

This is the author(s) refereed version of a paper that was accepted for publication:

Nicol, A., & Fleming, M. (2010). "i h8 u": the influence of normative beliefs and hostile response selection in predicting adolescents' mobile phone aggression - a pilot study. *Journal of School Violence*, 9, 212-231.
<https://doi.org/10.1080/15388220903585861>

This file was downloaded from:

<https://researchprofiles.canberra.edu.au/en/publications/i-h8-u-the-influence-of-normative-beliefs-and-hostile-response-se>

©2010 Taylor & Francis

Notice:

This is the authors' peer reviewed version of a work that was accepted for publication in the *Journal of School Violence*, available at <https://doi.org/10.1080/15388220903585861>.

Changes resulting from the publishing process may not be reflected in this document.

**“i h8 u”: The influence of Normative Beliefs and Hostile Response
Selection in Predicting Adolescents’ Mobile Phone Bullying**

Annemarie Nicol and Michele J. Fleming

Centre for Applied Psychology, Faculty of Health

University of Canberra

Correspondence

Correspondence may be addressed to either Ms Annemarie Nicol (email nicol@inspired.com.au) or Associate Professor Michele.Fleming (Michele.Fleming@canberra.edu.au).

Contact information

Annemarie Nicol
82 Streeton Drive, Rivett, ACT 2611, Australia
Ph (612) 6244 6349
Email: annemarie.nicol@fahcsia.gov.au
Fax: (612) 6244 6589

Abstract

Mobile phone bullying is a relatively new phenomenon and there is a paucity of research about its incidence or the underlying social-cognitive mechanisms that lead to it. Adolescents ($N = 348$), aged 13-17 years, completed self-report questionnaires on frequency and type of mobile phone bullying and victimization. Further, a model was proposed, in which mobile phone hostile response selection mediated the relationship between mobile phone normative beliefs and mobile phone bullying. A total of 39% of participants reported having used their mobile phone to send a rude message and 10% reported using their mobile phone to threaten someone. In turn, 38% reported having received a rude mobile phone message and 19% a threatening message. Girls reported more incidences of bullying (being the aggressor) using their mobile phones. Moreover, girls reported being the victims of mobile phone bullying more than boys. Nonetheless, the overall frequencies of mobile phone bullying and victimization were both relatively low. Mobile phone bullying was reported with a similar frequency to more traditional forms of bullying; however mobile phone victimization was reported less frequently than traditional forms of victimization. Path analysis revealed partial support for the hypothesized model; with hostile response selection mediating the relation between retaliatory normative beliefs and mobile phone bullying but not between general beliefs and mobile phone bullying. Results are considered in relation to more traditional forms of bullying and possible intervention strategies to reduce mobile phone bullying are considered.

Key words: Mobile Phone bullying; Cyber Bullying; Social Information Processing; Bullying; Hostile Response Selection; Aggression

Technology is changing the way children and young people communicate. The use of mobile phones amongst adolescents has dramatically increased and is now commonplace (Downie & Glazebrook, 2007). Despite this trend there has been little research to date on the effects that this technology has on young people’s relationships. Some studies (e.g. Madell & Muncer, 2007) have highlighted the positive benefits that mobile phone use has on teenage relationships, such as building and maintaining social ties (Reid & Reid, 2004). Preliminary research, however, has found that new technology is also being used by some young people to bully their peers, in what has become known as cyber-bullying. Research conducted in Australia, for example, with students in Years 8-10, found that 37% had been exposed to online bullying (Fleming, Greentree, Cocotti-Muller, Morrison, & Elias, 2006), whilst another Australian study indicated that 11% of students in Year 8 admitted to having cyber-bullied, a further 14% said that they had been victims of cyber-bullying, and 25% said that they knew somebody who had been cyber-bullied (Campbell, 2005). Li (2007) found that over a quarter of grade 7 students had been cyber-bullied and almost 15% had cyber-bullied others. Juvonen and Gross (2008), in a study of one thousand four hundred fifty-four 12- to 17-year-old youth, found that 72% of respondents reported at least one incident of cyber-bullying in the previous year, the most frequent through instant messaging. Similar incidences of cyber-bullying have been found in both Sweden (Slonje & Smith, 2008) and Turkey (Arıcak et al., 2008), highlighting the pervasiveness of the problem. Research conducted into bullying specific to mobile phones has found similar results. Research conducted in the UK by Charlton, Panting, and Hannan (2002), with 10 to 11 year-olds, found that 4% had received a rude message, 7% a threatening message, and 17% a frightening message; while the British children’s charity National Children’s Home (2005) found that 14% of 11 to 19 year-olds had been threatened or harassed using text messages. A

similar Australian study found that 10% of adolescents surveyed had received threatening messages on their phone (Australian Psychological Society, 2004).

Whilst technology has provided a new dimension to the problem, bullying in childhood and adolescence is not a new phenomenon. It is estimated that approximately one in ten children are commonly subjected to bullying by their peers (Olweus, 2003; Rigby & Slee, 1991). The consequences of bullying can be severe, both for the aggressor and for their victims. Children who are bullied report low self-esteem, chronic absenteeism, loneliness, and feelings of abandonment (Smokowski & Kopasz, 2005), whilst those who bully admit to less closeness in their relationships compared to their non-bullying peers (Pepler et al., 2006).

Early research on the effects of cyber-bullying has found no less severe consequences. In a study of 1500 youth aged between 10 and 17 years, Ybarra (2004) found that those who reported being the target of internet harassment were significantly more likely to report depressive symptomatology. Moreover, children have reported that they find cyber and text bullying as harmful as other forms of bullying (Smith, Mahdavi, Carvalho, & Tippett, 2006).

At present there is little understanding of mobile phone bullying and the processes that contribute to it. In order to contribute to the understanding of this new phenomenon, this study applies a social cognitive framework of aggression to understand and predict this form of bullying. This framework suggests that an individual’s cognitions about a social event play a central role in their aggressive behavior and the stability of that behavior over time (Crick & Dodge, 1994; Huesmann, 1988; Huesmann & Eron, 1984).

Theories of bullying suggest that normative beliefs, or cognitions about the acceptability of any given behavior, act as a general guide for behavior (Huesmann & Guerra, 1997; Werner & Nixon, 2005; Zelli, Dodge, Lochman, & Laird, 1999). Normative beliefs are part of a database-like structure that stores an individual’s organised knowledge. This structure comprises stored schemas, scripts, and beliefs, believed to have been learnt early

and increasingly reinforced over time until they become permanently encoded in memory (Bandura, 1977). Normative beliefs influence behavior by imposing limits on the degree to which the individual approves or disapproves of the particular behavior concerned. A number of studies show that beliefs supportive of aggression influence actual aggressive behavior (e.g. Huesmann & Guerra, 1997; Slaby & Guerra, 1988).

