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Daily Cybervictimization Among Latino Adolescents: Links with Emotional, Physical and School Adjustment

Guadalupe Espinoza, Ph.D.

Assistant Professor, Child and Adolescent Studies Department, California State University, Fullerton, Office Phone: (657) 278 - 2354

Guadalupe Espinoza: guadespinoza@fullerton.edu

Abstract

The current study examines how Latino adolescents' daily cybervictimization experiences are associated with their emotional and physical well-being and school adjustment. Latino high school students ($N=118$) completed daily checklists across five consecutive school days. Hierarchical linear modeling results revealed that daily cybervictimization experiences were associated with greater feelings of distress, anger, shame and physical symptoms. Moderation analyses showed gender differences such that the daily level associations with distress and anger were significant for Latinas but not Latino adolescents. Daily cybervictimization experiences were also related to increased school attendance problems such as arriving late to class or skipping a class. Mediation models indicated that daily feelings of distress accounted for the association between single episodes of cybervictimization and attendance problems. The results address several voids in the cybervictimization literature and demonstrate that a discrete encounter of victimization online is associated with compromised well-being and school adjustment among Latino adolescents.

Keywords

cybervictimization; Latino students; daily methods; high school; emotions

Within the past few years, cyberbullying, the use of the Internet or other digital communication devices to insult or threaten someone (Juvonen & Gross, 2008), has emerged as a new social and health concern facing adolescents. As cyberspace becomes the latest context of social interactions and development for adolescents, it is critical to understand the negative peer incidents they experience online. A recent report concluded that although there have been declines in face-to-face victimization, rates of cybervictimization (e.g., being threatened or embarrassed on the Internet) are increasing (Jones, Mitchell, & Finkelhor, 2012). Specifically, based on data from three cross-sectional national telephone surveys, the rates for youth experiencing at least one incident of "online harassment" increased by 83% from 2000 to 2010 (Jones et al., 2012). A longitudinal study also found a trend indicating that cybervictimization is increasing among youth (Ybarra, Mitchell, & Korchmaros, 2011).

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Given the disconcerting rise in cybervictimization rates, it is important to understand how these online experiences are related to adolescents' adjustment. Moreover, cybervictimization studies have predominately focused on the experiences of White adolescents. Thus, our understanding of cybervictimization experiences among Latino youth and how these experiences are linked to their well-being is limited. This underrepresentation in the literature exists despite the fact that Latino adolescents' use of electronic communication devices now parallels use among White youth (Madden, Lenhart, Duggan, Cortesi, & Gasser, 2013). Thus, the current study aims to extend cybervictimization research by relying on daily diary methodology to examine whether cybervictimization incidents are associated with daily emotions, physical symptoms, and school adjustment among an understudied population of Latino high school students.

Links with Emotional and Physical Well-Being and School Adjustment

Consistent with research on school bullying and victimization (e.g., Juvonen, Graham, & Schuster, 2003), research indicates that targets of cybervictimization are also at-risk for psychosocial adjustment problems. Students who experience cybervictimization report greater psychological distress, depressive symptoms and anxiety (e.g., Campbell, Spears, Slee, Butler, & Kift, 2012; Ybarra, 2004), compared to youth who are not targeted online. For example, based on results gathered via web-based anonymous surveys, Juvonen and Gross (2008) found that over and above reports of school-based victimization encounters, cybervictimization experiences predicted feelings of social anxiety. In a descriptive study, Patchin and Hinduja (2006) found that among cybervictimized youth, the most common feelings were frustration, anger, and sadness. In addition to negative affect and psychosocial problems, recent studies have linked cybervictimization experiences also to physical health complaints. A study among Swedish adolescents showed a significant association between cybervictimization and psychosomatic health problems such as headaches and having little appetite (Beckman, Hagquist, & Hellström, 2012). Moreover, a recent meta-analysis of 131 studies concluded that cybervictimization experiences were related to a number of psychosocial and physical health constructs such as depression, loneliness, and somatic symptoms (Kowalski, Giumetti, Schroeder, & Lattanner, 2014). Thus, largely stemming from studies utilizing traditional, one-time surveys, evidence indicates that adolescents who, on average experience more cybervictimization than others, are also, on average more likely to report psychosocial problems.

With regards to school adjustment, studies with large samples, multiple data waves and multi-informants have rather consistently shown that school victimization is linked to lower grades, lower engagement, and negative school climate perceptions (e.g., Juvonen, Wang & Espinoza, 2011; Nakamoto & Schwartz, 2009). Mixed results exist among the few studies examining cybervictimization in association to school adjustment. For example, one study documented a relationship between cybervictimization and school problems, such as trouble paying attention and learning problems, but only among boys (Brown, Demaray, & Secord, 2014). Online victimization has been linked to school problems such as detention, suspension, and skipping school (Ybarra, Diener-West, & Leaf, 2007). However, studies that focus on academic grades find no association (e.g., Li, 2007). The aforementioned meta-analysis (Kowalski et al., 2014) also concluded that there was no association between

cybervictimization and academic achievement. Thus, rather than focusing on academic outcomes such as grades, as they are likely to capture distal outcomes, more proximal indicators (e.g., engagement) may better help us understand the link between cybervictimization and school adjustment.

Whether cybervictimization is directly associated with school adjustment or whether the concerns and worries about online incidents simply spill over to the school context has not been tested. Within school victimization research, support exists for indirect, or mediational models, such that victims tend to be less engaged in school, with psychosocial problems mediating the effects (Juvonen, Nishina, & Graham, 2000; Schwartz, Gorman, Nakamoto, & Toblin, 2005). Thus, youth who experience cybervictimization may feel more depressed or anxious, and thus, have difficulty with school tasks such as making it to class on time. Overall, there is a dearth of cybervictimization studies testing mediating mechanisms to examine whether negative emotions account for links with school adjustment.

