178	0.141
3. Verbal-mean names (race)			
Never	0.849	0.832	0.865
Only once or twice	0.072	0.077	0.068
More than twice	0.079	0.091	0.068
4. Verbal-mean names (religion)			
Never	0.898	0.883	0.911
Only once or twice	0.054	0.064	0.044
More than twice	0.049	0.053	0.045
5. Relational-social exclusion			
Never	0.722	0.738	0.707
Only once or twice	0.160	0.150	0.169
More than twice	0.118	0.112	0.124
6. Relational-rumor spreading			
Never	0.650	0.681	0.622
Only once or twice	0.209	0.189	0.228
More than twice	0.140	0.130	0.150
7. Cyber-computer			
Never	0.896	0.895	0.896
Only once or twice	0.062	0.050	0.073
More than twice	0.042	0.054	0.031
8. Cyber-cell phone			
Never	0.929	0.928	0.930
Only once or twice	0.035	0.027	0.041
More than twice	0.036	0.045	0.028

*Prevalence was calculated by adjusting for the complex survey design, including stratification, clustering, and weighting.

Table 2. Factor Loadings and Model Fit Indices of the Multiple-Group CFA Models[†]

Items	Victimization	Classmate Support	Academic Adjustment
Victimization			
1. Physical	0.971		
2. Verbal-teasing	1.000*		
3. Verbal-mean names (race)	1.071		
4. Verbal-mean names (religion)	1.057		
5. Relational-social exclusion	1.036		
6. Relational-rumor spreading	0.971		
7. Cyber-computer	1.012		
8. Cyber-cell phone	1.011		
Classmate Support			
1. Kind and supportive		1.000*	
2. Accepting me		1.339	
3. Enjoy being together		0.805	
Academic Adjustment			
1. School performance			1.000*
2. Liking school			1.298

CFA, confirmatory factor analysis.
*The item was set as the reference variable with the corresponding loading of 1.
[†]The model fit statistics showed that the three-factor structure fit the data well, ie, CFI = .978, TLE = .979, and RMSEA = .038.

Table 3. Bivariate Correlations Between the Latent Variables of Victimization, Perceived Classmate Support, and Academic Adjustment

	Victimization	Classmate Support	Academic Adjustment
Male (N = 1584)			
Victimization	1.00		
Classmate Support	−.385	1.00	
Academic Adjustment	−.101	.389	1.00
Female (N = 1852)			
Victimization	1.00		
Classmate Support	−.361	1.00	
Academic Adjustment	−.337	.391	1.00

RESULTS

Sample Characteristics and Prevalence of Victimization

Among 3466 adolescents in grades 7 and 8 who completed the revised Olweus bully/victim questions in 2006 HBSC survey, 30 (0.9%) were excluded from our analyses because of missing data on socio-demographic variables. The remaining 3436 adolescents were included in the analyses, consisting of 47.8% males, 49.7% seventh graders, 41.8% Caucasians, 18.3% African-American adolescents, and 26.4% Hispanic adolescents. The mean age was 13.6 years, with a standard deviation of 0.73. Frequency distribution for victimization items is reported in Table 1, for all adolescents and for each gender.

Step 1: Factor Structure and Measurement Invariance (Multiple-Group CFA)

A multiple-group CFA on the items measuring victimization, perceived classmate support, and academic adjustment showed that the 3-factor structure fit the data well, ie, CFI = .978, TLE = .979, and RMSEA = .038. The factor loadings are reported in Table 2. As all the estimates of the factor loadings were fairly close to 1, each item was considered as a good indicator for the latent variable it represented.

The bivariate correlations for victimization, perceived classmate support, and academic adjustment are reported in Table 3. For both genders, perceived classmate support was negatively associated with victimization (−.385 for males and −.361 for females) and positively associated with academic adjustment (.389 for males and .391 for females) with similar magnitudes. The correlation between victimization and academic adjustment was −.101 for males and −.337 for females.

Step 2: Association Between Victimization and Academic Adjustment

The SEM provided desirable indices of goodness-of-fit, CFI = .987, TLI = .985, and RMSEA = .029. For both genders, victimization had a significant negative influence on academic adjustment (male: the unstandardized and standardized regression coefficients: $B = -.086$, $p < .001$; $\beta = -.121$, $p < .001$; female: $B = -.265$, $p < .001$; $\beta = -.322$, $p < .001$). R^2 were .057 for male and .127 for female.

Moderation by Gender. To statistically test the moderation by gender in the association of victimization and academic adjustment, the path weights or regression coefficients for victimization were constrained to be equal across gender. The modification index indicated that to free the equality of regression coefficients would lead to a chi-square drop of 4.008 with 1 degree of freedom, $p < .05$. Thus, we can conclude that the gender difference in the association between victimization and academic adjustment was statistically significant.

