



## Full length article

## Associations between child maltreatment, PTSD, and internet addiction among Taiwanese students



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## ABSTRACT

This study examines (1) the associations between multiple types of child maltreatment and Internet addiction, and (2) the mediating effects of post-traumatic stress disorder (PTSD) on these associations. We collected data from a national proportionately stratified random sample of 6233 fourth-grade students in Taiwan in 2014. We conducted bivariate correlations and sets of multiple regression analyses to examine the associations between multiple types of maltreatment (5 types in total) and Internet addiction, and to identify the mediating role of PTSD. The results reveal that being male and experiencing abuse (psychological neglect, physical neglect, paternal physical violence, sexual violence) were associated with increased risk among children of developing PTSD and Internet addiction. Moreover, PTSD mediated the associations between multiple types of maltreatment (except maternal physical violence) and Internet addiction. This study demonstrates (1) the effects of multiple types of maltreatment on the PTSD and Internet addiction of children and (2) the importance of early prevention and intervention in addressing related public-health concerns.

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## 1. Introduction

## 1.1. Child maltreatment and internet addiction

As Internet technology makes constant advances, it broadens and strengthens our daily-life conveniences. Inevitably, it also changes our lifestyles; we become increasingly reliant on the Internet. Internet use has become routine among children as well as adults; indeed, it is telling that many parents pacify their young children with the aid of iPads and cellphones. However, emerging from among the myriad benefits of Internet use are new forms of

behavioral problems, and one of the most pressing is Internet addiction, which is the inability of people to control their Internet use—an inability that can eventually lead to psychological, social, academic, and vocational problems (Davis, 2001; Young & Rogers, 1998). In Europe from 2009 to 2010, the overall prevalence of Internet addiction was 4.4%, and it was higher among males than females (5.2% versus 3.8%) (Durkee et al., 2012). The prevalence rate for having five or more symptoms of Internet addiction among adolescents in Hong Kong in 2005 was 6.7% (Fu, Chan, Wong, & Yip, 2010), and 13.7% among college students in Taiwan in 1998 (Chou & Hsiao, 2000).

Child maltreatment is one of the important predictors for behavioral problems such as Internet addiction. The definitions of three key terms will prove useful in this context. *Neglect* is defined as the failure of parents to meet their children's basic needs and proper level of care, *physical maltreatment* as intentional bodily injury visited upon children by parents or other caretakers, and *sexual maltreatment* as adults' use of a child for sexual stimulation

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(American Psychological Association Committee on Professional Practice and Standards, 1998). Research on maltreatment has emphasized physical and sexual violence, often to the exclusion of neglect (Stith et al., 2009). However, child psychological and physical neglect is more prevalent than physical and sexual violence, and can be extraordinarily harmful to child development (Shin, Miller, & Teicher, 2013). Therefore, we have included multiple types of maltreatment in the model underpinning the current study.

Research on child maltreatment has documented the associations between maltreatment and substance addictions (Evren, Kural, & Cakmak, 2006) and behavioral addictions such as gambling (Hodgins et al., 2010). However, little is known about the associations between maltreatment and a new form of addictive behavior—Internet addiction. Only one study examined the relationships between child maltreatment and problematic Internet use among college students (Yates, Gregor, & Haviland, 2012). Although preliminary studies suggested that harsh parenting, family conflict, and violence were associated with problematic Internet use (Park, Kim, & Cho, 2008; Wolak, Mitchell, & Finkelhor, 2003; Xiuqin et al., 2010), little is known about the relationships between multiple types of child maltreatment and Internet addiction, and the pathway or mechanism of the relationships. At the same time, research applying direct-effects models to the topic of Internet addiction has documented the prevalence, negative outcomes, and causal aspects of this form of addiction in relation to Internet usage, personality, and family factors (Chen, Chen, & Gau, 2015; Ko, Yen, Yen, Chen, & Chen, 2012; Servidio, 2014; Young & de Abreu, 2010). However, little is known about the mechanisms underlying—and the pathways leading to—Internet addiction, particularly where such knowledge would rest on the rigorous use of mediation-effects models. Kardefelt-Winther (2014) proposed the notion of compensatory internet use to address how online activities may compensate for psychological problems and encouraged further research to explore the mediation and interaction effects in the context of Internet addiction. The current study is the first to examine how different types of maltreatment affect students' Internet addiction, and how post-traumatic stress disorder (PTSD) affects the pathways leading to Internet addiction where Internet use serves as a coping strategy.