Addressing Voids in Current Cybervictimization Research

A few voids that exist in the cybervictimization research will be addressed in the current study. One limitation pertains to methodology; the majority of studies rely on traditional, onetime surveys. Extending the methods used to study cybervictimization will allow us to answer novel questions that have not been explored. The current study relies on daily diary methodology that permits examination of the associations between single incidents of cybervictimization and day-to-day fluctuations in adjustment. In contrast to one-time measures in which youth must rely on retrospective accounts, daily measures reduce the time elapsed between the actual experience and their account of the experience, minimizing potential biases and error (Bolger, Davis, & Rafaeli, 2003). Moreover, daily methods allow estimation of the associations between variables of interest at the within-subject level, while accounting for individual differences. That is, this method allows estimation of whether specific events and feelings co-occur with another on a daily basis. For example, by assessing adolescents daily cybervictimization experiences and daily emotions such as distress, it is possible to test if within-subject changes in distress vary as a function of daily cybervictimization. Daily assessments remain unused in cybervictimization research and have only been used in a few school victimization studies (Espinoza, Gonzales & Fuligni, 2013; Lehman & Repetti, 2007; Nishina & Juvonen, 2005). These studies have illustrated the usefulness of the method in detailing daily level associations with victimization incidents. Daily methodology also allows examination of potential lagged effects inasmuch as some of the negative associations with cybervictimization may linger to the next day.

Another limitation is that despite the growing use of online tools among Latino youth (Madden et al., 2013) and that Latinos are one of the fastest growing ethnic groups in the United States (U.S. Census Bureau, 2012), they continue to be underrepresented in victimization research. Few studies have even included a sample of Latino youth large enough to compare their cybervictimization rates with other groups (see Bauman, Toomey, & Walker, 2013; Messias, Kindrick & Castro, 2014 for exceptions). More research is needed with Latino youth to extend beyond drawing comparisons with other groups but to also explore potential within-group variations (e.g., gender, generational status). Given that

Latino teens are at high risk of mental health problems (Gore & Aseltine, 2003; Roberts, Roberts, & Chen, 1997) and of doing poorly in school (Kohler & Lazarin, 2007), it is important to examine their social experiences online to better understand the whether cybervictimization helps explain some of these adjustment indicators.

Finally, cybervictimization studies have largely focused on the experiences of middle school students and are less studied among high school students (Bauman, Toomey, & Walker, 2012). However, the high school years are an important developmental period to study. For example, older adolescents are more likely to be connected online (i.e., higher smart phone and computer ownership), compared to young adolescents in middle school (e.g., Lenhart, 2012), which may mean that they have more opportunities for negative online interactions with peers. Thus, employing daily diaries, an intensive longitudinal method, among an understudied population in cybervictimization research will provide us with a better understanding of how everyday experiences with victimization are related (or unrelated) to various indices of adjustment among Latino high school students.

Current Study

Four central research aims guide this study. The first research aim is to describe Latino high school students' everyday cybervictimization incidents. Given how understudied Latino youth are in the peer relations and victimization literature, it is unknown how frequently they experience cybervictimization incidents.

The second aim guiding this study is to examine whether episodic (within-persons) and/or persistent (between-persons) cybervictimization experiences are related to adolescents' daily emotions (i.e., anger, distress, shame), physical symptoms, and school adjustment (i.e., school climate perceptions, attendance problems). Multiple indicators of emotions and school adjustment are assessed in order to capture the array of adjustment problems that are most closely linked with cybervictimization incidents. For example, past studies examining negative emotions have studied distress and depressive symptoms most extensively (e.g., Bonanno & Hymel, 2013; Campbell, Spears, Slee, Butler & Kift, 2012; Ybarra, 2004). However, findings from descriptive studies indicate that students also report feeling anger and shame after being cybervictimized (Patchin & Hinduja, 2006). One challenge in examining associations between cybervictimization and adjustment, particularly school adjustment indicators such as school safety and belonging, is that the relation may be partly accounted for by traditional, school-based victimization experiences (Olweus, 2012). To address this important methodological issue, additional models are conducted to take into account school victimization incidents. Moreover, to understand whether the impact of cybervictimization lasts longer than for a single day, lagged effects are tested. That is, if a cybervictimization incident on one day is associated with anger, does the emotion continue to be associated with the incident on the following day? Daily research on discrimination experiences among Latinos has shown that there is diminished recovery from one day to the next (Torres & Ong, 2010). Thus, these analyses will reveal whether the impact of a single cybervictimization incident persists to the next day.

The third study aim was to test the extent to which significant variability found in daily-level associations vary by grade, sex and generational status. With regards to grade differences, findings have been inconsistent in even simply identifying mean-level differences in reports of cybervictimization. Many studies find no significant grade differences or only subtle differences based on grade or age (e.g., Brown, Demaray, & Secord, 2014; Griezel, Finger, Bodkin-Andrews, Craven, & Yeung, 2012). Fewer studies have tested whether grade may moderate cybervictimization associations. Given that the transition year tends to be stressful (Benner & Graham, 2009), and that it has been suggested that the psychological toll among victimized students may be worst in seventh to tenth grade (Kowalski et al., 2014), it is hypothesized that cybervictimization experiences for students in the ninth and tenth grade may be more strongly related to adjustment problems. Focusing on gender, in a study examining daily school victimization, gender was not found to moderate the association between victimization and distress or school adjustment (Espinoza, Gonzales, & Fuligni, 2013). However, Bauman and colleagues (2013) found that cybervictimization experiences were significantly associated with depressive symptoms, but only for girls, suggesting that girls may be more sensitive to social stressors occurring online. Although generational status has not received empirical consideration within the cybervictimization literature, victimization may be particularly harmful for first-generation immigrant youth because they are managing many challenges as they adapt to the U.S. culture (McKenney et al., 2006). Alternatively, cybervictimization may be more harmful for second- and third-generation youth because they place more importance on peer relationships (Stromheier et al., 2011). Given that there is limited research on cybervictimization among Latino youth, these analyses examining the extent to which associations may vary based on grade, sex or generational status are exploratory.

The final aim is to identify mediating mechanisms by examining whether potential associations between cybervictimization experiences and school adjustment problems can be accounted for by daily emotions. Given that psychosocial problems (e.g., depression) in particular have been shown to mediate associations between school bullying incidents and school adjustment (Juvonen, Nishina, & Graham, 2000), feelings of distress are expected to serve as a mediator between daily cybervictimization experiences and school adjustment indicators.