Step 3: Mediating Role of Perceived Classmate Support

The derived mediation model is shown in Figure 2. As indicated by goodness-of-fit indices, this mediation model had a desirable fit with the data, CFI = .969, TLI = .969, and RMSEA = .036.

Covariates. Family affluence scale was positively and significantly related to both perceived classmate support (Male: $\beta = .038$, $p < .05$; Female: *ns*) and academic adjustment (Male: $\beta = .020$, $p < .05$; Female: $\beta = .062$, $p < .001$). There was no grade difference.

Predictor and Mediator—Influence of Victimization on Perceived Classmate Support. Victimization and perceived classmate support were negatively and significantly associated for both males ($\beta = -.370$, $p < .001$) and females ($\beta = -.324$, $p < .001$).

Mediator and Outcome—Influence of Perceived Classmate Support on Academic Adjustment. For both males and females, perceived classmate support was positively and significantly associated with academic adjustment. The higher level of perceived classmate support the student perceived, the higher level of academic adjustment he/she reported (the standardized regression coefficient, male: $\beta = .395$, $p < .001$; female: $\beta = .299$, $p < .001$). Taken together, perceived classmate support had a mediating role in the relationship between victimization and academic adjustment for both males and females.

Predictor and Outcome—Influence of Victimization on Academic Adjustment With Perceived Classmate Support as the Mediator. When perceived classmate support was controlled for, victimization was not directly associated with academic adjustment for males ($\beta = .030$, *ns*). Among females, on the other hand, the positive association between victimization and academic adjustment remained statistically significant ($\beta = -.221$, $p < .001$).

Figure 2. **Results of the Mediation Model**
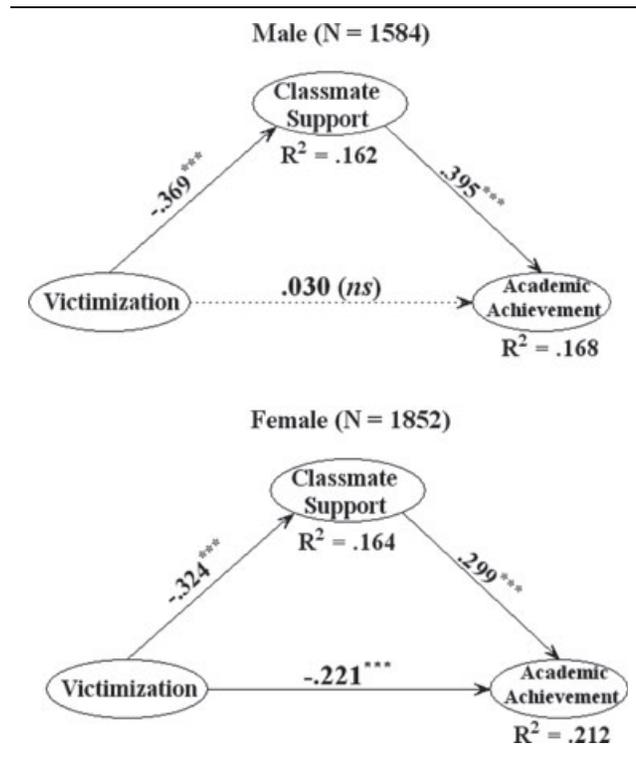
Note: $^*p < .05$; $^{**}p < .01$; $^{***}p < .001$. The path weights reported in the graph are all standardized weights. The model fit statistics showed that the 3-factor structure fit the data well, ie, CFI = .969, TLE = .969, and RMSEA = .036.

DISCUSSION

The current study examined the moderating role of gender and mediating role of perceived classmate support in the association between peer victimization and academic adjustment. Controlling for the socio-demographic variables, victimization had a significantly stronger influence on academic adjustment in females than in males. For both genders, perceived peer support mediated the association between victimization and academic adjustment. It was negatively associated with peer victimization and positively associated with academic adjustment.

Consistent with our first hypothesis, a significant inverse association between peer victimization and academic adjustment was found. This is consistent with previously reported studies, which showed that victims of bullying are at risk of a variety of adjustment problems, including school and academic adjustment.[3,4] The identification of victimization as a risk factor for poor academic adjustment highlights the importance of addressing victimization at school. However, professionals such as educators and counselors who work with students are not given specific information to guide effective prevention and

intervention unless mediator and moderator of this association are identified.

