

**Comparative optimism and cyberbullying: The role of previous involvement in  
cyberbullying and technology**

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### Abstract

Individuals hold optimistic beliefs about the likelihood of experiencing cyberbullying relative to others. However, how cyberbullying experiences and technology use influence these perceptions remains unclear. Data was collected from 444 (371 female, 71 male, 2 non-disclosed) students ( $M_{age} = 20.38$ ,  $SD_{age} = 3.51$ ) recruited from two Universities in the UK. Participants completed questionnaires assessing problematic internet use, fear of missing out (FoMO), previous experiences of cyberbullying, and the likelihood with which they and eight comparator groups would experience cyberbullying. Problematic internet use and being a victim (negatively) and witness (positively) mediated the relationship between FoMO and comparative optimistic beliefs for experiencing cyberbullying. Elevated FoMO predicted greater problematic internet use which predicted being a victim and witness. Being a: (a) victim predicted reduced comparative optimism and (b) witness predicted increased comparative optimism. Therefore, adults who have previously experienced cyberbullying hold less optimistic beliefs whereas those who witness cyberbullying hold optimistic beliefs.

*Keywords:* Comparative optimism; cyberbullying; fear of missing out; problematic internet use; risk perceptions

### Introduction

Cyberbullying represents an: “(a) intentional aggressive behaviour that is, (b) carried out repeatedly, (c) occurs between a perpetrator and victim who are unequal in power, and (d) occurs through electronic technologies” (Kowalski et al., 2014, p. 1074). Although some research suggests instances of cyberbullying peak around the age of 14 (Ortega et al., 2009), some individuals continue to experience cyberbullying across the lifespan (e.g., Ševčíková & Šmahel, 2009) suggesting that research needs to consider adults’ experiences. Experiencing cyberbullying has been associated with negative outcomes (Kowalski et al., 2014) leading to involvement in cyberbullying being regarded as a negative experience associated with digital technology use.

To manage and mitigate potential negative experiences, individuals tend to adopt various protective psychological strategies. One such strategy is adopting a comparative optimistic mindset. Comparative optimism represents the general tendency to believe that, compared to others, we are less at risk of experiencing negative events and more likely to experience positive events (Weinstein, 1980). In the context of digital settings, Hewitt and White (2022) define cyber optimistic bias as the tendency to be “*over confident in being protected, hence, be less of a victim*” (p. 50). There is evidence that adults hold comparative optimistic beliefs for experiencing online harms on social networking sites (Buglass et al., 2021), experiencing risks associated with using the internet (Betts et al., 2024), and experiencing a privacy risk (Metzger & Suh, 2019).

Focusing on the online risk of cyberbullying, adolescents, young adults, and adults hold optimistic beliefs about the likelihood that they will experience cyberbullying compared to others (Betts et al., 2019). Betts et al. reported that across the three samples, those younger than the participants were rated as being at greatest risk of experiencing cyberbullying and the self was judged to be at the lowest risk of experiencing cyberbullying. However, this

study was limited as only five comparator groups were included. Increasing the number of comparator groups and their social distance would help to give better insight into how judgements vary. Further, family was not included as a comparator group despite family reflecting both a socially close group and an important information source (Gil et al., 2007). Therefore, the current research explored these issues by extending the number of comparator groups and it was predicated that:

H1: Individuals will hold comparative optimism beliefs for experiencing cyberbullying and that these will vary according to comparator group. It is expected that those groups socially distant and younger will be judged to be at greater risk of experiencing cyberbullying.