Aggressive behavior is also frequently explained in terms of biases in social information processing (Dodge & Crick, 2003). Social information processing refers to the mental processing of information that individuals engage in during specific social situations. Crick and Dodge (1994) suggest that children engage in six mental steps before enacting social behavior. These include attending to a particular social situational cue, encoding and interpreting that cue, clarifying the desired goal, evaluating and selecting possible responses from memory, and finally enacting the chosen response. Biases can occur at any stage in this social information process, thus leading aggressive children to interpret their social world more aggressively (Waas, 1988), to generating more aggressive ways of responding in social situations (Quiggle, Garber, Panak, & Dodge, 1992), and to evaluating aggressive behaviors more favorably than their non-bullying peers (Perry, Perry, & Rasmussen, 1986).

According to Crick and Dodge’s (1994) model, a decision to behave in a certain way is made after generating and evaluating alternative responses to a given situation. The individual then makes a decision based upon their perception of the most positively evaluated response, their perceived self-efficacy for performing the behavior, their expectations of the outcome of the behaviour, and their evaluation of the appropriateness of the response (Crick & Dodge, 1994; Richard & Dodge, 1982). Empirical evidence supports this viewpoint, with studies finding that adolescents engage in more bullying behavior when they perceive positive outcomes from the behavior (Crick & Ladd, 1990; Hall, Herzberger, & Skowronski, 1998; Lochman & Dodge, 1994; Smithmeyer, Hubbard, & Simons, 2000), when they have

high self-efficacy for performing the behavior (Cuddy & Frame, 1991; Erdley & Asher, 1996; Quiggle et al., 1992; Wheeler & Ladd, 1982), and when they evaluate these behaviors favorably (Crick & Dodge, 1996; Crick & Werner, 1998).

The current study examines the relationship between normative beliefs, response selection, and mobile phone bullying. Whilst not a part of the social information-processing model, normative beliefs have been found to influence social processing and, in turn, be influenced by it (Huesmann & Guerra, 1997; Zelli et al., 1999). Werner and Nixon (2005), for example, found that children who believe aggression is acceptable are more likely to perceive negative cues in the environment, interpret those cues as intentionally hostile and access aggressive retaliatory responses from memory.

Response selection has also been shown to mediate the influence of an adolescent’s normative beliefs about the acceptability of aggression (Bellmore, Witkow, Graham, & Juvonen, 2005). It does this by delineating as acceptable the range of behaviors from which the individual makes a decision to finally perform. Adolescents who bully are more likely than those who do not bully to generate and support aggressive problem solving behaviors as methods they would use to resolve a given situation (Bellmore et al., 2005). Bellmore et al.’s results demonstrated that normative beliefs and response selections not only independently influence aggression but that they work together to predict aggression. Further, they found that the influence of normative beliefs on aggression was indirect, and that response selection mediated the influence that beliefs had on aggression. Adolescents who thought aggressive retaliation was appropriate, or selected aggressive strategies in response to provocation, were viewed by both their teachers and peers as being more aggressive.

The Present Study

At present there is little understanding of the cognitive processes that contribute to mobile phone bullying (MPB). Consistent with research undertaken on traditional bullying

(Bellmore et al., 2005), the current study will propose and test a mediational model of mobile phone bullying, hypothesizing that mobile phone hostile response selection will partially mediate the effect of normative beliefs on mobile phone bullying. The current study incorporates not only beliefs about the acceptability of aggressive retaliation, shown to have a strong link with hostile response selection (Bellmore et al., 2005), but also beliefs about the acceptability of aggression generally (see Figure 1). The study aims to test this model with a population of adolescents.

Given the scarcity of research to date on MPB the current study also aims to explore the frequency and incidence of MPB in an adolescent population, including its relationship to traditional bullying.

[Insert Figure 1. The hypothesized social-cognitive model of mobile phone bullying.]

Method

Participants

A total of 348 students in years 8, 9 and 10 participants were recruited from five non-government co-educational high schools. Of these, 328 (94.3%) reported owning or having access to a mobile phone. For the purposes of this study only those participants were included in this study. Six participants were excluded from the study as they had missing data in excess of the recommended 5% of the total survey (Tabachnick & Fidell, 2007). The final sample therefore consisted of 322 participants (154 males, 169 females), aged 13 to 17 years ($M = 14.53$, $SD = 0.83$).

Measures

Each participating student completed a self-report questionnaire that consisted of demographic information including sex, grade and age. Information was also collected on participants’ mobile phone ownership and usage, and the text messaging and video capabilities of their phone. All other measures are described below.

Peer Relations Questionnaire. The Peer Relations Questionnaire is a widely used scale designed to measure standard bullying (Rigby & Slee, 1993). The scale consists of twenty items and comprises three subscales: six items measuring the tendency to bully others, five items measuring a tendency to be victimized, four items measuring prosocial behavior, and four filler items. Participants were asked to rate each item according to how appropriately the statement described them from 1 (*never*) to 5 (*almost always*). Scores were added and averaged across items, yielding a scale score that could range from 1-5, with a higher score on each subscale representing a greater degree of bullying, victimization, or prosocial behavior. The internal consistency of each scale has previously found to be adequate (Rigby & Slee, 1993) with good convergent validity when compared with other measures of bullying (Bond, Wolfe, Tollit, Butler, & Patton, 2007). In the current study high internal consistency was found for all three subscales: bullying ($\alpha=.84$), victimization ($\alpha=.86$), and prosocial behavior ($\alpha=.73$).

Mobile phone bullying (MPB). The MPB measure was based conceptually on the Direct and Indirect Aggression Scale (Björkqvist, Lagerspetz, & Österman, 1992). The original measure consisted of a 24 item-scale used to measure three subscales (physical, verbal and indirect aggression). The scale was modified in several ways for the present study. Items measuring physical aggression were discarded and the phrasing of the verbal and indirect aggression items were adjusted to refer to mobile phone use (e.g., “insults the other

one” was adjusted to “sent a message on your mobile insulting someone” and “shuts the other one out of the group” was adjusted to “used a mobile to tell someone that they’re out of the group”). Finally, a victim scale was added to measure mobile phone victimization.