With regard to our second hypothesis, we found that the strength of association between victimization and academic adjustment was stronger in females than in males among US adolescents in grades 7 and 8. Our results were similar to the findings by Hoglund[6] which showed that the strength of association between victimization and academic adjustment was more than twice as great in females as males. However, a meta-analysis by Nakamoto and Schwartz[5] showed that majority of previous studies did not analyze the association separately by gender. And among the few studies which tested the moderation by gender, results were mixed. In addition to different locations of sample collection, a possible explanation for the mixed findings may be the measure of peer victimization. Using a single measure of victimization without identifying specific victimization behaviors may bias the estimate of prevalence or frequency of experiences with peer victimization toward physical victimization.[18] In the current study, we used multiple items assessing various types of victimization including relational, verbal, and cyber victimization. The results showed that the strength of association between victimization and academic adjustment in girls was more than twice that in boys, for both the bivariate correlations and the standardized regression coefficients which controlled for socio-demographic characteristics.

Consistent with our third hypothesis, perceived classmate support was negatively associated with victimization and positively associated with academic adjustment for both genders. The negative association between victimization and perceived classmate support may be explained by 2 mechanisms. First, previous studies have shown that children and adolescents who have fewer friends and receive less peer support are at higher risk of being bullied.[27] Wang and colleagues[20] found that the negative relationship between number of friends and victimization was consistent for physical, verbal, and relational types of bullying. Second, the roles played by classmates in the process of bullying may change the victims' perception of their support. A study on participant role showed that classmates or other peers participated actively in a ''group process'' of bullying.[28] For example, they have identified several types of participant roles which may lead to lower level of perceived classmate support among victims, such as reinforcers (who may laugh at the victims), assistants (who assist the bullies), and outsiders (who may pretend not to notice what is happening).

The mediating effect of perceived classmate support on academic adjustment indicates the perceived role of classmates as an important source of social support and may lead to greater academic adjustment, which is consistent with previous studies.[10] Fostering strong bonds between students could enhance academic adjustment and serve as a buffer against potentially negative school-related experiences such as being victimized by other students. The strength of association of perceived classmate support with victimization or with academic adjustment was similar in males and females. When controlling for perceived classmate support, the association of victimization and academic adjustment became insignificant for males but remained significant for females. This suggests that other mediators, such as depression, may also contribute to explaining the covariation of victimization and academic adjustment for girls.[13] Nonetheless, our results suggest the important role of perceived classmate support in the relationship between peer victimization and academic adjustment.

It is important to note the limitations of the current study. First, the cross-sectional nature of the data limits our conclusion to concurrent associations. Even though there is some evidence supporting the sequential ordering of the pathways shown in our theoretical model, such as the predicting effect of victimization on future academic adjustment,[15] longitudinal studies are recommended for future studies. Second, all information was obtained through self report. Multiple sources of measurement of academic adjustment, such as grade point average or other objective measure of academic adjustment, are recommended for future studies. Third, bullying is a worldwide school problem; cross-national studies are needed to further examine the roles of gender and peer support in the relationship between victimization and academic adjustment.

Despite these limitations, this study contributed to the literature on victimization and academic adjustment in at least 3 ways. First, we included various types of victimization items as indicators. Thus, the estimate of experience with peer victimization may be more accurate compared to other studies, which used a single item assessing general bullying.[18] We included not only items measuring traditional bullying victimization such as physical, verbal, and relational forms, but also a new form, ie, cyber victimization. The high correlation between the constructs of traditional and cyber victimization suggested a single construct; thus a latent variable of overall victimization was used for all analyses. Second, all 3 key variables, ie, victimization, perceived classmate support, and academic adjustment, were treated as latent variables. Thus, by modeling the measurement errors in the latent variable approach, the estimation of correlation and regression coefficients was unattenuated. Third, the nationally representative sample allows us to generalize our results to the population of US middle school adolescents.

IMPLICATIONS FOR SCHOOLS

The current study extends previous research by examining moderating and mediating effects on the association between peer victimization and academic adjustment using a nationally representative sample. A significant inverse relationship between peer victimization and academic adjustment suggests that it is important for school programs to involve staff and students in preventing peer victimization and intervening when it occurs. The mediating effect of peer support suggests that encouraging classmate support at a class or school level may effectively reduce the detrimental effects of victimization on academic adjustment. For instance, school bullying interventions and policies should increase students' and teachers' knowledge of the nature and effects of school bullying; encourage witnesses to report bullying incidents; increase classmates' empathy for victims of bullying; and develop a schoolwide supportive atmosphere for victims. In addition, the moderating effect of gender suggests that the negative effect of victimization on academic adjustment may be stronger for female early adolescents. It points to a more important need, especially when victims are females, for schools to increase coping skills of victims, to train school staff to respond to bullying incidents immediately, and to follow up with the victims on their academic adjustment. Finally, researchers could also investigate whether certain coping skills or intervention approaches are more appropriate for female versus male early adolescents, thereby informing practices tailored to the needs of students who are vulnerable to poor academic adjustment due to victimization.

Human Subjects Approval Statement

The study protocol was approved by the institutional review board of the Eunice Kennedy Shriver National Institute of Child Health and Human Development.

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