Aligned to comparative optimism as a strategy to manage online risk, Blank and Lutz (2018) argue that the uses and gratification theory (Katz et al., 1974) can be applied to understand online risk management and why internet users may downplay potential risks. Specifically, internet users make a choice about how they use and interact with the internet. Associated with the choice and motivation about internet use is Fear of Missing Out (FoMO). FoMO represents the belief that others are having a rewarding time without the self being present (Przybylski et al., 2013) and is “*defined as a fundamental human motivation that consists in craving interpersonal attachments*” (Blanchnio & Prepiorka, 2018, p. 514). Tandon et al. (2021) argue that the theory of compensatory internet use (Kardefelt-Winther, 2014) can explain why those who experience FoMO are more likely to increase their social media to manage their FoMO. The theory of compensatory internet use suggests that individuals engage with technology to alleviate negative feelings they are experiencing (Kardefelt-Winther, 2014). Relatedly, previous research has highlighted that FoMO predicts online risk taking (Popovac & Hadlington, 2020) and vulnerability to online harms (Buglass et al., 2017). Further, those who experience higher levels of FoMO are more likely to engage

in social comparisons (Tandon et al., 2021). Understanding more about the relationship between FoMO and such social comparisons is crucial because Tandon et al. suggest an “amplification effect” exists where those who experience FoMo may be more likely to be impacted by other negative outcomes associated with social media use. In the context of the current research, driven by their need to address their FoMO and their desire to maintain connections, individuals may hold higher comparative optimism beliefs for the likelihood of experiencing cyberbullying. Therefore, it is predicted that:

H2: FoMO will predict comparative optimism beliefs for experiencing cyberbullying

As FoMO has been identified as an antecedent for adolescents’ and young adults’ experiences of problematic internet use (Fioravanti et al., 2021) and spending more time online has been identified as an antecedent of problematic internet use (Sánchez-Fernández et al., 2023), it is likely that problematic internet use will mediate the relationship between FoMO and comparative optimism beliefs for experiencing cyberbullying. Both FoMO and problematic internet use have been reported to be associated with cyberbullying involvement. For example, 15- to 18-year-olds from Tehran who reported experiencing elevated levels of FoMO also reported experiencing cyberbullying as a victim (Hosseini Sfidvadjani et al., 2023). Spanish adolescents who experienced higher levels of cyberbullying were more likely to also report having higher problematic internet use than those adolescents who reported that they were not involved in cyberbullying (Machimbarrena et al., 2021). Therefore, it is predicted that:

H3: FoMO will predict cyberbullying experiences

H4: Problematic internet use will mediate the relationship between FoMO and comparative optimism beliefs for experiencing cyberbullying

The reported prevalence rates of involvement in cyberbullying range from 1% to 79.3% with variations reported according to whether an individual is a victim, bully, or bully/victim

(Brochado et al., 2017) and according to the type of measures used, the reporting timeframe, and whether cut-offs are used to identify role (see Betts et al., 2017). Similar variation has been reported for the prevalence rates of witnesses/bystanders (Zych et al., 2016). Given the prevalence of cyberbullying, it is likely that previous experiences of cyberbullying impacted the results of Betts et al. (2019) as optimistic judgements have been found to be influenced by personal experience of the event in question (Helweg-Larsen, 1999). For example, university students who experienced the 1994 Northridge earthquake held no optimistic bias for future earthquakes (Helweg-Larsen, 1999). Moreover, those who had personal experience of injury or financial loss following the earthquake held less optimism about injury in future earthquakes compared to those who had not had such experiences. Relatedly, optimistic judgements over time have been found to be influenced by learning such that while an optimistic bias remains for the self, there is evidence that calibration about the likelihood of events improves (Massey et al., 2011). Previous experiences of cyberbullying may influence comparative optimism beliefs for experiencing cyberbullying as these beliefs are likely to be modified based on information about actual risk to the general population (Betts et al., 2024).

Understanding how previous involvement in cyberbullying influences comparative optimism beliefs for experiencing cyberbullying is crucial to ensure the success of anti-bullying campaigns as the effectiveness of such awareness raising campaigns depends on the extent to which the intended audience engages with the materials and believes that they are directly relevant to them (Nævestad, 2010). Given that both FoMO (Hosseini Sfidvadjani et al., 2023) and problematic internet use (Machimbarrena et al., 2021) have been associated with involvement in cyberbullying and that previous experiences influence subsequent risk judgements (Helweg-Larsen, 1999), involvement in cyberbullying as a victim, bully, or witness will be explored as parallel mediators due to the cross-sectional nature of the design

and to reflect that experiences as a victim, bully, or witness may be independent of each other (Hayes, 2018). As shown in Fig. 1, it was predicted that:

H5: Involvement in cyberbullying as a victim, bully, or witness will serve as parallel mediators in the relationship between FoMO, problematic internet use, and optimistic beliefs for experiencing cyberbullying.

