Kicking the Digital Dog: A Longitudinal Investigation of Young Adults’ Victimization and Cyber-Displaced Aggression

Michelle F. Wright, M.S., and Yan Li, Ph.D.

Abstract

Using the general strain theory as a theoretical framework, the present longitudinal study investigated both face-to-face and cyber victimization in relation to cyber-displaced aggression. Longitudinal data were collected from 130 (70 women) young adults who completed measures assessing their victimization (face-to-face and cyber), cyber aggression, and both face-to-face and cyber-displaced aggression. Findings indicated that victimization in both social contexts (face-to-face and cyber) contributed to cyber-displaced aggression 6 months later (Time 2), after controlling for gender, cyber aggression, face-to-face displaced aggression, and cyber-displaced aggression at Time 1. A significant two-way interaction revealed that Time 1 cyber victimization was more strongly related to Time 2 cyber-displaced aggression when young adults had higher levels of face-to-face victimization at Time 1. Implications of these findings are discussed as well as a call for more research investigating displaced aggression in the cyber context.

Introduction

Aggression and victimization in the cyber context have gained increased attention among scholars as these experiences are related to individuals’ adjustment problems (e.g., depression, anxiety).\textsuperscript{1-5} Even though researchers are interested in examining cyber aggression and victimization, much of the focus has been placed on the frequency of these behaviors and experiences, except a few studies.\textsuperscript{2-4} Much more work is greatly needed to understand the mechanisms contributing to cyber aggression. To this end, the present study examined both face-to-face and cyber victimization in relation to cyber-displaced aggression, utilizing a short-term longitudinal design. Findings of this study will help capture the motivations associated with young adults’ engagement in harmful behaviors through the cyber context.

Although extensive research\textsuperscript{6-12} has examined cyber aggression and victimization among adolescents, only a handful of studies have examined these behaviors among young adults. Recent developments have shown that cyber aggression and victimization have become a common issue among young adults. In one of the earliest studies, Finn\textsuperscript{13} found that 10–15 percent of young adults reported that they experienced repeated email and instant messenger victimization. Later research has shown that young adults also spend time using other technologies, a risk factor associated with cyber aggression and victimization.\textsuperscript{14} For example, Walker et al.\textsuperscript{3} found that young adults experienced frequent Facebook (56 percent) and cell phone (45 percent) victimization. Additionally, around 22.5 percent of young adults in a Turkish sample reported that they engaged in cyber aggression at least once.\textsuperscript{15} At present, no published studies, to our knowledge, have addressed the relationship of cyber aggression involvement (as perpetrators or target) to psychosocial adjustment difficulties among young adults. Considering that face-to-face aggression and victimization relate to adjustment difficulties, such as depression, anxiety, and loneliness among young adults, it is possible that cyber aggression has a similar effect.\textsuperscript{16,17} Additionally, in the literature on adolescents, the involvement in cyber aggression is linked to depression, anxiety, loneliness, and poor academic performance. This pattern of associations is likely carried into young adulthood. Taking these findings together, it is apparent that cyber aggression and victimization happen frequently among young adults and may be associated with problematic outcomes for both victims and perpetrators. Given such prevalence and the possible harmful effects, it becomes imperative to investigate the mechanisms that help explain why young adults engage in aggression in the cyber context. One constructive direction in this line of research is to understand the factors contributing to cyber aggression as well as the motivations underlying these behaviors.\textsuperscript{18,19} Such
research may provide valuable information to educators, researchers, and policy makers who are interested in reducing aggressive behaviors in the cyber context.

Previous research has proposed that cyber aggression is partly motivated by a victim’s desire for revenge against an individual responsible for harming him/her. König et al.21 explain that victims are unable to get back at an individual responsible for harming them in the non-digital environment, and consequently, they turn to cyber aggression as a way to retaliate. Furthermore, there is also evidence suggesting that face-to-face and cyber victimization each relate to subsequent cyber aggression. However, it is also reasonable to hypothesize that victims may not always be able to retaliate against the provocateur in the digital environment. Anonymity of the perpetrator may present an instance that prevents the victim from retaliating against the perpetrator. As a result, victims may engage in cyber aggression toward an innocent individual as a way to alleviate their anger and frustrations. This type of aggression in the face-to-face setting has been labeled as displaced aggression. It is defined as aggression against an innocent third party who is not responsible for the individual’s anger and frustration. Applying this construct to the digital environment, we refer to this type of aggression as cyber-displaced aggression. To illustrate this type of aggression, imagine an adolescent or a young adult who is picked on at school, but cannot retaliate because he fears revenge by bullies. After arriving home that same day, he starts playing Xbox and while playing a game, he decides to send harassing messages to other players. As a type of cyber aggression, cyber-displaced aggression occurs online and can involve the same types of behaviors (e.g., sending harassing messages to someone online). However, a major difference is that the targets of cyber-displaced aggression are innocent individuals, whereas other types of cyber aggression do not necessarily reflect the types of victims who are targeted. Cyber-displaced aggression, like displaced aggression in face-to-face settings, is motivated by the individuals’ inability to retaliate against someone who has harmed them, while having the possibility to vent their anger and frustration in the digital environment at innocent targets.