In sum, the current study aims to extend previous research in multiple ways. Through the use of repeated diary methodology and by focusing on a Latino sample spanning across the high school years, the within-person impact of daily incidents of cybervictimization will be examined.

Method

Participants

Students were recruited from a high school located in an urban, low-income area in Los Angeles that was comprised of predominately Latino (94%) students with 68% of students eligible for free or reduced lunch. Based on the number of ninth to twelfth grade students who were invited to participate, returned a signed consent form with permission to participate from their parent or guardian and those who signed an assent form, the

participation rate was 67% which compares favorably with past daily adolescent studies (e.g., Ham & Larson, 1990; Kiang, Yip, Gonzales-Backen, Witkow, & Fuligni, 2006). A total of 144 adolescents participated in the initial part of the study, which included completing a background survey during homeroom period. The final analytic sample included 118 adolescents who completed both the background survey and at least one diary checklist during the five-day span and also self-reported their ethnicity as Latino. The sample was equally split by sex (50% female) and students across ninth (25%), tenth (36%), eleventh (32%) and twelfth (7%) grade were included. Among this Latino sample, students were Central American (57%) or Mexican American (39%), with a group of students who were both Mexican and Central American (4%). A majority of the adolescents (74%) were second-generation (i.e., the adolescent was born in the United States and at least one parent was born outside of the U.S.). Twenty percent of students were first-generation immigrants (i.e., adolescent and parent(s) born outside of U.S.) and 6% were third generation (i.e., adolescent and parent(s) born in the U.S.).

Procedures

Students were recruited to participate in the study during homeroom. All students in a homeroom classroom enrolled predominately with freshmen, sophomores and juniors were invited to participate (homeroom classrooms composed of mainly seniors were excluded due to numerous senior activities scheduled during the study period). A challenge of recruiting school-based samples, particularly in high schools, is offering adequate incentives for students to return the consent forms. To encourage students to return signed consent forms (whether it be granting or not granting permission to participate), their names were entered in a raffle with prizes (e.g., music gift cards, university shirts). Students with permission to participate in the study and those who also provided their assent completed background questionnaires (e.g., demographic items such as country of birth) during homeroom. Students then received instructions for completing the daily diary checklists and a packet with a set of paper checklists and envelopes to complete for the next five school days before going to bed. After completing each diary checklist, students were instructed to write the time and date at the top of the checklist, seal it in an envelope and place it in the project box located in their homeroom the following morning. Each diary checklist took about five minutes to complete. Parent consent forms were provided in English and Spanish and student surveys were provided in English (no students requested a Spanish version).

To help ensure that the checklists were completed, participants were asked to provide their email address or a cell phone number where they could receive reminder text messages. Over three-fourths of students provided this information and were sent a message twice during the week to remind them to complete the checklists and return them to school on the following day. The checklists were gathered during each homeroom class to verify that they were completed on time. Furthermore, to compensate students for completing the diary checklists, they earned two dollars for each checklist, resulting in a ten dollar payment if all five were completed. For some students less than five diary checklist days were analyzed, if, for example, the adolescent failed to complete the daily checklist or to return it. On average, across the five days, 97% of diaries were completed and 81% of diaries were completed on time (i.e., completed either on the same night or before 9:00am on the following day), which

compares favorably with past daily diary studies with Latino adolescents (Espinoza, Gonzales, & Fuligni, 2013). When analyses were run including only the diaries completed on time, the main results did not differ from the results of the analyses including all of the completed diaries, whether or not they were on time. Thus, the findings reported in the results are drawn from all completed diaries.

Measures

The daily measures assessed a variety of school and online events, activities and emotions. Table 1 displays descriptive statistics and correlation coefficients for the mean-level (averages across school days) variables.

Cybervictimization experiences—Adolescents were asked, “Did any of the following things happen online or in a text message today?”. The five items adapted from a previous cybervictimization study (Juvonen & Gross, 2008) included: “someone called you names that insulted you”, “someone threatened you, physically or otherwise”, “someone spread rumors about you online or via text message”, “someone shared private pictures of you that embarrassed you”, and “someone shared private information, without your permission, that embarrassed you”. Each evening, students checked a box labeled either *no* (0) or *yes* (1) next to each item. To create the composite, the five items were averaged each day.

School victimization experiences—In a section titled, *School Events and Experiences*, adolescents were asked, “Did any of the following happen today?” with three items measuring school victimization. The items tapped into physical (“someone from school hit, kicked or shoved me”), verbal (“someone from school insulted or made fun of me”) and relational (“someone from school spread rumors about me or excluded me”) forms of victimization. Similar physical and verbal items have been used in a previous daily school victimization study (Espinoza, Gonzales, & Fuligni, 2013). Students checked a box labeled either *no* (0) or *yes* (1) next to each item. The three items were averaged across each day to create the daily measure.

Daily emotions—Students were asked to report the extent to which they experienced certain emotions during the day. The items were prefaced with “The following is a list of feelings. Today, did you feel...”? The items were rated on a 5-point scale labeled *not at all* (1) and *extremely* (5) at its end points. For each indicator, the items were averaged to form composites across each day.

Distress: Distress was assessed with six items modified from the anxiety and depression subscales of the Profile of Moods States (POMS; Lorr and McNair, 1971). Each evening, adolescents rated the extent to which they had anxious feelings (e.g., worried, nervous) and depressive feelings (e.g., discouraged, sad). Given that the two scales were highly correlated ($r = .55, p < .001$), they were combined to form a single index of distress (daily $\alpha = .79$)¹.

¹To calculate reliability estimates with the repeated measures, the item values were standardized within individuals.

Anger: Two items, “angry” and “mad”, were used to assess levels of daily anger. The items were strongly correlated ($r = .84, p < .001$).

Shame: Four items were used to measure adolescents’ daily feeling of shame. Participants indicated the extent to which they felt “embarrassed”, “ashamed”, “humiliated” and “mortified” during the day. The measure showed good internal reliability (daily $\alpha = .72$).