## Method

### Participants

An online survey was completed by 479 university students recruited from two universities in the United Kingdom as part of a larger project running from September 2018-June 2020. Data was removed for 35 respondents who only completed the consent statements and the demographic questions. The final sample comprised of 444 (371 female, 71 male, 2 non-disclosed) students ( $M_{age} = 20.38$ ,  $SD_{age} = 3.51$ ).

### Measures

#### *Comparative optimistic beliefs for cyberbullying*

Following Betts et al. (2019), participants were asked to report the extent to which they thought they and others would experience cyberbullying (i.e., “*For each of the group of people listed below, please indicate how likely you think it is that they will become a victim of cyberbullying*”) using a 7-point scale ranging from 1 (*Extremely unlikely*) to 7 (*Extremely likely*). Friends, family members, enemies, people you don’t like, people at your university, people older than you, people younger than you, and strangers served as the comparator groups that varied according to social distance and age.

#### *Previous experiences of cyberbullying*

Involvement in cyberbullying was assessed using a modified version of Betts et al.’s (2017) cyberbullying made and received method. Rather than being presented with a definition of cyberbullying, participants were asked to report about specific behaviours

including nasty communications, violent image, unpleasant image, insulting communication, threatening communication, exclusion, and spreading rumours/slurs. For experiences as a victim, participants were presented with each behaviour separately and asked to report how often they had received the behaviour over the last year for up to nine media types (i.e., phone call, text message, e-mail, instant message, social network site, blog, bash board, and private chat message while gaming) using a 3-point scale (1 = *Never*, 2 = *Sometimes*, and 3 = *Often*). The anchor points sometimes and often were used to be indicative of the repetitive nature of cyberbullying and acknowledge variation in the possible intensity. This process was repeated for: (a) engaging in the behaviour to assess bullying and (b) witnessing the behaviour. Total scores were created by combining ratings for each cyberbullying behaviour across media type for experiences as a victim ( $M = 75.06$ ,  $SD = 12.03$ ,  $\alpha = .880$ ), bully ( $M = 66.32$ ,  $SD = 6.89$ ,  $\alpha = .851$ ), and witness ( $M = 81.06$ ,  $SD = 19.41$ ,  $\alpha = .946$ ).

### ***Fear of missing out***

The 10-item fear of missing out scale (Przybylski et al., 2013) assessed participants' fear of missing out (e.g., "*I fear others have more rewarding experiences than me*"). Participants indicated their agreement using a 4-point scale (1 = *Strongly disagree*, 4 = *Strongly agree*). The scale demonstrated good internal consistency ( $\alpha = .854$ ), and item response theory has been used to validate the 10-item scale (Przybylski et al., 2013). Items were summed such that high scores indicated greater fear of missing out ( $M = 25.21$ ,  $SD = 5.52$ ).

### ***Problematic internet use***

The 20-item internet addiction index (Leung & Lee, 2012) assessed problematic internet use (e.g., "*I have concealed the extent of my internet use*"). Participants responded to the statements using a 4-point scale (1 = *Strongly disagree*, 4 = *Strongly agree*). The scale demonstrated very good internal consistency ( $\alpha = .894$ ) similar to that reported when the psychometric properties of the scale were established (Leung & Lee, 2012). Items were



summed such that high scores indicated greater problematic internet use ( $M = 44.34$ ,  $SD = 8.93$ ).