The adjusted scale consisted of 27 items intended to measure two subscales of MPB, direct and indirect, and one subscale of mobile phone victimization. Seven items measured aggressive behaviors typically regarded as indirect or relational (Björkqvist, 2001; Crick, Bigbee, & Howes, 1996; Underwood, Galen, & Paquette, 2001) and included examples such as “used your mobile to start or spread a rumor”, seven items measured direct verbal mobile phone bullying, such as “sent a message on your mobile insulting someone”, and seven items measured mobile phone victimization, using items such as “received a message on you mobile that frightened you.” There were six filler items that related to other uses of mobile phones. Participants were asked to report the frequency of their behavior in the past six months on a seven-point scale from 1 (*never*) to 7 (*often*). Scores were added and averaged across each item in the subscale, resulting in possible scores from 1 to 7, with a higher score indicating a higher degree of MPB, or mobile phone victimization.

A Principal Components Analysis of the 27-item MPB measure, however, led to only two factors being retained, mobile phone bullying and mobile phone victimization (see the Results section for details of the Principal Components Analysis). The distinction between indirect and direct MPB was not supported through factor analysis. Moreover, due to cross loadings, three items were removed from the scale. The final scale consisted of 18 items, 13 of which measured MPB and five of which measured mobile phone victimization. The new scale was found to have a high degree of internal reliability for both MPB ($\alpha = .93$) and mobile phone victimization ($\alpha = .84$).

Normative Beliefs about Mobile Phone Bullying. This measure was adapted from the Normative Beliefs About Aggression Scale (NOBAGS) (Huesmann & Guerra, 1997),

originally designed for primary school children and subsequently used with adolescent samples (e.g., Werner & Nixon, 2005). The NOBAGS consists of 20 items containing two subscales (retaliatory aggressive beliefs and general aggressive beliefs). Twelve items measure beliefs about retaliation and eight items measure general aggressive beliefs. Whilst maintaining the conceptual properties of the NOBAGS scale, several modifications were made for the present study. Firstly, items pertaining to physical aggression were removed completely from the scale. Secondly, the phrasings of the items were adjusted to account for mobile phone bullying (e.g., “if you’re angry, it is okay to say mean things to other people” was changed to “in general it’s okay to take your anger out on others using a mobile.”), with the format of the Retaliatory Normative Beliefs subscale adjusted to be more appropriate for secondary school students. Participants were asked to indicate the extent that they believed certain behaviors were acceptable or unacceptable, with responses on a 4-point scale from 1 (*it’s perfectly okay*) to 4 (*it’s really wrong*). Scores were added and averaged across each item in the subscale, from one to four, and items were reverse scored so that a higher score indicated more approval for bullying behavior.

A Principal Components Analysis was conducted on the adjusted 20-item Normative Beliefs about Mobile Phone Bullying Scale. Seven items cross loaded and were removed from the new scale and subsequent analyses. The final scale consisted of 13 items, with six items measuring retaliatory normative beliefs (e.g., “it’s no big deal to swear at someone on your mobile, if they’ve sworn at you first”) and seven measuring general normative beliefs (e.g., “it’s wrong to threaten people on your mobile”). The new scale was found to have a high degree of internal consistency for both retaliatory normative beliefs ($\alpha = .91$) and general normative beliefs ($\alpha = .84$).

Mobile Phone Hostile Response Selection. The Mobile Phone Hostile Response Selection (MB-HRS) scale was adapted from a hostile response selection scale developed by

Graham and Juvonen (1998). The original scale consisted of two hypothetical scenarios each of which described the respondent being a victim of an unequivocal hostile peer provocation. Two additional scenarios were added in order to incorporate an element of each different form of bullying: physical, verbal, indirect and mobile phone. The final scale, therefore, consisted of four short vignettes, such as “imagine that you’ve has a fight with some kids in your group. You’ve heard that they’ve started a rumor about you, which has gone around the school. Now everybody avoids you.” After reading each scenario students were asked to rate the likelihood that they would do something to get even, fight back, or get even using their mobile phone. Responses were made on a five-point scale from 1 (*definitely would do*) to 5 (*definitely would not do*). Scores from the response “what is the likelihood that you would get back at them using your mobile phone” were added and averaged to form a Mobile Phone HRS scale, yielding a possible score that could range from 1-5. Items were reversed scored so that a higher score indicated higher hostile response selection.

Procedure

Approval to conduct the research was obtained from the University’s Committee for Ethics in Human Research, from the local Schools’ Education Office, and from the school principals from each participating school. Five schools participated in the study, comprising of two large city schools, each with a total student population in excess of 1,000 students, and three schools located in large regional towns, one of these was a medium sized central school (Kindergarten to year 10), one a small high school (years 7-10) and one a large college (years 7-12). Thus, the sample captured a relatively diverse representation of adolescents. Active consent was sought from parents. Of the approximately 560 parental consent forms that were sent home with students 348 (62%) parents agreed to their child’s participation in the study. All students who had parental consent agreed to participate.

Classroom teachers administered the questionnaire during a normal class period in each participating school. Teachers were provided with standardized written instructions for the administration of the survey.

Results

Tests for assumptions of univariate normality were conducted on the data. The variables of traditional bullying, mobile phone bullying, mobile phone victimization, normative beliefs and mobile phone hostile response selection were all found to be substantially positively skewed. Logarithmic transformations were conducted on the data (Tabachnick & Fidell, 2007), however these transformations did not assist in normalizing the data and did not affect the variables in the subsequent analyses, so the original variables were retained.

Mobile Phone Bullying Behavior and Victimization

Item-level mobile phone bullying indicates that participants reported the full range of bullying behavior included in the MPB measure (see Table 1). The most frequently endorsed item was gossiping, with 56% of participants reporting at least some gossiping (those who reported the item at least once) and 29.1% reporting it more regularly (those who responded to the item with “sometimes” through “often”). This was followed by sending a rude message (38.7%), with 18.3% reporting that they had done this more than once. A smaller percentage (17.7%) had used their mobile phone camera at least once, to make fun of another person, or had threatened another using their phone (9.9%). Approximately 70% of participants reported using their mobile to bully at least once in the previous six months. There were also sex differences in the reporting of specific items, with females reporting more MPB than males on three items. Using an adjusted alpha level of $p = .01$ to reduce the Type I error rate, there

were significant differences found in using a mobile to gossip $t(321) = 6.186, p < .001$ (males $M = 1.89, SD = 1.51$; females $M = 2.96, SD = 1.61$); texting to say someone else doesn’t like them $t(275)=3.80, p < .001$ (males $M = 1.29, SD = .86$; females $M = 1.80, SD = 1.47$); and using a mobile to start or spread a rumor $t(289) = 2.39, p = .01$ (males $M = 1.20, SD = .75$; females $M = 1.46, SD = 1.12$). A similar level of mobile phone victimization was found, with 67% of the sample reporting at least one incidence of being a victim of MPB in the past six months. The most predominant response was that 38.1% had received an offensive text, 26.6% had received a hurtful message, 24.8% had received a frightening message and 19.5% had received a threatening message. Females reported significantly more victimization than males on three items, including receiving an offensive text $t(315)=3.03, p = .003$ (males $M = 1.66, SD = 1.27$; females $M = 2.15, SD = 1.6$); receiving an SMS that hurt your feelings $t(307)=3.75, p = .002$ (males $M = 1.35, SD = 1.06$; females $M = 1.88, SD = 1.45$) and receiving a call that hurt your feelings $t(276)=3.18, p < .001$ (males $M = 1.44, SD = .76$; females $M = 1.62, SD = 1.3$).