### 1.2. Child maltreatment, PTSD, and negative outcomes

Child maltreatment has been linked to PTSD and problem behaviors. Children who experience physical or sexual violence run an increased risk of having PTSD (Vranceanu, Hobfoll, & Johnson, 2007), mental health problems (e.g., depression, anxiety, suicidal tendencies), and substance dependence across adolescence and adulthood (Fergusson, Boden, & Harwood, 2008; Teicher, Samson, Polcari, & McGreenery, 2006; Thornberry, Henry, Ireland, & Smith, 2010). Among Taiwanese college students, Shen (2009) identified several long-term associations stemming from childhood physical maltreatment and interparental violence to later PTSD and behavioral problems. Longitudinal studies also reveal that child neglect is positively associated with internalizing problems (Bolger & Patterson, 2001). Neglected children are at greater risk of aggression and juvenile drug and alcohol offenses later in life (Chen, Propp, deLara, & Corvo, 2011; Kotch et al., 2008; Shin et al., 2013), and child physical abuse has been linked to problem drinking and illicit drug use (Fang et al., 2015; Shin et al., 2013).

### 1.3. PTSD and internet addiction

Individuals who suffered from PTSD may use adaptive or maladaptive strategies to cope. One coping strategy is avoidance,

whereby individuals attempt to avoid a stressor or their reaction to it. Victims of violence use avoidance to avoid or reduce negative affect (Littleton, Horsley, John, & Nelson, 2007). They withdraw from others and block or distance themselves from their own feelings and thoughts regarding the stressor (Snyder & Pulvers, 2001). Although avoidance strategies may temperately reduce psychological distress, they can become maladaptive if individuals overly rely on them (Snyder & Pulvers, 2001) and can perhaps develop into an addiction. According to the self-medication hypothesis (Cappell & Greeley, 1987), people who experience abuse may use substances to reduce and escape from the intrusive symptoms of PTSD (Hruska & Delahanty, 2012). Similarly, Internet addiction can be recognized as a maladaptive avoidance coping strategy: children who experience neglect or violence may bury themselves in the cyber world, thereby attempting to avoid—rather than cope with—PTSD.

In fact, both Internet addiction and substance dependence can be recognized as addictive behavioral-problem syndromes. They share such similar characteristics as excessive use, withdrawal symptoms, growing tolerance, immobilizing preoccupations, and functional impairment (Beard & Wolf, 2001; Hall & Parsons, 2001; Leung, 2004). In addition, they have similar family risk factors. For example, higher parent-adolescent conflict and lower family function and monitoring are associated with a higher risk of Internet addiction among adolescents (Yen, Yen, Chen, Chen, & Ko, 2007). In sum, these findings imply that the associations and pathways between maltreatment and substance use might be similar to the associations and pathways between maltreatment and Internet addiction.

Research on addictive behaviors has directly linked childhood sexual abuse and overall childhood trauma to alcohol-use disorder and PTSD-avoidance symptoms (Müller et al., 2015). The study by Müller et al. (2015) has also found that PTSD avoidance mediates the relationships between childhood trauma and alcohol-use disorder. In other words, child maltreatment has been linked to PTSD symptoms, which in turn, can lead to substance dependence. Therefore, drawing on the findings about this pathway from child maltreatment to substance dependence, the current study examines the pathway from child maltreatment to Internet addiction.

In sum, the current study extends previous research by examining the associations among multiple forms of maltreatment (psychological and physical neglect, paternal physical violence, maternal physical violence, and sexual violence) and PTSD and Internet addiction (as exhibited by school-age children). Our primary hypothesis comprises two parts: (1) the more maltreatment a child experiences, the higher the level of PTSD symptoms and Internet addiction the child will exhibit, and (2) there are mediating effects of PTSD on the associations between multiple types of maltreatment and Internet addiction.

## 2. Method

This study is a part of the Longitudinal Study of Children's and Adolescents' Family and Social Experiences (LSCAFSE). The Institutional Review Board of the National Taiwan University Hospital declared that the LSCAFSE was consistent with the protection of the rights and welfare of human subjects.

### 2.1. Participants

We conducted this study in the 2014 spring semester with fourth-grade students. We stratified the sample by geographical locations across Taiwan (19 counties or cities in total) and randomly selected the districts to increase representation. Of the invited elementary schools, approximately 49% schools ( $n = 314$ ) agreed to

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