### **Procedure**

Favourable ethical review was received from the Business, Law, and Social Sciences Research Ethics Committee (Number: 2018/191). The study was advertised via an online recruitment system at the respective universities. Once participants signed up to the study, they were presented with the information sheet that detailed the nature of the study, that the results would be anonymous, that individual responses would be kept confidential, and that the data may be used for publications and presentations. Next potential participants were asked to give their consent through selecting compulsory check boxes before completing the online survey. The participants received study credits to compensate them for their time.

## **Results**

### **Comparative optimistic beliefs for cyberbullying**

There was variation in the ratings for perceptions of the likelihood of experiencing cyberbullying with family rated below the self and younger people rated the highest (see Table 1). A one-way repeated measures ANOVA was conducted to explore whether individuals held comparative optimism beliefs for experiencing cyberbullying and whether there were differences according to comparator group to test H1.

There was a significant main effect of comparator group, Wilks' Lambda = .31,  $F(8, 411) = 115.90$ ,  $p < .001$ ,  $\eta^2 = .693$ . Pairwise comparisons, with a Bonferroni correction, revealed partial support for H1 with some evidence that individuals held comparative optimism beliefs for experiencing cyberbullying with variation according to comparator group. Family was perceived by participants as significantly less likely to experience cyberbullying than all other comparator groups except the self ( $p < .001$ ) and the effect sizes were small to large (Cohen, 1988;  $d \geq .14$  and  $\leq 1.41$ ). The self was also perceived to be significantly less likely to

experience cyberbullying than all other comparator groups except family and friends ( $p \leq .004$ ) and the effect sizes were small to large ( $d \geq .19$  and  $\leq 1.71$ ). Friends were perceived as significantly less likely to experience cyberbullying than enemies, people that you do not like, people at the same university, younger people, and older people ( $p < .001$ ) and the effect sizes were small to large ( $d \geq .26$  and  $\leq 1.33$ ). Enemies were perceived as less likely to experience cyberbullying than people at the same university and younger people ( $p < .001$ ) and the effect sizes were small to large ( $d \geq .47$  and  $\leq 1.12$ ). People you do not like were perceived as less likely to experience cyberbullying than those at the same university, younger people, and strangers ( $p < .001$ ) and the effect sizes were small to large ( $d \geq .43$  and  $\leq 1.11$ ). Younger people were perceived to be the most likely to experience cyberbullying compared to all other comparator groups ( $p < .001$ ) and the effect sizes were medium to large ( $d \geq .61$  and  $\leq 1.40$ ). Strangers were also perceived to be the most likely to experience cyberbullying compared to all others ( $p < .001$ ), except younger people and the effect sizes were medium to large ( $d \geq .64$  and  $\leq 1.01$ ).

### **Relationship between FoMO, problematic internet use, involvement in cyberbullying, and comparative optimism beliefs for experiencing cyberbullying**

The PROCESS Macro programme for SPSS (Hayes, 2018) model 81 was used to examine: (a) the indirect effects of problematic internet use as a serial mediator and (b) whether experiences as a victim, bully, and witness acted as parallel mediators in the relationship between FoMO and comparative optimistic beliefs for experiencing cyberbullying. For this analysis, Joshi and Carter's (2013) approach was used to create a single indicator of comparative optimistic beliefs for experiencing cyberbullying by subtracting the rating for the self from the average rating for the eight comparator groups. Lower scores indicated participants believed they were more likely to experience cyberbullying than others and higher scores indicated participants believed that others were

more likely to experience cyberbullying. The effects were tested using bias-corrected bootstrapping with 5,000 samples and the 95% confidence intervals reported where effects are interpreted as statistically significant if the confidence interval does not include 0 (Preacher & Hayes, 2008).