[Insert Table 1. Percentage of Participants who Report MPB Items]

Principal Components Analysis of MPB Measure

As the mobile phone bullying questionnaire was an adaptation of another measure an exploratory Principal Components Analysis was performed on the 27 items in the measure, using an oblique rotation (Direct Oblimin) as correlation between the variables was expected (Fabrigar, Wegener, & Strahan, 1999). Two factors were extracted using both an inspection of the scree plot (Kline, 1994) and those with eigenvalues exceeding 1.0. These collectively explained 61% of the variance. Three factors cross loaded and were removed from the scale. The remaining factors loaded cleanly, with values less than .40 suppressed (Ferguson & Cox,

1993). The labels of “Mobile Phone Bullying” and “Mobile Phone Victimization” were applied to the factors. Both factors were found to be internally consistent and well defined by the variables (see Table 2).

[Insert Table 2. Factor Loadings, Communalities (h^2), and Percents of Variance and Covariance for Principal Components Extraction and Direct Oblimin Rotation on Mobile Phone Bullying items]

Frequency and Incidence of MPB

Although many participants had used some form of bullying on one occasion, the overall frequency of mobile phone bullying was low ($M = 1.51$, $SD = 0.87$, on a 1 – 7 scale). A dependent samples t -test indicated that the difference between the frequency of traditional bullying ($M = 1.46$, $SD = 0.59$) and mobile phone bullying ($M = 1.51$, $SD = 0.87$) was not significant $t(321) = 1.39$, $p = .17$. Mobile phone bullying did not differ significantly from traditional bullying in its frequency. As with bullying, the overall frequency of mobile phone victimization was low ($M = 1.68$, $SD = .92$, on a 1 – 7 scale). Females ($M = 1.70$, $SD = 1.02$) reported being the victim of mobile phone bullying more than males ($M = 1.42$, $SD = 0.82$), this difference was significant $t(316) = 2.80$, $p = .006$. A dependent samples t -test indicated that there was a significant difference between the frequency of traditional victimization ($M = 1.82$, $SD = .71$) and mobile phone victimization ($M = 1.68$, $SD = .92$) $t(321) = -2.61$, $p = .009$. Mobile phone victimization was reported less frequently than more traditional forms of victimization.

Independent samples t -tests were conducted using sex as the independent variable and bullying (both MPB and traditional) as the dependent variable. For MPB results found a significant difference between males ($M = 1.39$, $SD = 0.69$) and females ($M = 1.62$, $SD = 0.99$), $t(301) = 2.39$, $p = .02$, with females reporting higher rates of mobile phone bullying than males. The results for mobile phone bullying were reversed for traditional bullying, with

results indicating that males ($M = 1.56, SD = 0.59$) reported bullying significantly more often than females ($M = 1.36, SD = 0.58$), $t(321) = -3.11, p = .002$. Males ($M = 1.92, SD = 0.79$) also reported being the victim of traditional bullying significantly more frequently than their females peers ($M = 1.73, SD = 0.61$), $t(321) = -2.40, p = .017$.

Bivariate Intercorrelations of the variables

Spearman’s rho correlation analysis was conducted to investigate the relationships between self-reported mobile phone bullying, normative beliefs about mobile phone bullying and mobile phone hostile response selection. Results indicated that there were moderate to strong relationships between bullying variables (traditional and mobile phone bullying), normative beliefs (both retaliatory and general) and all facets of hostile response selection. Self-reported mobile phone bullying was significantly and positively correlated with normative beliefs, both retaliatory and general and all aspects of hostile response selection (see Table 3). In particular mobile phone bullying was significantly and positively correlated with traditional bullying ($r_s = .32, p < .001$), being a victim of MPB was also significantly and positively correlated with being a victim of traditional bullying ($r_s = .21, p < .001$), at the same time also being positively and strongly correlated with MPB ($r_s = .61, p < .001$).

[Inset Table 3 Intercorrelations Among the Variables]

Path Analysis

A maximum likelihood estimation procedure was used on 322 participants to evaluate the hypothesized relationships between normative beliefs, hostile response selection and mobile phone bullying as presented in Figure 1.

The hypothesized model presented in Figure 1 was first evaluated, however was not found to fit the model well, $\chi^2(2) = 120.74, p < .001$. In order to obtain a better fitting model

the hypothesized model was re-specified, ensuring that changes made were theoretically sound and produced meaningful conclusions. The standardized residual covariances and modification indices indicated that the model would be substantially improved by the inclusion of a direct pathway between general beliefs and MPB. While this produced a better fitting model $\chi^2(2) = 3.241, p = .198$, the hypothesized pathway between general beliefs and hostile response selection was not supported by the data ($\beta = .14, p = .08$). Removing this pathway produced a more parsimonious model that fit the data well.

The final model (see Figure 2) provided a good fit for the data $\chi^2(2) = 3.241, p = .198$ and was theoretically sound. Within this model retaliatory normative beliefs about MPB ($\beta = .52$) predicted mobile phone hostile response selection, explaining 27% of the variance in mobile phone hostile response selection. Hostile response selection fully mediated the relationship between retaliatory beliefs and MPB. General beliefs ($\beta = .56$) directly predicted MPB and were not mediated through hostile response selection. Hostile response selection directly predicted mobile phone bullying ($\beta = .22$). The final model explained 47% of the variance in MPB. Goodness of fit indices also indicated that the data fit the model well (RMSEA = .044; TLI = .994; CFI = .998).

[Insert Figure 2. Final Social-Cognitive Model of Mobile Phone Bullying]

Discussion

Of the adolescents in the current study 94% owned or had access to a mobile phone. Of those, over half reported using their phone more than three times a day. This suggests that the mobile phone has become a significant factor in young people’s communication. In terms of mobile phone use, this study supported previous research in finding that the majority of

these communications are with parents, family or friends (Australian Psychological Society, 2004). At the same, however, a sizable proportion of respondents in the sample reported using their phone aggressively.