Daily physical symptoms—The six items used to assess physical symptoms were prefaced with the question, “Did you feel any of the following today?”. Sample items include “stomachaches or pain”, “headaches” and “trouble sleeping”. Items were rated on a 5-point scale from *not at all* (1) to *extremely* (5). The items had strong internal reliability (daily $\alpha = .83$).

School adjustment—Adolescents were asked to indicate whether certain events happened at school and also how they felt about school during the day.

School belonging: Three items adapted from Gottfredson’s (1984) Effective School Battery assessed belonging. The items included: “I felt like I belong in school”, “I felt like I am a part of this school”, and “I felt close to people at school”. Items were rated on a 5-point scale from *not at all* (1) to *extremely* (5). The scale showed excellent internal reliability (daily $\alpha = .91$).

School safety: The item “I was worried about my safety” was prefaced with “How did you feel today at school?” to measure school safety. Response options ranged from *not at all* (1) to *extremely* (5). The item was reverse coded such that higher scores indicate higher feelings of school safety. An alpha coefficient was not calculated given that this is a single item measure.

Attendance problems: Students indicated whether they were “late for a class” and whether they “skipped or cut a class” during the day. An attendance problems index was created by averaging the number of incidents reported each day. It was not appropriate to calculate alpha coefficients for this measure given that it is a count of events.

Results

The results section is divided into three main sections. The first section provides descriptive results based on the examination of mean differences in frequencies and correlates of cybervictimization experiences.² The second section describes the results from the hierarchical linear modeling (HLM; Bryk & Raudenbush, 1992) analyses that simultaneously tested the individual (between-subjects, persistent) and daily (within-subjects, episodic) associations between adolescents’ cybervictimization experiences and their emotions, physical symptoms and school adjustment. An advantage of HLM is that it appropriately accounts for the nested data (i.e., days within individuals). Moreover, by

²The descriptive analyses addressing the first research aim is based on individual-level data and does not control for nesting of days within individuals.

accounting for both between-persons and within-persons cybervictimization associations it is possible to test whether episodic and/or persistent cybervictimization experiences are related to adjustment problems. This section also describes analyses that examined whether associations with cybervictimization persisted across the following day and whether significant individual variability could be explained by adolescents' sex, grade, or generational status. The final section details the results from lower level mediations (ideal for testing mediations that include repeated measures; Bauer, Preacher, & Gil, 2006) that tested whether daily emotions account for the relationships between cybervictimization and school adjustment.

Cybervictimization Frequencies and Descriptive Information

Among the five cybervictimization items, the item "someone called you names that insulted you online" was the most prevalent ($M = .04$, $SD = .11$) and "someone shared private online pictures of you that embarrassed you" was the least prevalent ($M = .01$, $SD = .06$). As expected, all items were significantly correlated with one another. The two items related to sharing private pictures and information were strongly correlated ($r = .75$) and calling names and spreading rumors were less strongly related ($r = .37$). The composite measure of daily cybervictimization experiences were averaged across the five school days to create a score that indicated the proportion of days that students were targeted online. Overall, 19% of Latino high school students reported at least one cybervictimization incident within the 5 consecutive days. Specifically, 10% reported one incident, 4% reported two incidents and 5% reported three or more incidents. Univariate linear model tests revealed no differences in cybervictimization experiences based on sex, grade, or generational status (all p 's > .05).

Descriptive analyses were also conducted to examine if there were differences in the frequency of cybervictimization and school victimization experiences and to test the overlap across both constructs. The mean-level cybervictimization and school victimization measures were moderately correlated ($r = .42$, $p < .001$). A paired t-test comparing the average number of bullying incidents reported at school and online revealed that there were no differences in the frequency of victimization experiences across each context, $t(117) = 1.97$, $p > .05$. Thus, one type of victimization was not more prevalent than the other.

Daily Associations of Cybervictimization with Emotions and Adjustment

HLM tested the extent to which both individual- (between-subjects) and daily-levels (within-subjects) of cybervictimization experiences predicted the daily outcomes.

HLM analyses plan—In the models testing the associations between cybervictimization and the adjustment variables, a mean-level cybervictimization predictor was entered at the Level 2 intercept to indicate whether students who on average report more victimization are also, on average, more likely to report negative adjustment. The daily-level cybervictimization predictor was entered at Level 1 to test whether youth experience more negative emotions, physical symptoms and school adjustment problems on days that they are cybervictimimized. The Level 1 cybervictimization predictor was group mean centered to remove the between-persons variation given that the mean-level cybervictimization predictor (grand mean centered) was included in the models (West, Ryu, Kowk, & Cham, 2011). That

is, rather than including a daily raw score of cybervictimization, the group-mean centered variable represents the daily deviation from an adolescent's average cybervictimization experiences across the five days (Raudenbush & Bryk, 2002). Thus, both persistent and episodic cybervictimization incidents were captured by partitioning the overall effect into the distinct between-subjects and within-subjects effect via the centering and inclusion of predictors at both levels (West et al., 2011).

Separate models were estimated in which each indicator of daily emotions, physical symptoms and school adjustment was predicted from adolescent's victimization experiences. For example, the Level 1 equation estimated to predict daily anger was:

$$\text{Anger}_{ij} = b_{0j} + b_{1j} (\text{daily cybervictimization experiences}) + e_{ij} \quad (1)$$

Anger on a particular day (i) for a particular adolescent (j) is modeled as a function of their intercept, or the average feelings of anger across days (when victimization is at the individual's mean; b_{0j}) and daily fluctuations in cybervictimization experiences (i.e., group mean centered cybervictimization; b_{1j}). The error term (e_{ij}) accounts for variance in anger unexplained by the predictors. The basic Equation 1 model predicting daily anger also included multiple individual-level equations for Level 2:

$$b_{0j} (\text{average daily anger}) = c_{00} + c_{01} (\text{average cybervictimization}) + u_{0j} \quad (2)$$

$$b_{1j} (\text{daily association of cybervictimization with anger}) = c_{10} + u_{1j} \quad (3)$$

In Equation 2, average cybervictimization (c_{01}) represents the relationship between mean levels of cybervictimization experiences and anger. A significant c_{01} coefficient would indicate that adolescents who, on average, experience higher levels of cybervictimization report greater anger. No additional predictors are entered in Equation 3, which models the daily association of cybervictimization with anger. Coefficients u_{0j} and u_{1j} account for the variance in the intercept and slope that remains unexplained.