In searching for the mechanisms that explain cyber aggression, researchers have proposed the general strain theory. This theory posits that strain (e.g., being the victim of bullying) engenders negative feelings that lead to maladaptive coping strategies, such as delinquency and problem behaviors. Victimization may serve as a source of strain, resulting in the usage of maladaptive coping strategies, which lead some young adults to aggress against innocent individuals because they are unwilling and/or unable to retaliate against the perpetrator of their victimization. Although there is a scarcity of research investigating the relationship between victimization and cyber-displaced aggression, there are some studies that have established connections between victimization and displaced aggression in the non-digital setting. As a source of strain, face-to-face victimization may have additive effects in young adults’ aggressive behaviors. There is empirical evidence suggesting that multiple forms of face-to-face victimization lead to aggressive behaviors among children, adolescents, and young adults. Similarly, being victimized in multiple contexts (e.g., face-to-face, online) may exacerbate the victim’s stress and provoke more cyber-displaced aggression.

Following these premises, the present study examined the relationship between young adults’ victimization (both face-to-face and online) and their use of cyber-displaced aggression 6 months later. The longitudinal design enables a closer examination of the time-order relationship between victimization and cyber-displaced aggression. To understand more thoroughly the unique associations between Time 1 victimization (both face-to-face and online) and Time 2 cyber-displaced aggression, we controlled for other related variables, including Time 1 cyber aggression, Time 1 face-to-face displaced aggression, and Time 1 cyber-displaced aggression as well as gender.

Methods

Participants

Data were collected from 130 (70 women) young adults recruited from a Midwestern university. The participants were between 18 and 25 years old ($M = 19.67$, $SD = 2.20$). Participants self-identified as white (65 percent) followed by Hispanic (21 percent), Asian (10 percent), and black/African American (4 percent).

Measures and procedures

Participants were recruited through the psychology subject pool and received partial course credit for introductory psychology. Once participants signed up for the study, they were given a website address taking them to an informed consent document. After giving their consent, participants were directed to the measures, which were arranged in the following order: background information (e.g., age, gender, and ethnicity), cyber victimization, cyber aggression, cyber-displaced aggression, face-to-face victimization, and face-to-face displaced aggression.

After the last measure, participants were asked for their email address so that they could participate in the study again in 6 months. At the second time point, 6 months later, they were reminded that they had participated in the study 6 months earlier and were invited to participate again. Participants reported their cyber-displaced aggression again at Time 2. At Time 1, there were 440 participants and 40 percent ($N = 176$) gave their email address. Among the Time 1 participants who were emailed, 130 completed the study at Time 2. To detect multivariate outliers, we examined the Mahalanobis distance of all the cases, which is an appropriate strategy for multiple regression. To determine the outliers, we looked up the critical $\chi^2$ value and, as a result, we removed this outlier, resulting in a final sample size of 129 (69 women) for the correlation and regression analyses. Furthermore, to investigate whether the attrition from Time 1 to Time 2 was unbiased, $t$ tests were conducted for the variables concerned in this study between participants from Time 1 only and those who participated in both time points. Findings indicated that
Face-to-face displaced aggression. A measure on face-to-face aggression was adapted to assess cyber victimization and cyber aggression at Time 1. The descriptions were revised to indicate that these behaviors took place through information and communication technologies, including social networking sites (e.g., Twitter, Facebook, Myspace), text messages, chat programs (e.g., AOL Instant Messenger, Yahoo Messenger, Google Talk), and email. Six questions were used to assess how often participants were victimized through information and communication technologies (e.g., How often have you spread rumors about someone through information and communication technologies?). Another six questions assessed cyber aggression (e.g., How often has someone spread rumors about you through information and communication technologies?). Participants responded on a scale of 1 (never) to 9 (daily) for both sets of questions. Cronbach’s alpha was 0.89 for cyber victimization and 0.78 for cyber aggression. The items were averaged to form final scores for cyber victimization and cyber aggression, respectively.