In examining responses to specific items in the MPB questionnaire, there were a substantial number of adolescents who reported both MPB and being a victim of MPB. Nearly 70% of adolescents reported that they had engaged in at least some bullying on their phone over the past six months, a figure heavily inflated by the inclusion of gossiping, which was by far the most popular response. For some of the more serious aggressive behaviors, this figure was considerably reduced, with 10% of adolescents admitting to threatening another on their phone, 39% reporting sending a rude message, 33% insulting someone and 14% reporting using a camera phone to make someone feel uncomfortable, threatened or embarrassed.

At the same time, a greater number of students reported being the victim of MPB. Nearly 20% of the sample acknowledged having received a threatening message on their phone, with 7.1% of these suffering from this form of bullying on a more regular basis (those who reported the item “sometimes” to “often”), 38% reported receiving an offensive text (17.6% more frequently) and 25% received a frightening message (6.8% more frequently). These figures are higher than have been previously reported in other studies of mobile phone bullying (Charlton et al., 2002; Smith et al., 2006). The dramatic rise in ownership and corresponding increase in the frequency of use of mobile phones amongst adolescents can partially be used to explain this increase. Another explanation is that the measures used in this study explored more forms of aggressive mobile phone behaviors, such as teasing and gossiping, than have been examined in earlier studies. Moreover, in this study, one-off instances of mobile phone bullying were captured. The overall frequency of mobile phone bullying was still relatively low and the frequency not significantly different from traditional

bullying. The overall frequency of mobile phone victimisation was also relatively low, with participants reporting it significantly less frequently than non-traditional forms of victimisation. This may suggest that students are less comfortable reporting being a victim of this kind of bullying than other forms of bullying. Finally, it is possible that these forms of aggressive behaviors are becoming more socially acceptable over time.

The results of the current study indicated that rates of both MPB and mobile phone victimization increased as a direct proportion to the frequency with which students reported using their phone. This suggests that as mobile phone use increases so too does mobile phone bullying. The current study found some evidence that MPB is becoming as frequent as traditional bullying with results indicating that rates of MPB did not significantly differ from rates of traditional bullying. The current study found sex differences in both MPB and traditional bullying and found that whilst MPB was significantly higher for females, the opposite was the case for traditional bullying. This is consistent with a plethora of research finding that boys consistently score higher on measures of physical aggression and girls higher on measures of relational aggression (e.g., Björkqvist, Lagerspetz, & Kaukiainen, 1992).

Social-Cognitive Model of Mobile Phone Bullying

The final goal of the study was to propose and test a social cognitive model where normative beliefs, both general and retaliatory, and hostile response selection directly predict an adolescents’ MPB and where hostile response selection mediates the relationship between normative beliefs and MPB. Path analysis techniques were used to evaluate the theoretical constructs of interest (normative beliefs, hostile response selection and mobile phone bullying), to test the overall goodness of fit of the model and to evaluate the strength of the associations between each construct and the model.

The current study found some support for the hypothesized model. Hostile response selection was not only found to directly and positively predict mobile phone bullying it was also found to mediate the relationship between both retaliatory and general normative beliefs and mobile phone bullying. This supports a theoretical model of aggression which posits that adolescents who approve of aggressive behavior are more likely to select aggression as an appropriate response to a peer provocation scenario, and are thus more likely to behave aggressively (Bellmore et al., 2005).

A direct pathway was found between general beliefs and mobile phone bullying that was not found for retaliatory beliefs. Bellmore et al. (2005) tested the mediational relationship between retaliatory normative beliefs, hostile response selection and bullying and found that hostile response selection fully mediated the relationship between retaliatory beliefs and aggressive behavior. In other words, Bellmore et al. tested a model exclusively incorporating a reactive form of aggression, defined by Little et al. (2003) as an angry and defensive response to provocation. Thus it is not unusual that hostile response selection would fully mediate the relationship between retaliatory beliefs and behavior. The current study included a measure of generalized beliefs about MPB which were not retaliatory in nature. This measure was found to be only partially mediated by hostile response selection.

Several conclusions can be drawn from these results. Firstly, there was a strong association between normative beliefs and hostile response selection, which suggests that beliefs and response selections work together to predict aggressive behavior. Secondly, the results found support for the hypothesized social-cognitive model of aggression (Bellmore et al., 2005), where hostile response selection mediates the relationship between normative beliefs about MPB and MPB behavior. Thirdly, this association was found to be unique for mobile phone bullying, suggesting that the relationship between beliefs, response selection, and behavior may be specific to the type of behavior in question. Finally, this study supports

past research, which suggests that both latent knowledge structures and social information processing interact to better predict bullying.

Limitations and Directions for Future Research

There are several limitations of the current study which must be borne in mind when interpreting the results. A major limitation of the study was the absence of a universally sound and psychometrically designed measure for mobile phone bullying. Whilst measures were adapted for the study, these revealed problems with the conceptualization of mobile phone bullying. This was most noted in adapting the Direct and Indirect Aggression Scale (Björkqvist, Lagerspetz, & Österman, 1992), where a principal components analysis revealed that labels of direct and indirect bullying are unlikely to be appropriate for mobile phone bullying. As cyber-bullying becomes an increasingly common phenomenon it is imperative to develop sound psychometric measures that can fully capture the breadth and depth of this behavior.

The model utilized in this study explored the relative influences of two social-cognitive approaches in predicting mobile phone bullying, investigating one specific latent knowledge construct (normative beliefs) and one step in the final stage of the social information processing model (hostile response selection). More research is needed to examine whether other cognitive factors in both approaches follow the same path model, to understand the ways in which cognitive processes encourage mobile phone bullying and to increase the prediction of this form of aggressive behavior. Future research could also examine whether the pathways found in this study differ for males and females and other populations.

The study is correlational hence it is not possible to draw conclusions about causality or the direction of the pathway. The cross sectional design of the study also makes it difficult

to distinguish between genuine developmental trends and cohort effects. A study such as this one would benefit from the inclusion of longitudinal data to explore the developmental processes through which mobile phone bullying emerges.

The use of self-report measures provides another potential limitation in a study such as this. Many existing studies of aggression utilize peer and / or teacher reports of aggressive behaviors and, although the debate continues (e.g., Howard, 1994; Solberg & Olweus, 2003), these are considered by many to be the industry standard for measuring aggression (Cole, Cornell, & Sheras, 2006). Whilst self-reports have the advantage of being an easy and inexpensive method of collecting data, they also rely upon the ability of participants to make accurate retrospective reports of their behavior (Whitley, 2001), and bullies, in particular, also often underreport aggressive behavior (Björkqvist, Österman, & Kaukiainen, 1992). This only highlights the need to validate these measures with other measures of mobile phone bullying as they become available.