Daily emotions and physical symptoms—The results from the models predicting emotions and physical symptoms are shown in Table 2. There was a daily association between cybervictimization and feelings of distress, anger, shame and also physical symptoms. Thus, on any given day that an adolescent reported a higher level of cybervictimization (i.e., deviated from their average levels of cybervictimization), they reported greater feelings of distress, anger, and shame, as well as more physical symptoms. Additionally, a significant association with mean-level cybervictimization emerged for anger, shame and physical symptoms suggesting that adolescents who on average report more cybervictimization are also, on average, more likely to report certain negative emotions and physical symptoms. Estimates of the degree of individual variability in the daily-level associations with cybervictimization are also presented in Table 2 (indicating the residual

slope variability at Level 2). There was significant variability in the association of daily cybervictimization experiences with distress, anger and shame, but not physical symptoms. These findings indicate that the daily association between cybervictimization and the outcomes have remaining variance that may be explained by individual-level factors (e.g., sex).

Controlling for both mean- and daily-levels of *school* victimization incidents, an additional set of models were run to examine whether these incidents might account for, or change, the daily cybervictimization findings. Results revealed that the daily associations with distress, anger, shame and physical symptoms remained significant even when accounting for school victimization experiences.

Daily school adjustment—The results from the models predicting school adjustment are shown in Table 3. A daily association emerged with school attendance. Specifically, adolescents, who on any given day deviated from their average level of cybervictimization, such that they experienced greater levels of cybervictimization, reported more attendance problems such as skipping class. A mean-level association also suggests that youth who reported more cybervictimization incidents also reported more attendance problems across the five days. In predicting school belonging, adolescents who, on average, reported higher levels of cybervictimization, also reported feeling a lower sense of school belonging. However, there was no association between belonging and daily-level cybervictimization. Neither daily-level nor mean-level experiences of cybervictimization were related to school safety perceptions among Latino youth. The estimates of individual variability showed that school belonging and safety had significant variability in the daily-level associations with cybervictimization.

As was done with the previous models, additional models with daily- and mean-level school victimization incidents tested whether these incidents might account for, or alter, the daily findings. There were no changes such that even after accounting for school victimization, daily cybervictimization experiences were related to more attendance problems.

Do victimization associations last for one day or persist to the following day?

Additional models tested whether daily associations persisted on the day following the cybervictimization incident. The models were slightly modified to examine if there were lagged associations such that cybervictimization on one day, continued to be linked with the outcome on the next day. For example, to address the lagged-effect hypothesis, the daily level equation predicting anger is as follows:

$$\text{Anger}_{ij} = b_{0j} + b_{1j}(\text{cybervictimization experience}_{t-1}) + e_{ij} \quad (4)$$

Anger is modeled as a function of each individual's intercept (b_{0j}) and the cybervictimization incident experienced on the previous day (b_{1j}). As in the previous models, the main predictor, cybervictimization, is group centered. The Level 2 equations with mean-level cybervictimization were identical to those from Equations 2 and 3. Results indicated that only the daily-level association with anger persisted on the following day (b

= .79, $SE = .40$, $p = .04$). Thus, on any given day that students experienced cybervictimization they reported greater feelings of anger, not only on the day of the incident, but also on the following day. Victimization associations with the other adjustment indicators were not found on the following day.

Moderation effects of sex, grade and generational status?—HLM models examined whether the associations between cybervictimization and the outcomes that had significant individual variability (e.g., distress, anger, shame, belonging) could be explained by adolescents' sex, grade or generational status. Given that in the full models there was a lack of significant findings based on grade, the most parsimonious models without grade were retained. For example, the basic Equation 1 model predicting daily anger, when victimization is at the student's mean, included the following individual-level equations:

$$\begin{aligned} b_{0j} \text{ (average daily anger)} \\ = c_{00} + c_{01} \text{ (average cybervictimization)} \\ + c_{02} \text{ (sex)} \\ + c_{03} \text{ (second generation)} \\ + c_{04} \text{ (third generation)} + u_{0j} \end{aligned} \quad (5)$$

$$\begin{aligned} b_{1j} \text{ (daily association of cybervictimization with anger)} \\ = c_{10} + c_{11} \text{ (sex)} + c_{12} \text{ (second generation)} \\ + c_{13} \text{ (third generation)} + u_{1j} \end{aligned} \quad (6)$$

Sex was effect coded (male = -1, female = 1), and generational status was dummy coded with the first generation adolescents as the comparison group. Equation 5 tests whether there are sex or generational status differences in the intercept, or average daily anger. This model also continues to account for the mean-levels of cybervictimization. Equation 6 tests whether the daily association of cybervictimization experiences with anger is predicted by the adolescents' sex or generational status (i.e., moderation effects).

In the model predicting distress, a significant association with sex ($b = .14$, $SE = .04$, $p = .002$) and mean-level cybervictimization ($b = 1.35$, $SE = .63$, $p = .03$) emerged at the intercept. Additionally, a significant difference between boys and girls emerged in the daily association of cybervictimization with distress ($b = .85$, $SE = .34$, $p = .01$). Follow-up simple slope analyses were run to probe the interaction. As shown in Figure 1, the results from simple slope computational tools (Preacher, Curran, & Bauer, 2006), revealed that daily cybervictimization was associated with greater feeling of distress for girls ($b = 2.53$, $SE = .61$, $p < .001$), but not boys ($b = .83$, $SE = .50$, $p = .10$). Among girls, a cybervictimization incident on any given day was associated with higher distress on the same day. A similar pattern emerged for anger (see Figure 2). A significant association with sex ($b = .20$, $SE = .06$, $p = .001$) and the mean-level cybervictimization predictor ($b = 1.96$, $SE = .90$, $p = .03$) was found at the intercept. Also, a significant difference between boys and girls emerged in the daily association of the cybervictimization with anger ($b = .85$, $SE = .34$, $p = .01$). The

simple slope analyses demonstrated that daily cybervictimization experiences were related to greater feelings of anger for girls ($b = 3.21$, $SE = 1.02$, $p = .01$), however, there was no relationship among boys ($b = .72$, $SE = .81$, $p = .37$). No other significant moderations were found for the remaining variables.