Cyber-displaced aggression. This measure was a modified version of the cyber aggression measure, particularly with an additional description of cyber-displaced aggression before they answered any questions. Participants read the following description of cyber-displaced aggression: “Sometimes when people are upset or frustrated they take it out on innocent people who did not cause their anger or frustration.” After the description, participants were asked to think about the times in which they have acted this way through information and communication technologies. Participants then answered six questions (e.g., How often do you tease a person in a mean way?) about how often they engaged in cyber-displaced aggression on a scale of 1 (never) to 9 (daily). The correlation between Time 1 and Time 2 cyber-displaced aggression was 0.75 (p < 0.001). Chronbach’s alpha was 0.73 for Time 1 and 0.94 for Time 2. The items were averaged to form a cyber-displaced aggression score at each time point.

Face-to-face victimization. Using an established measure, participants reported how often they were victimized by face-to-face relational, verbal, and physical aggression on a scale of 0 (never) to 4 (a few times a week) at Time 1. Eleven items were included in this measure. Sample items included “Someone left me out of what they were doing” (relational), “Someone threatened to hurt me” (verbal), and “Someone hit, kicked, or pushed me in a mean way” (physical). All 11 items were averaged to form a face-to-face victimization score with a Chronbach’s alpha of 0.92.

Face-to-face displaced aggression. The displaced aggression subscale of the Displaced Aggression Questionnaire was used for this study. Participants answered nine statements about how characteristic face-to-face displaced aggression was of them on a scale of 1 (extremely uncharacteristic of me) to 7 (extremely characteristic of me). Sample items included “When I am angry, I don’t care who I lash out at,” “Sometimes I get so upset by work or school that I become hostile toward family or friends,” and “When things don’t go the way I plan, I take my frustration out at the first person I see.” All items were averaged to form a final score of face-to-face displaced aggression. The Chronbach’s alpha was 0.95 for this measure.

Results
To examine Time 1 victimization in relation to Time 2 cyber-displaced aggression, both zero-order correlations (Table 2) and hierarchical regressions (Table 3) were conducted. Time 2 cyber-displaced aggression served as the dependent variable in the hierarchical regression analysis. Continuous predictors (e.g., victimization) were centered in the regression analyses to protect against multicollinearity.

Block 1 included control variables, including gender (coded

<table>
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<tr>
<th>Variable</th>
<th>M</th>
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<th>M</th>
<th>SD</th>
<th>t</th>
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<td>0.49</td>
<td>0.63</td>
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<td>2.88</td>
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<td>2.73</td>
<td>1.46</td>
<td>0.98</td>
<td>0.33</td>
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<td>Face-to-face victimization</td>
<td>1.07</td>
<td>0.77</td>
<td>1.03</td>
<td>0.81</td>
<td>0.49</td>
<td>0.63</td>
</tr>
</tbody>
</table>

SD, standard deviation.

Table 1. Descriptive Statistics of Investigated Variables Among Time 1 Only Participants and Participants from Time 1 and Time 2

There were no significant differences in any of the investigated variables (Table 1).

<table>
<thead>
<tr>
<th></th>
<th>Time 1 only participants</th>
<th>Time 1 and Time 2 participants</th>
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<tbody>
<tr>
<td></td>
<td>M</td>
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<tr>
<td>Cyber aggression</td>
<td>2.52</td>
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<td>Cyber-displaced aggression</td>
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Table 2. Correlations among Investigated Variables

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<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
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<tr>
<td>1. Time 1</td>
<td>0.25**</td>
<td>0.53***</td>
<td>0.59***</td>
<td>0.71***</td>
<td>0.69***</td>
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<td>2. Time 1</td>
<td>0.42***</td>
<td>0.75***</td>
<td>0.54***</td>
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<td>3. Time 1</td>
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<td>0.64***</td>
<td>0.56***</td>
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<td>4. Time 2</td>
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<td>0.63***</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>5. Time 1</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>6. Time 1</td>
<td></td>
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</table>