Despite the limitations, however, the current study provides an important investigation into the incidence of mobile phone bullying and has been the first of its kind to examine social cognitive predictors of this behavior. This potentially has important implications for the ways in which teachers and schools deal with mobile phone bullying. Finding that normative beliefs and hostile response selection work together to predict and influence adolescents’ mobile phone bullying may be particularly useful in designing interventions which focus on social-cognitive strategies. Interventions such as changing the way adolescents think about aggression have already been found to be successful at altering some bullying behavior (Metropolitan Area Child Study Research Group, 2007). The finding that hostile response selection mediates the influence of beliefs on behavior also suggests that a stronger focus on the development of problem solving skills may be necessary, including interventions such as assisting adolescents to develop wider range of responses to peer

provocation (Bellmore et al., 2005), teaching them to develop more realistic assessments of social situations, and providing them with resources that encourage them to reflect before acting (Pakaslahti, 2000). An intervention study of adolescent offenders found that by altering social-cognitive factors, such as beliefs about the acceptability of aggression and response generation, short term decreases in aggressive behavior were achieved (Guerra & Slaby, 1990).

Bullying is a complex phenomenon to understand and predict. This is no less the case with mobile phone bullying, where research suffers from a lack of adequate measurement. As mobile phone bullying becomes a more widely acknowledged form of aggression, and as research focuses on a wider array of social-cognitive predictors, more comprehensive interventions can be made available that incorporate a range of latent knowledge structures and social information processing variables.

References

- Aricak, T., Siyahhan, S., Uzunhasanoglu, A., Saribeyoglu, S., Ciplak, S., Yilmaz, N., et al. (2008). Cyberbullying among Turkish adolescents. *CyberPsychology & Behavior, 11*(3), 253-261.
- Australian Psychological Society. (2004). *Psychosocial aspects of mobile phone use among adolescents*. Retrieved 25 March, 2006, from http://www.psychology.org.au/news/psychology_week/10.10_2.asp
- Bandura, A. (1977). *Social learning theory*. Englewood Cliffs, NJ: Prentice Hall.
- Bellmore, A. D., Witkow, M. R., Graham, S., & Juvonen, J. (2005). From beliefs to behavior: The mediating role of hostile response selection in predicting aggression. *Aggressive Behavior, 31*, 453-472.
- Björkqvist, K. (2001). Different names, same issue. *Social Development, 10*, 272-274.
- Björkqvist, K., Lagerspetz, K., & Österman, K. (1992). *Direct and indirect aggression scales (DIAS)*. Retrieved March 10, 2007, from <http://www.vasa.abo.fi/svf/up/dias.htm>
- Björkqvist, K., Lagerspetz, K. M. J., & Kaukiainen, A. (1992). Do Girls Manipulate and Boys Fight? *Aggressive Behavior, 18*(2), 117-127.
- Björkqvist, K., Österman, K., & Kaukiainen, A. (1992). The development of direct and indirect aggressive strategies in males and females. In K. Björkqvist & P. Niemela (Eds.), *Of mice and women: Aspects of female aggression* (pp. 51-64). Orlando, FL: Academic Press.
- Bond, L., Wolfe, S., Tollit, M., Butler, H., & Patton, G. (2007). A comparison of the gatehouse bullying scale and the peer relations questionnaire for students in secondary school. *Journal of School Health, 77*(2), 75-80.
- Campbell, M. A. (2005). Cyber bullying: An old problem in a new guise? . *Australian Journal of Guidance and Counselling, 15*(1), 68-76.
- Charlton, T., Panting, C., & Hannan, A. (2002). Mobile telephone ownership and usage among 10 and 11 year olds. *Emotional and Behavioural Difficulties, 7*(3), 152-163.
- Cole, J. C., Cornell, D. G., & Sheras, P. (2006). Identification of school bullies by survey methods. *Professional School Counselling, 9*(4), 305-313.
- Crick, N. R., Bigbee, M. A., & Howes, C. (1996). Gender differences in children's normative beliefs about aggression: How do I hurt thee? Let me count the ways. *Child Development, 67*(1003-1014).
- Crick, N. R., & Dodge, K. A. (1994). A review and reformulation of social information-processing mechanism in children's social adjustment. *Psychological Bulletin, 115*(1), 74-101.
- Crick, N. R., & Dodge, K. A. (1996). Social information-processing mechanisms in reactive and proactive aggression. *Child Development, 67*, 993-1002.
- Crick, N. R., & Ladd, G. W. (1990). Children's perceptions of the outcomes of social strategies: Do the ends justify being mean? *Developmental Psychology, 26*(4), 612-620.
- Crick, N. R., & Werner, N. E. (1998). Response Decision Processes in Relational and Overt Aggression. *Child Development, 69*(6), 1630.
- Cuddy, M. E., & Frame, C. L. (1991). Comparison of aggressive and nonaggressive boy's self efficacy and outcome expectancy beliefs. *Child Study Journal, 21*(2).
- Dodge, K. A., & Crick, N. R. (2003). A biopsychosocial model of the development of chronic conduct problems in adolescence. *Developmental Psychology, 39*(2), 349-371.
- Downie, C., & Glazebrook, K. (2007). *Mobile phones and the consumer kids*. Canberra: Australia Institute Research Paper No. 41.
- Erdley, C. A., & Asher, S. R. (1996). Children's social goals and self-efficacy perceptions as influences on their responses to ambiguous provocation. *Child Development, 67*, 1329-1344.