Mediating Mechanisms Underlying School Adjustment

A series of mediation models in which daily emotions mediated the links between cybervictimization and school attendance were tested. Only school attendance was tested as an outcome in the mediation models because in the main models with daily cybervictimization as the predictor, it was the only school adjustment indicator that was significant. All of the variables in the mediation model were assessed at the daily level of the hierarchical linear models. In these lower level mediations, the relationships among the predictor, mediator and/or outcome can be random (i.e., vary across individuals). In order to examine the direct, indirect and total effects in the HLM models among the variables measured at the daily level and with the effects allowed to vary randomly, the procedures set forth by Bauer, Preacher and Gil (2006) were followed. In the three models testing whether emotions mediated the daily association between online victimization and attendance problems there was only support for the model with distress serving as the mediator. That is, distress mediated the association between cybervictimization and attendance problems at the daily level (indirect effect = .023, $SE = .01$, $z = 1.91$, $p = .05$). Overall, there was partial mediation such that 15% of the total association between cybervictimization and attendance problems was accounted for by distress. Thus, feeling distressed (but not feeling anger or shame) helps explain why youth skip classes on days when they report being victimized online.

Discussion

Adolescents are increasingly relying on online communication devices to keep in touch with their peers (e.g., Lenhart, 2012). As these online devices are also used to cause harm via name-calling, threats and privacy violations, it is important to study how day-to-day cybervictimization incidents are associated with emotions, physical symptoms and school adjustment. Although only about one-fifth of Latino high school students reported at least one cybervictimization incident across the five-day span, the results of the study revealed that even just one incident is associated with elevated negative emotions, physical symptoms and attendance problems. That is, whereas a growing number of studies have utilized traditional survey techniques to demonstrate that mean-levels or repeated experiences of cybervictimization are related to negative adolescent adjustment outcomes, this is the first study to document such links at the level of daily incidents. Another strength of the current study is that daily results were found even after accounting for average levels of cybervictimization and school victimization reports. Moreover, the findings reveal that compared to boys, girls report stronger negative feelings on days when victimized online, and that distress helps explain why students skip class or avoid school.

Emotional and Physical Well-Being

Until now, most cybervictimization studies have focused on the links with distress and depressive symptoms (e.g., Bonanno & Hymel, 2013). The role of emotions such as anger and shame have not been examined much in relation to cybervictimization experiences. Menesini and Camodeca (2008) found that cyber victims reported more shame than students who were classified as not being involved in online bullying (as a perpetrator or a victim). Some studies that test the extent to which cybervictimization leads to cyberaggression (Wright & Li, 2013) draw upon the general strain theory (Agnew, 1992). Interestingly, although cybervictimization experiences have been considered a source of strain that leads to feelings of anger (Patchin & Hinduja, 2011), no studies have empirically tested this direct link. The findings of this study not only reveal concurrent associations between cybervictimization and anger, but also next-day associations suggesting that anger after a cybervictimization incident may linger until the following day. It is possible that anger, which has been described as a guardian to one's self-esteem, helps reduce frustration, shame and other negative emotions (Novaco, 2000). Future studies should further explore the extent to which links between daily cybervictimization and emotions such as anger, show next-day associations. In particular, studies that span more days and can test for lingering associations across several days are needed.

Results also revealed a daily link between cybervictimization experiences and physical symptoms. This finding extends recent cybervictimization findings showing that adolescents who on average report more cybervictimization experiences are also more likely to report more symptoms such as headaches and stomach pains (e.g., Låftman, Modin, & Östberg, 2013). In sum, the findings indicate that a single incident of cybervictimization is related to elevated negative emotions and also physical symptoms. These findings highlight the importance of addressing cybervictimization experiences as an important social health concern.

The results from the models testing the extent to which the daily associations with emotions and school adjustment indicators with significant variability could be explained by demographic characteristics revealed only differences by sex. The associations between both cybervictimization with distress and anger were significant for girls, but not boys. This finding is in line with studies showing that girls are more impacted by bullying experiences compared to boys (Låftman, Modin, & Östberg, 2013). For example, Bauman and colleagues (2013) among an ethnically diverse sample (including 24% Latino), found that the association between cybervictimization and depressive symptoms was only significant for girls. Thus, the current findings are consistent with past studies and show that they extend to Latina adolescents and also extend to the emotion of anger. Potential explanations for girls greater sensitivity to cybervictimization experiences have included the fact that they are more prone to internalizing negative experiences and their greater endorsement of the imaginary audience which may amplify their emotions upon perceiving that their peers are aware of their negative experiences online (e.g., Bauman, Toomey, & Walker, 2013; Rosenfeld, 2000). Overall, the findings indicating that girls experience the pain of cybervictimization more intensely than boys warrants further investigation as it could have implications for differentiated interventions.

Given that most of the students in the study were second-generation and in the early high school years, there may not have been enough variability across generational status and grade levels to detect differences. Additional studies with larger Latino samples and greater variability will provide a better depiction of whether the impact of cybervictimization is indeed similar across generational status and throughout the high school years. For example, given the largely inconsistent findings regarding age or grade differences, it is important to continue to examine whether age is an influential risk factor for cybervictimization in the way that it is for school victimization. Perhaps because school victimization has been found to peak in middle school, to-date more cybervictimization studies have examined the experiences of middle school students than high school students (Bauman, Toomey, & Walker, 2012). However, more research on the high school years is needed; Yoon (2013) has raised the issue that cybervictimization patterns may differ depending on the developmental period under examination, especially since as adolescents get older their engagement with technology increases. Overall, studying cybervictimization relationships within specific school contexts is important since interventions developed for school-based delivery will vary depending on whether the intervention targets elementary, middle or high school students.