All possible direct and indirect effects were examined. The total effect of FoMO on comparative optimistic beliefs for experiencing cyberbullying was non-significant, indicating indirect-only mediation (Zhao et al., 2010;  $effect = -.020$ ,  $SE = .013$ ,  $t = -1.51$ ,  $LLCI = -.047$ ,  $ULCI = .006$ ) meaning H2 was not supported. In partial support for H3, FoMO positively predicted involvement in cyberbullying as a victim and bully such that higher FoMO scores predicted higher victim and bully scores. However, there was no direct effect between FoMO and witnessing cyberbullying. There was also significant direct effect between FoMO and problematic internet use such that higher scores of FoMO predicted higher scores of problematic internet use (see Fig. 1).

Several indirect effects were also significant (see Table 2). A significant indirect effect was found between FoMO and comparative optimistic beliefs for experiencing cyberbullying via problematic internet use: higher levels of FoMO predicted higher levels of problematic internet use which, in turn, negatively predicted comparative optimistic beliefs for experiencing cyberbullying scores supporting H4: those with higher problematic internet use believe that they were more likely to experience cyberbullying than others.

Partial support for H5 was found with significant indirect effects between FoMO and optimistic beliefs via problematic internet use and experiencing cyberbullying as a victim and witness. Although the results were close to zero so need to be interpreted with caution, higher levels of FoMO predicted higher levels of problematic internet use and higher levels of problematic internet use predicted higher reports of experiencing cyberbullying as a victim which, in turn, negatively predicted comparative optimistic beliefs for experiencing

cyberbullying. Participants who had higher scores as a victim reported that they were more likely to experience cyberbullying compared to others. Similarly, higher levels of FoMO predicted higher levels of problematic internet use and higher levels of problematic internet use predicted higher levels of witnessing cyberbullying which, in turn, predicted comparative optimistic beliefs for experiencing cyberbullying. Participants who scored higher for witnessing cyberbullying also reported that they were less likely to experience cyberbullying compared to others. There were no other significant indirect effects.

### **Discussion**

In summary, there was evidence that: (a) adults hold comparative optimistic beliefs for experiencing cyberbullying and (b) involvement in cyberbullying as a victim and witness mediated the relationship between FoMO, problematic internet use, and comparative optimistic beliefs for experiencing cyberbullying.

In partial support of H1, our sample of adults held comparative optimistic beliefs for experiencing cyberbullying. However, contrary to expectation, the self was only rated as experiencing lower levels of cyberbullying for seven out of the eight comparator groups, with ratings for family being lower than the self. Although this provides a reliability check (Plucker & Makel, 2021) of Betts et al.'s (2019) findings, the finding relating to family is unique to the current study. One potential explanation for why family was rated lower than the self is because family are an important reference and source of information for individuals (Gil et al., 2007). As predicted, those younger than the self were rated as being the most at risk of experiencing cyberbullying. One interpretation of this finding is that it may reflect perceptions around technology use and the associated risks (see Betts et al., 2024) and adds further support to the with age come wisdom hypothesis proposed by Scharrer and Leone (2008) which argues that younger people are vulnerable because of their age and their potential lack of knowledge.

Similar to Hosseini Sfidvadjani et al.'s (2023) finding that FoMO was associated with experiencing cyberbullying as a victim, FoMO predicated experiences of cyberbullying as a victim and bully providing partial support for H3. Although there was not a direct effect of FoMO predicting comparative optimistic beliefs for experiencing cyberbullying (H2), the results suggest an indirect effect between FoMO and comparative optimistic beliefs for experiencing cyberbullying via problematic internet use (H4). Higher levels of FoMO predicted higher levels of problematic internet use which, in turn, predicted lower levels of comparative optimistic beliefs for experiencing cyberbullying. The results suggest that those with higher levels of problematic internet use held less optimistic views about the likelihood of experiencing cyberbullying in future believing that they were more likely to experience cyberbullying than others. Although a belief, this finding reflects previous reports that suggest problematic internet use is associated with elevated levels of experiencing cyberbullying as a victim (Zsila et al., 2018) and that spending more time online is associated with greater involvement in cyberbullying (Barlett et al., 2019). The current findings are also consistent with the "amplification effect" proposed by Tandon et al. (2021) with regards to FoMO experiences cooccurring with other negative experiences associated with social media use.