- Fabrigar, L. R., Wegener, D. T., & Strahan, E. J. (1999). Evaluating the use of exploratory factor analysis in psychological research. *Psychological Methods, 4*, 272-299.
- Ferguson, E., & Cox, T. (1993). Exploratory factor analysis: A users' guide. *International Journal of Selection and Assessment, 1*, 84-94.
- Fleming, M. J., Greentree, S., Cocotti-Muller, D., Morrison, S., & Elias, K. A. (2006). Safety in cyberspace: Adolescents' safety and exposure online. *Youth & Society, 38*, 135-154.
- Graham, S., & Juvonen, J. (1998). Self-blame and peer victimization in middle school: An attributional analysis. *Developmental Psychology, 34*(3), 587-599.
- Guerra, N. G., & Slaby, R. G. (1990). Cognitive mediators of aggression in adolescent offenders: 2. Intervention. *Developmental Psychology, 26*, 269-277.
- Hall, J. A., Herzberger, S. D., & Skowronski, K. J. (1998). Outcome expectancies and outcomes values as predictors of children's aggression. *Aggressive Behavior, 24*, 439-454.
- Howard, S. H. (1994). Why do people say nasty things about self reports? *Journal of Organizational Behavior, 15*, 399-404.
- Huesmann, L. R. (1988). An information processing model for the development of aggression. *Aggressive Behavior, 14*, 13-24.
- Huesmann, L. R., & Eron, L. D. (1984). Cognitive Processes and the Persistence of Aggressive Behavior. *Aggressive Behavior, 10*(3), 243-251.
- Huesmann, L. R., & Guerra, N. G. (1997). Children's normative beliefs about aggression and aggressive behaviour. *Journal of Personality and Social Psychology, 72*(2), 408-419.
- Juvonen, J., & Gross, E. F. (2008). Extending the school grounds? Bullying experiences in cyberspace. *Journal of School Health, 78*(9), 496-505.
- Kline, P. (1994). *An easy guide to factor analysis*. London: Routledge.
- Li, Q. (2007). New bottle but old wine: A research of cyberbullying in schools. *Computers in Human Behaviour, 23*(4), 1777-1791.
- Little, T. D., Henrich, C. C., Jones, S. M., & Hawley, P. H. (2003). Disentangling the "whys" from the "whats" of aggressive behaviour. *International Journal of Behavioral Development, 27*(2), 122-133.
- Lochman, J. E., & Dodge, K. A. (1994). Social-cognitive processes of severely violent, moderately aggressive, and nonaggressive boys. *Journal of Consulting and Clinical Psychology, 62*(2), 366-374.
- Madell, D. E., & Muncer, E. J. (2007). Control over social interactions: An important reason for young people's use of the internet and mobile phones for communication? *CyberPsychology & Behavior, 10*(1), 137-140.
- Metropolitan Area Child Study Research Group. (2007). Changing the way children 'think' about aggression: Social-cognitive effects of a preventive intervention. *Journal of Consulting and Clinical Psychology, 75*, 160-167.
- National Children's Home. (2005). *Children as young as eleven are victims of new mobile bullying phenomenon*. Retrieved March 25, 2007, from <http://www.nch.org.uk/information/index.php?i=77&r=332>
- Olweus, D. (2003). A profile of bullying. *Educational Leadership, 12*-17.
- Pakaslahti, L. (2000). Children's and adolescents' aggressive behavior in context: The development and application of aggressive problem-solving strategies. *Aggressive and Violent Behavior, 5*, 467-490.
- Pepler, D. J., Craig, W. M., Connolly, J. A., Yuile, A., McMaster, L., & Jiang, D. (2006). A developmental perspective on bullying. *Aggressive Behavior, 32*, 376-384.
- Perry, D. G., Perry, L. C., & Rasmussen, P. (1986). Cognitive social learning mediators of aggression. *Child Development, 57*, 700-711.
- Quiggle, N. L., Garber, J., Panak, W. F., & Dodge, K. A. (1992). Social information processing in aggressive and depressed children. *Child Development, 63*, 1305-1320.

- Reid, D., & Reid, F. (2004). *Insights into the social and psychological effects of SMS text messaging*. Retrieved 24 April, 2007, from <http://www.160characters.org/documents/SocialEffectsOfTextMessaging.pdf>.
- Richard, B., & Dodge, K. A. (1982). Social maladjustment and problem solving in school-aged children. *Journal of Consulting and Clinical Psychology, 42*, 787-793.
- Rigby, K., & Slee, P. T. (1991). Bullying among Australian school children: reported behavior and attitudes toward victims. *Journal of Social Psychology, 131*(5), 615-627.
- Rigby, K., & Slee, P. T. (1993). Dimensions of interpersonal relation among Australian children and implications for psychological well-being. *Journal of Social Psychology, 133*(1), 33-42.
- Slaby, R. G., & Guerra, N. G. (1988). Cognitive mediators of aggression in adolescent offenders: 1. Assessment. *Developmental Psychology, 24*(4), 580-588.
- Slonje, R., & Smith, P. K. (2008). Cyberbullying: Another main type of bullying. *Scandinavian Journal of Psychology, 49*(2), 147-154.
- Smith, P. K., Mahdavi, J., Carvalho, M., & Tippett, N. (2006). *An investigation into cyberbullying, its forms, awareness and impact, and the relationship between age and gender in cyberbullying: A report to the anti-bullying alliance*. Retrieved 25 March, 2007, from www.anti-bullyingalliance.org.uk/downloads/pdf/cyberbullyingreportfinal230106_000.pdf
- Smithmeyer, C. M., Hubbard, J. A., & Simons, R. F. (2000). Proactive and reactive aggression in delinquent adolescents: Relations to aggression outcome expectancies. *Journal of Clinical Child Psychology, 29*(1), 86-93.
- Smokowski, P. R., & Kopasz, K. H. (2005). Bullying in school: An overview of types, effects, family characteristics and intervention strategies. *Children & Schools, 27*(2), 101-110.
- Solberg, M. E., & Olweus, D. (2003). Prevalence estimation of school bullying with the Olweus Bully / Victim Questionnaire. *Aggressive Behavior, 29*, 239-268.
- Tabachnick, B. G., & Fidell, L. S. (2007). *Using multivariate statistics*. Boston: Pearson Education.
- Underwood, M. K., Galen, B. R., & Paquette, J. A. (2001). Top ten challenges for understanding gender and aggression in children: Why can't we all just get along? *Social Development, 10*(2), 248-266.
- Waas, G. A. (1988). Social attributional biases of peer-rejected and aggressive children. *Child Development, 59*(969-975).
- Werner, N. E., & Nixon, C. L. (2005). Normative beliefs and relational aggression: an investigation of the cognitive bases of adolescent aggressive behavior. *Journal of Youth and Adolescence, 34*(3), 229-243.
- Wheeler, V. A., & Ladd, G. W. (1982). Assessment of children's self efficacy for social interactions with peers. *Developmental Psychology, 18*(6), 795-805.
- Whitley, B. E. (2001). *Principles of research in behavioral science*. New York: McGraw Hill.
- Ybarra, M. L. (2004). Linkages between depressive symptomology and internet harassment among young regular internet users. *CyberPsychology & Behavior, 7*(2), 247-368.
- Zelli, A., Dodge, K. A., Lochman, J. E., & Laird, R. D. (1999). The distinction between beliefs legitimizing aggression and deviant processing of social cues: Testing measurement validity and the hypothesis that biased processing mediates the effects of beliefs on aggression. *Journal of Personality and Social Psychology, 77*(1), 150-166.