**p < 0.01.

***p < 0.001.

Other descriptive statistics (Table 1) and correlations (Table 2) are presented in the text.
as 0 = Male; 1 = Female), Time 1 face-to-face displaced aggression, Time 1 cyber-displaced aggression, and Time 1 cyber aggression. Gender was included as a control variable to account for the potential effect of gender. The effect of gender on cyber-displaced aggression or cyber aggression is unclear due to limited research among young adults. Furthermore, the literature on adolescents demonstrates mixed findings. Some researchers find that girls are more likely to be cyberbullies, while others find that boys are more likely. On the other hand, some researchers found no gender differences in cyber aggression. Controlling for gender allows us to explore the potential gender difference in the new research area of cyber-displaced aggression. For Block 2, face-to-face and cyber victimization were entered into the model. A three-way interaction between gender, face-to-face victimization, and cyber victimization was not significant, and thus was dropped from the final analyses. To investigate the two-way interaction, a follow-up regression analysis was conducted with Time 1 face-to-face displaced aggression, Time 1 cyber-displaced aggression, and Time 1 cyber aggression as covariates and cyber victimization as the predictor at high (1 SD), mean, and low (−1 SD) levels of face-to-face victimization. The program was used. This program tests the significance of the unstandardized simple regression slopes and provides graphical illustration of the simple slopes.

Gender was not significantly linked to cyber-displaced aggression. Time 1 face-to-face displaced aggression (β = 0.14, p < 0.05), Time 1 cyber-displaced aggression (β = 0.22, p < 0.01), and Time 1 cyber aggression (β = 0.18, p < 0.01) all significantly and positively predicted Time 2 cyber-displaced aggression, ΔR² = 0.03, p < 0.001. Both Time 1 face-to-face victimization, β = 0.18, p < 0.05, and Time 1 cyber victimization, β = 0.22, p < 0.01, also significantly and positively predicted Time 2 cyber-displaced aggression after controlling for the above-related variables. A significant interaction effect was found between victimization in the two social contexts, β = 0.22, p < 0.001. Follow-up analyses of the interaction with a control of the covariates (see Fig. 1) indicated that Time 1 cyber victimization predicted more Time 2 cyber-displaced aggression when participants experienced higher levels of face-to-face victimization at Time 1 (simple slopes: B = 0.62, SE = 0.09, p < 0.001 at +1 SD; B = 0.40, SE = 0.10, p < 0.001 at mean; B = 0.17, SE = 0.13, p = n.s. at −1 SD). Squared semipartial correlations were calculated to examine the effect size of the unique prediction of each variable on cyber-displaced aggression. Overall, the findings indicated

### Table 3. Hierarchical Regression Predicting Time 2 Cyber-Displaced Aggression

<table>
<thead>
<tr>
<th>Block 1</th>
<th>sr²</th>
<th>B</th>
<th>SE</th>
<th>β</th>
<th>R²</th>
<th>ΔR²</th>
<th>F(dfs)</th>
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</thead>
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<td>0.34</td>
<td>-0.06</td>
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<td>-0.26***</td>
<td>43.25 (4, 97)</td>
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<tr>
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<td>0.27</td>
<td>0.11</td>
<td>0.17*</td>
<td>0.18</td>
<td>0.98</td>
<td>0.14</td>
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<td>Time 1 cyber-displaced aggression</td>
<td>0.18</td>
<td>0.14</td>
<td>0.11</td>
<td>0.29***</td>
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<tr>
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<td>0.28</td>
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<td>Time 1 cyber victimization (CV)</td>
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<td>0.62</td>
<td>0.21</td>
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<td>Time 1 cyber aggression</td>
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</table>

* p < 0.05.
** p < 0.01.
*** p < 0.001.

![Graph](image_url)
that, although small, each of the predictors, except for gender, has a statistically significant effect in explaining the variance of cyber-displaced aggression.

**Discussions**

This study provides one of the first investigations of cyber-displaced aggression utilizing a short-term longitudinal design. Our findings indicate that victimization in both the face-to-face and cyber contexts longitudinally relate to cyber-displaced aggression 6 months later. Furthermore, being victimized in the cyber context relates more strongly to future cyber-displaced aggression when young adults have a higher level of face-to-face victimization. Our findings support the general strain theory, indicating that victimization in both social contexts may engender maladaptive coping strategies, such as the use of cyber-displaced aggression.

**Victimization experience and cyber-displaced aggression**

Our hypotheses were supported regarding the relationship between victimization and cyber-displaced aggression. Both face-to-face and cyber victimization positively related to cyber-displaced aggression 6 months later, while controlling for gender and Time 1 cyber-displaced aggression, cyber aggression, and face-to-face displaced aggression. Our findings support the linkage between both cyber victimization and cyber aggression as revealed by the literature. Furthermore, our results extend these previous findings to other types of aggressive behaviors displayed in the cyber context, namely, cyber-displaced aggression.