H5 was partially supported as involvement in cyberbullying as a victim and witness mediated the relationship between FoMO, problematic internet use, and comparative optimistic beliefs for experiencing cyberbullying. The results suggest that those who had experienced cyberbullying previously as a victim held less optimistic views about the likelihood of experiencing cyberbullying in future believing that they were more likely to experience cyberbullying than others. This relationship is consistent with previous research which has highlighted how personal experience can reduce optimistic bias (Helweg-Larsen, 1999). However, those who have witnessed cyberbullying continued to hold optimistic

beliefs about the future likelihood of experiencing cyberbullying. It may be that witnessing cyberbullying perpetuates the belief that cyberbullying is something that happens to other people, thus maintaining the optimistic bias.

The findings of the current study may have implications for online safety campaigns associated with cyberbullying as the success of such campaigns tends to be influenced by the extent to which individuals perceive them to be relevant to themselves (Nævestad, 2010). There is some evidence that when individuals hold optimistic beliefs it can prevent them from taking appropriate measures to avoid online risks (Alnifie & Kim, 2023). Therefore, when future campaigns are developed designers need to be mindful to highlight their relevance for the individual (Nævestad, 2010), especially those who have experienced cyberbullying as a victim or witness.

### **Limitations**

The study has five limitations. First, we asked participants to imagine an individual from a range of comparator groups, but they were not asked to specify who this individual was. Consequently, it was not possible to assess how representative the selected individual was and participants could have interpreted the comparator groups differently. For example, we did not specify whether family related to immediate family members or extended family members but rather left participants to use their own conceptualisation of family to reflect that it is challenging to define family (Trost, 1988). There is also likely to be overlap between group members for example friends could be younger or older than the participant. Relatedly, we did not ask participants whether the selected individual had prior experience of cyberbullying which may have influenced judgements (e.g., Hewleg-Larsen, 1999). Third it is likely that the comparator groups vary in size according to social distance. For example, friends and family are likely to represent smaller groups than strangers and there is evidence that as group size increases so to do judgements about negative life events (Price et al., 2006).

Consequently, to address these issues, future research should examine who participants are anchoring their judgements to when they provide such ratings. For example, research could explore how representative the individual is of the specific comparator group, whether the individual has experienced cyberbullying, and the size of the comparator group that the individual represents.

The measure of cyberbullying involvement also did not capture the power imbalance associated with cyberbullying (Kowlaski et al., 2014) but as Englander et al. (2017) note assessing power imbalance in cyberbullying can be difficult to judge because online interactions often lack communication cues needed to make such judgements. Finally, most of the sample was female which likely reflects the gender disparity in the departments participants were recruited from. There is some evidence that males hold more optimistic beliefs for the likelihood of experiencing cyberbullying compared to females (Betts et al., 2019) suggesting that gender may have confounded the results in the current study.

### **Conclusions**

In conclusion, the results suggest that previous experiences as a victim and witness of cyberbullying and motives and experiences of using technology are important factors in predicting comparative optimistic beliefs for experiencing cyberbullying. Together, the results suggest that those who have experienced cyberbullying previously hold less optimistic views about the likelihood of experiencing similar behaviour again whereas those who witness cyberbullying continue to hold optimistic views that they will not experience cyberbullying. These findings have implications for understanding individuals' engagement with online safety campaigns and the "amplification effect" (Tandon et al., 2021).

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**Table 1**

*Descriptive statistics for the ratings for the likelihood of experiencing cyberbullying according to comparator group*

Comparator group	Total	
	<i>M</i>	<i>SD</i>
People younger than you	5.09 <sub>a</sub>	1.40
Strangers	4.32 <sub>b</sub>	1.40
People at your university	3.91 <sub>c</sub>	1.59
People you don't like	3.26 <sub>de</sub>	1.63
Your enemies	3.18 <sub>de</sub>	1.61
People older than you	3.04 <sub>efh</sub>	1.66
Your friends	2.83 <sub>gh</sub>	1.64
You	2.73 <sub>hif</sub>	1.75
Family	2.53 <sub>i</sub>	1.67

*Note:* Means not sharing subscripts differ significantly.