School Climate Perceptions and Attendance Problems

The findings revealed that being targeted online is linked to how victims perceive their school and how they behave in school. Specifically, on days when adolescents are cybervictimised they are more likely to skip class or be late to class(es). It may be that after being targeted online teens have concerns about the bully targeting them at school or that their peers who saw the mean comment will ridicule them. These concerns could lead to a desire to avoid contact with peers. Persistent victimization incidents (weekly cybervictimization incidents), in turn, were related to a lower sense of school belonging and increased school attendance problems. Whereas past cybervictimization studies have shown no association with school indices such as grades and achievement (e.g., Li, 2007), associations between cybervictimization and more proximal and malleable indicators of school adjustment, such as climate perceptions and avoidance behaviors, highlight that these online experiences may color students school perceptions and experiences. To be able to address school problems, identifying mediating mechanisms between cybervictimization experiences and school adjustment is critical. The results revealed that on any given day that adolescents reported being cybervictimised they were more likely to feel distressed, and this in turn was predictive of arriving late to class or skipping class(es) altogether. Past research indicates that when students experience incidents that result in feelings of psychological distress, such as peer victimization, it is often difficult for them to be engaged during class and focused on school activities (Roeser et al., 2002). Interestingly, feelings of anger or shame did not mediate associations with attendance problems, suggesting that it is not simply negative feelings that explain this link but rather, specifically, feeling worried, distracted and sad that is related to attendance problems.

Limitations and Future Directions

Although the use of daily methodology is a strength of the study, it is important to ensure that the everyday reports are brief to reduce the time demands placed on participants. Due to

these practical concerns, some constructs in this study were measured with only a few items or a single item (e.g., school safety). However, this is not uncommon in daily studies (e.g., Fuligni & Masten, 2010). Also, related to the study measures, although the school-based victimization items were included under the title of ‘School Events and Experiences’ and asked about incidents at school, they did not clearly specify that the incident occurred offline. Moreover, given the need to keep the daily reports brief, some additional information regarding victimization incidents was not assessed that would have been useful. For example, future research that utilizes a daily assessment would benefit from asking students when cybervictimization took place (e.g., before school, during school). The finding showing that students are more likely to miss class on days when they are victimized online suggests that cybervictimization may take place before or during school (e.g., via texting). This information would allow us to better understand the timing and temporal sequence of cybervictimization incidents and their impact on adolescents’ adjustment. Another limitation that has been briefly noted is that due to the small sample size (although comparable with other daily diary studies; e.g., Nishina & Juvonen, 2005) and limited variability in key demographics, such as generational status, there may have been limited power to detect within group differences among Latinos. Researchers (e.g., Umaña-Taylor & Bámaca-Gómez, 2003) have stressed the importance of exploring within group differences to understand the heterogeneity that exists within ethnic minority groups. Although the current study addressed these issues by focusing on Latino youth and exploring sex, grade-level and generational status differences, larger samples are needed in future research.

Consistent with past studies relying on daily report methodology (e.g., Espinoza, Gonzales, & Fuligni, 2013), victimization experiences, much like racial discrimination (Huynh & Fuligni, 2010) occur at low rates across a limited number of days. In the current study, only about 20% of 118 Latino high school students reported at least one incident of cybervictimization across five days. Given this low frequency of reported incidents, it is important to consider the statistical and methodological implications of utilizing daily methodology in this area of research. In two studies on middle school students experiences with school victimization (N s = 95–97), Nishina and Juvonen (2005) found that about 50% of sixth graders reported at least one incident across at least four days. Although the rates of cybervictimization may be relatively low in high school (and lower than in the beginning of middle school), the current findings suggest that much like racial discrimination, aversive online experiences are emotionally impactful when they do occur. Hence, the low frequency of cybervictimization alone does not suggest that such experiences should not be examined using daily report methodology. Rather, future research on cybervictimization among high school students should rely on longer time spans than five days and possibly also larger sample sizes.

Implications for Interventions

Emerging research illustrating the impact of cybervictimization and the processes by which it unfolds is critical for the development of interventions and for parents and school personnel who are in the position to help youth deal with these experiences. A few implications for interventions based on the current findings have already been mentioned. For example, the different pattern of associations between cybervictimization with distress

and anger based on gender indicates that interventions targeted towards girls may be beneficial and is a recommendation that researchers have made (Bauman et al., 2013). However, the intervention model that has been shown thus far to be the most effective against school bullying is the school-wide approach which involves students, teachers, school staff, administrators and parents and include multiple elements such as creating effective strategies for reporting school bullying and integrating the topic of bullying into classroom curriculum (e.g., Merrell, Gueldner, Ross, & Isava, 2008). The key question is whether the same interventions that work for school victimization will also work for victimization that occurs online. Indeed, there is some empirical evidence to suggest that strategies utilized to address traditional school victimization may be beneficial in reducing cybervictimization incidents (e.g., Williford, Elledge, Boulton, DePaolis, Little, & Salmivalli, 2013). However, no intervention efforts have been tested within high schools comprised of predominately Latino youth. Given the greater importance Latino youth place on their relationships with parents and family members (Fuligni, Tseng, & Lam, 1999), an emphasis on parental involvement in interventions targeting Latino students may be particularly effective. For example, Latino parents may benefit from informational meetings or materials about cybervictimization because although in general the digital divide between Latino and White adults is becoming much smaller, Latino adults from low-income households and who are not born in the U.S., are the least likely to be connected online (Lopez, Gonzalez-Barrera, & Patten, 2013). Therefore, they may not be familiar with the negative experiences their teens are exposed to online. Currently, several programs aimed at reducing cybervictimization are being implemented and in the following decade as the results of intervention evaluations are published, there will be a greater understanding of how to respond to this relatively new form of online victimization with an increasing recognition of whether similar approaches are effective across distinct developmental periods and ethnic groups.

Conclusions

The current study contributes to the growing field of cybervictimization in several, important ways. By utilizing daily methodology, a unique set of questions are addressed. The focus of the current study on Latino youth highlights that cybervictimization is an important stressor in the daily lives of Latino youth such that even a single incident is associated with emotional, physical and school problems. As the representation of Latinos continues to grow in U.S. schools (U.S. Department of Education, 2013) and as their mental health and scholastic outcomes continue to fare worse than other ethnic groups (e.g., Gore & Aseltine, 2003), it is important to better understand the extent to which peer interactions, such as cybervictimization experiences, may be related to their emotional well-being and school adjustment. Identifying underlying mechanisms is therefore critical. Clearly, it is time to move beyond descriptive studies (with White middle school samples) and obtain more meaningful information about the impact of cybervictimization. Focusing on understudied population of Latino high school students and assessing single incidents of online victimization by relying on daily reports is one way to advance toward this goal.