Tables and Figures

Table 1

Percentage of Participants who Report Mobile Phone Bullying and Victimization

| Item | At least once ^a % | frequently ^b % |
|--|---------------------------------|------------------------------|
| <i>MPB</i> | | |
| Gossip | 56.0 | 29.1 |
| Sent rude message | 38.7 | 18.3 |
| Insult someone | 32.9 | 7.2 |
| Make fun of another person | 25.1 | 8.7 |
| Someone else doesn’t like them | 23.5 | 9.2 |
| Don’t like someone | 22.9 | 7.1 |
| Intending to hurt someone’s feelings | 18.9 | 4.9 |
| Sexual reference about another | 16.1 | 6.9 |
| Start / spread rumor | 16.1 | 5.2 |
| Exclude someone from relationship | 15.8 | 4.6 |
| Intending to offend someone | 15.5 | 3.7 |
| Threatened someone | 9.9 | 3.9 |
| Tell someone they’re out of group | 4.6 | 2.7 |
| Make fun of another using a camera-phone ^c | 17.7 | 6.8 |
| Use camera-phone to take embarrassing photo ^c | 14.3 | 5.4 |
| Use image intending to hurt someone ^c | 5.0 | 2.5 |
| <i>Mobile Phone Victimization</i> | | |
| Didn’t want to be in contact with | 54.2 | 26.3 |
| Received offensive text | 38.2 | 17.6 |
| Received hurtful message | 26.6 | 10.3 |
| Received frightening call | 24.8 | 6.8 |
| Received threatening message | 19.5 | 7.1 |
| Received hurtful call | 19.2 | 8.4 |
| Break up relationship | 16.4 | 10.2 |

Note^a adolescents who reported the item at least once

Note^b adolescents who reported the item “sometimes” to “often”

Note^c *N* = 258

Table 2

Factor Loadings, Communalities (h^2), and Percents of Variance and Covariance for Principal Components Extraction and Direct Oblimin Rotation on Mobile Phone Bullying and Victimization items

| Item | F_1 | F_2 | h^2 |
|---|-----------------------------|----------------------------------|-------|
| | Mobile Phone Bullying | Mobile Phone Victimization | |
| Threatened someone | .86 | | .73 |
| Tell someone they’re out of the group | .86 | | .63 |
| Intended to offend someone | .85 | | .75 |
| Intended to hurt someone’s feelings | .85 | | .75 |
| Try to exclude someone from relationship | .83 | | .66 |
| Start or spread rumor | .81 | | .72 |
| Make sexual reference about another student | .77 | | .52 |
| Tell someone you don’t like them | .72 | | .60 |
| Break up relationship | .71 | | .45 |
| Tell them someone else doesn’t like them | .71 | | .63 |
| Sent message insulting someone | .69 | | .63 |
| Sent rude message | .60 | | .41 |
| Used mobile to gossip | .45 | | .35 |
| Received text that hurt your feelings | | .89 | .74 |
| Received text that offended you | | .89 | .77 |
| Received call that hurt your feelings | | .72 | .56 |
| Received message that frightened you | | .72 | .56 |
| Received threatening message | | .62 | .47 |
| Make fun of another person ^a | | | .69 |
| Had someone break up with you ^a | | | .60 |
| Don’t want contact with ^a | | | .44 |
| Percent of Variance | 49.33 | 11.25 | |

Note^a Item omitted due to cross loadings

Table 3

Intercorrelations Among the Variables

| Variable | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|------------------------------------|--------|-------|--------|-------|-------|-------|-------|
| 1. Bully Scale | - | | | | | | |
| 2. victim subscale | .38** | - | | | | | |
| 3. prosocial subscale | -.32** | -.12* | - | | | | |
| 4. Mobile Phone Bullying | .32** | .11* | -.11* | - | | | |
| 5. Victim of Mobile Phone Bullying | .20** | .21** | .01 | .61** | - | | |
| 6. Retaliatory Beliefs About MPB | .40** | .03 | -.26** | .46** | .22** | - | |
| 7. General Beliefs About MPB | .39** | .11 | -.25** | .43** | .26** | .80** | - |
| 8. Hostile Response Selection MPB | .29** | .02 | -.08 | .40** | .26** | .50** | .40** |

*p<.05, **p<.01

Figures

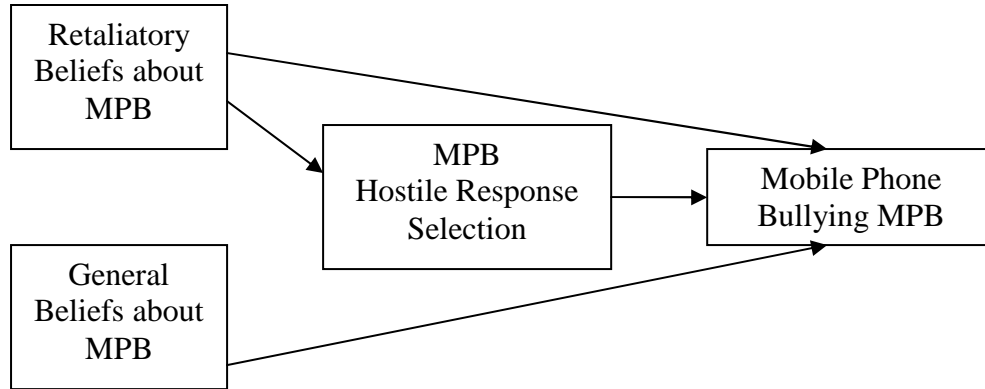


Figure 1. The hypothesised social-cognitive model of mobile phone bullying

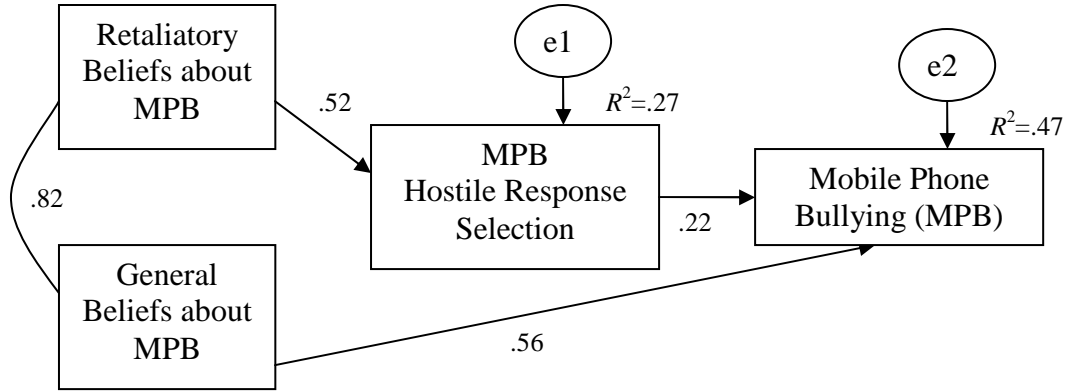


Figure 2. Final social-cognitive model of mobile phone bullying