**Table 2**

*Indirect effects for the relationship between FoMO, problematic internet use, involvement in cyberbullying, and comparative optimism beliefs for experiencing cyberbullying*

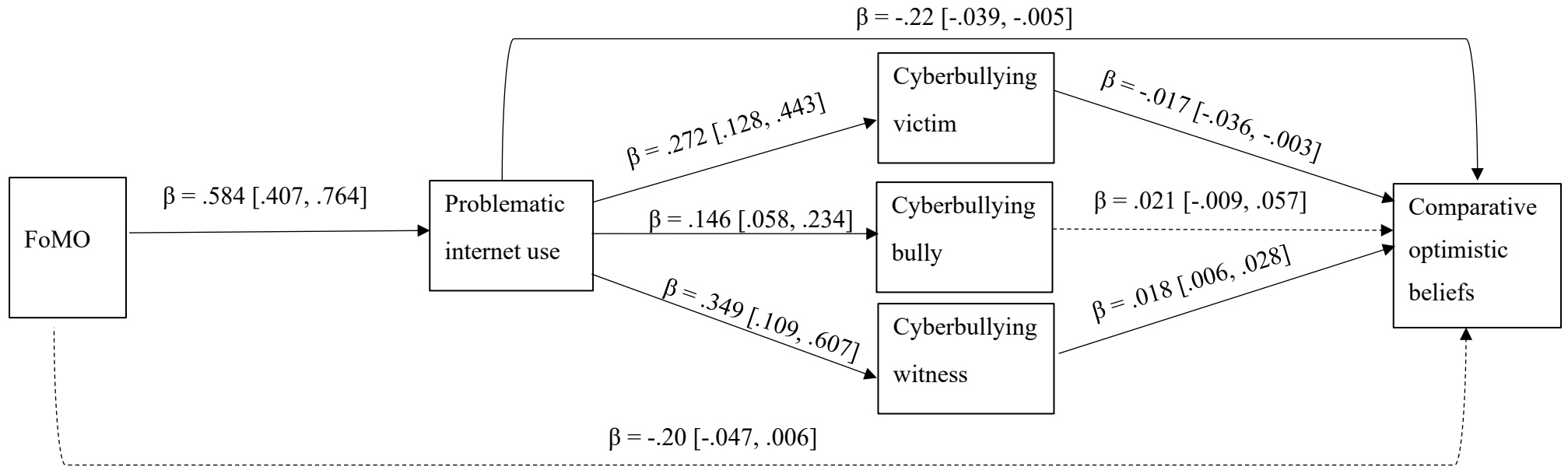
Indirect effects	$\beta$	95% CI	
		LL	UL
FoMO → PIU → COB	-.013	-.024	-.003
FoMO → victim → COB	-.005	-.013	-.001
FoMO → bully → COB	-.001	-.006	.003
FoMO → witness → COB	.002	-.008	.010
FoMO → PIU → victim → COB	-.003	-.007	-.001
FoMO → PIU → bully → COB	.002	-.007	.005
FoMO → PIU → witness → COB	.004	.001	.008

*Note.* FoMO = Fear of Missing Out; PIU = Problematic Internet Use; COB = Comparative Optimistic Beliefs; CI = confidence interval; LL = lower limit; UL = upper limit. As bootstrapped confidence intervals are reported throughout, it is not possible to report the *p* value for these analyses (see Hayes, 2018).



**Fig. 1**

*Direct effects for the relationship between FoMO, problematic internet use, involvement in cyberbullying, and comparative optimism beliefs for experiencing cyberbullying.*



*Note:* Comparative optimism beliefs were scored such that Lower scores indicated participants believed they were more likely to experience cyberbullying than others and higher scores indicated participants believed that others were more likely to experience cyberbullying.