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Highlights

- High school students (118) completed daily diary checklists across five school days
- Daily cybervictimization linked to distress, anger, shame and physical symptoms
- Daily cybervictimization related to more school attendance problems
- Distress mediated the relationship between cybervictimization and school attendance

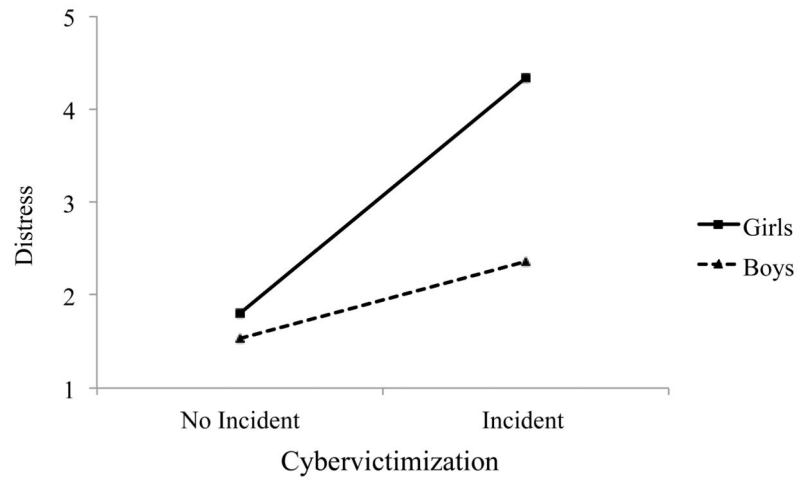


Figure 1. Association between daily distress and cybervictimization moderated by sex

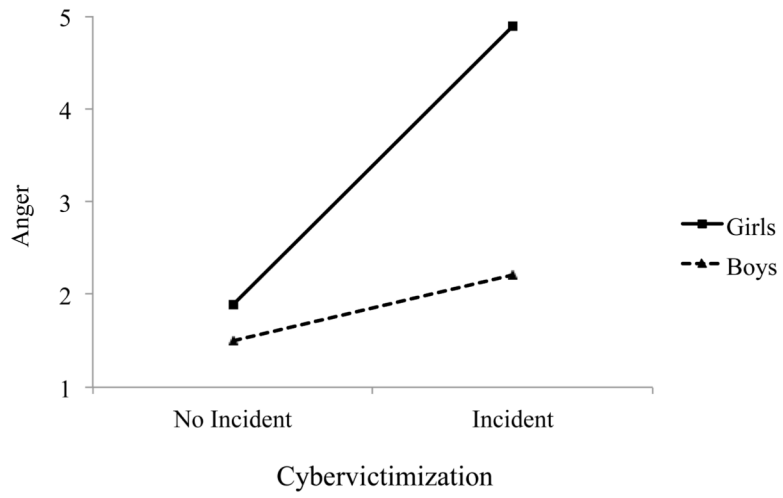


Figure 2. Association between daily anger and cybervictimization moderated by sex

Table 1

Descriptives and Correlations Among Mean-Level Variables

	M	SD	Range	1	2	3	4	5	6	7	8	9
1. Cybervictimization	.02	.06	0 – 1	-								
2. School Victimization	.03	.09	0 – 1	.42**	-							
3. Distress	1.56	.48	1 – 5	.17	.28**	-						
4. Anger	1.60	.64	1 – 5	.20*	.33**	.66**	-					
5. Shame	1.15	.24	1 – 5	.23*	.21*	.58**	.36**	-				
6. Physical Symptoms	1.49	.54	1 – 5	.26*	.40**	.49**	.46*	.09	-			
7. School Belonging	3.50	.95	1 – 5	-.20*	-.37**	-.23*	-.23*	-.21*	-.32**	-		
8. School Safety	4.22	.98	1 – 5	-.03	-.04	.11	.10	-.12	.13	-.10	-	
9. Attendance Problems	.21	.23	0 – 1	.23*	.18*	.19*	.16	-.02	.31**	-.28**	.18*	-

Note.

* $p < .05$;** $p < .01$.

Table 2
Hierarchical Linear Models Predicting Daily Emotions and Physical Symptoms

	Distress		Anger		Shame		Physical Symptoms	
	b	SE	b	SE	b	SE	b	SE
Intercept	1.57***	.04	1.61***	.06	1.15***	.02	1.49***	.05
L1 Daily Cybervictimization	1.37***	.31	1.19**	.44	.59**	.20	.62**	.20
L2 Mean Level of Cybervictimization	1.37	.73	2.07*	.79	.96*	.38	2.52**	.80
Standard deviation estimate	.68*	.83	1.09*	1.04	.28**	.53	.11	.33

Note. L1 = Level 1; L2 = Level 2. The coefficients are unstandardized estimates. The “standard deviation estimate” is the degree of individual variability in the estimates of the daily associations between cybervictimization and each outcome.

* $p < .05$;

** $p < .01$;

*** $p < .001$

Table 3

Hierarchical Linear Models Predicting School Adjustment

	School Belonging		School Safety		Attendance Problems	
	b	SE	b	SE	b	SE
Intercept	3.50***	.08	4.23***	.09	.21***	.02
L1 Daily Cybervictimization	.40	.57	-1.50	.95	.20*	.08
L2 Mean Level of Cybervictimization	-3.25**	1.18	-.46	1.09	1.01*	.47
Standard deviation estimate	2.96**	1.72	11.62***	3.41	.02	.13

Note. L1 = Level 1; L2 = Level 2. The coefficients are unstandardized estimates. The “standard deviation estimate” is the degree of individual variability in the estimates of the daily associations between cybervictimization and each outcome.

* $p < .05$;

** $p < .01$;

*** $p < .001$