Drawing on the general strain theory, victimization, whether face-to-face or cyber, may impose strain in an individual's life. This strain may produce negative feelings and poor coping strategies, in particular, aggressive strategies. Our results are consistent with previous findings regarding cyber victimization as a source of strain in adolescents' offline adjustment. In addition, our results extend these findings to another type of outcome (i.e., cyber-displaced aggression) and to the young adult population. Moreover, the significant two-way interaction between face-to-face and cyber victimization reveals that these two types of victimization interactively and negatively impact young adults' coping strategies. When young adults had a higher level of face-to-face victimization, their cyber victimization was more strongly related to later cyber-displaced aggression. This finding further suggests that victimization experienced in both social contexts (i.e., face-to-face, cyber) exacerbates the strain in young adults' lives, resulting in more use of aggressive coping strategies in the cyber context.

**Gender, face-to-face displaced aggression, and cyber aggression**

To obtain unique associations between cyber-displaced aggression and victimization, we controlled for gender, Time 1 face-to-face displaced aggression, Time 1 cyber-displaced aggression, and Time 1 cyber aggression. We found no gender differences in Time 2 cyber-displaced aggression. This finding is consistent with previous research, suggesting no gender differences concerning face-to-face displaced aggression among adolescents and young adults.

The positive relationship between Time 1 face-to-face displaced aggression and Time 2 cyber-displaced aggression is particularly interesting, suggesting that young adults bring their face-to-face behavioral disposition into the digital world. This finding can be interpreted using the coconstruction theory, which posits that individuals are psychologically connected to their online worlds similarly to their offline worlds. Thus, it is not surprising to see that young adults, who engage in face-to-face displaced aggression, tend to generalize this disposition to the digital world as well. In addition, this study found that Time 1 cyber aggression was also related to cyber-displaced aggression at Time 2. This is consistent with previous research that has found a relationship between face-to-face aggression and face-to-face displaced aggression. Our results demonstrate a similar association in the cyber context.

**Limitations and future directions**

This study provided a useful addition to the literature regarding young adults' victimization in relation to cyber-displaced aggression. However, a few limitations of the present study should be noted along with future directions. Although our cyber-displaced aggression questionnaire demonstrates adequate reliability, additional research is needed to further develop this measure to make it more suited toward the digital environment. Even though our short-term (6 months) longitudinal study design addresses the need for longitudinal research in the literature, future research with a longer time span is greatly needed. As suggested by the research on face-to-face aggressive behaviors, the impact of victimization in different social contexts on young adults' cyber-displaced aggression may span years. Future research may also employ strategies to reduce attrition rates of participants and utilize other populations, such as community samples and adolescents, to examine the generalizability of the current findings. Additionally, previous research has found evidence for the relationship between different personality characteristics (i.e., revenge planning) and face-to-face displaced aggression. Future investigations may examine whether these personality characteristics also relate to cyber-displaced aggression. Also, future research may investigate the situations and/or behavioral dispositions (e.g., anger, hostility) that may trigger revengeful cyber aggression versus cyber-displaced aggression. Furthermore, the associations found in this study may vary depending on the technology mediums (e.g., social networking sites, cell phone, gaming consoles) and different types of aggression, such as proactive and reactive aggression. These potential variations are also warranted for further investigation.

**Conclusion**

Our study is one of the first investigations to examine cyber-displaced aggression among young adults. This is an important consideration because researchers have traditionally conceptualized cyber aggression as a result of revenge, such that individuals are motivated to retaliate against the perpetrators of their victimization through the digital environment. The present study, on the other hand, indicates that victims may act aggressively toward an innocent individual in the cyber context. Furthermore, findings of this study may inform clinicians and researchers to consider that
strain in multiple contexts (e.g., both face-to-face and cyber victimization) may work interactively to produce maladaptive cyber behaviors, such as aggression. Another implication of this study is to inform intervention programs aimed at combating aggression in the cyber context. Such programs may identify individuals at risk for cyber-displaced aggression based on their display of a high level of face-to-face displaced aggression and provide help to these individuals. Finally, we call for additional investigations aimed at understanding more about cyber-displaced aggression among young adults and the development of cyber-displaced aggression by extending the investigations to the adolescent population.

Author Disclosure Statement

No competing financial interests exist for this research.

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Address correspondence to:
Dr. Yan Li
Department of Psychology
DePaul University
Chicago, IL 60614
E-mail: yli34@depaul.edu