Cyber-ostracism and its relation to depression among Chinese adolescents: The moderating role of optimism

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ABSTRACT

Internet has been a popular medium and means to interconnect with others, with increasing opportunities for inclusion; at the same time, being ignored and excluded, a phenomenon referring to cyber-ostracism also increased. This study investigated the influence of cyber-ostracism on Chinese adolescents’ depression, and the moderating role of optimism between them. First, a scale with 14-item was developed to measure the cyber-ostracism experience of adolescents. Then, a survey was conducted among 1626 Chinese adolescents aged 12–18, and the results showed that: (1) cyber-ostracism was positively correlated with depression, while optimism was negatively correlated with depression, (2) optimism could moderate the influence of cyber-ostracism on depression, with a stronger association for adolescents with low level of optimism. Results indicated that cyber-ostracism is a negative interpersonal experience as ostracism in real life, while optimism could alleviate the detrimental effect of cyber-ostracism.

1. Introduction

Nowadays, Internet has become an integral part of our daily lives throughout the world. Also, it has been a popular medium and means to interconnect with others (CNNIC, 2015; Valkenburg & Peter, 2007), providing more convenient ways and opportunities for social interaction (Subrahmanyam & Greenfield, 2008). However, with increasing opportunities for inclusion in online social interactions, being ignored and excluded, a phenomenon referring to cyber-ostracism also became more and more common, which has negative effects on individuals as ostracism occurs in real life (Williams et al., 2002; Williams, Cheung, & Choi, 2000). Although ostracism and its detrimental influences have received much attention, less is known about the ostracism occurrence online (Williams et al., 2002). At the same time, studies on ostracism and cyber-ostracism were mainly conducted with experimental paradigms (Tobin, Vanman, Verreyne, & Saeri, 2014; Williams et al., 2000), which could not investigate the general situation of cyber-ostracism.

Though ostracism may occur across the life span, it is particularly outstanding during the period of adolescence, as they are jockey for social position and influence in the peer group, and extremely sensitive to being excluded or ignored by others (Coyne, Gundersen, Nelson, & Stockdale, 2011). Thus, compared with children and adults, the deleterious effects of ostracism are more pronounced among adolescents (Pharo, Gross, Richardson, & Hayne, 2011; Rich, Adrienne, C Nathan, Adams, & Inga, 2012). At the same time, online communication is especially popular among adolescents (CNNIC, 2015; Valkenburg & Peter, 2007). Thus, they may also be more likely to be encountered with ostracism online. In addition, adolescence is also a vulnerable period for behavioral and emotional health problems, and there is a significant increase in depression during adolescence (Hankin, 2006). So adolescents’ cyber-ostracism experience and its relation to depression deserve more attention.

Based on this, the current study aimed to investigate adolescents’ cyber-ostracism, as well as its association with depression through questionnaire method, which may not only deepen our understanding on adolescents’ cyber-ostracism, but also contribute to the prevention and intervention for adolescents’ depression.
1.1. Cyber-ostracism and depression

As many studies have shown, people are born with a basic need for belonging and social interaction, which is vital to individuals' physical health and psychological well-being (Baumeister & Leary, 1995; Hammell, 2014). Thus, the close association between interpersonal relationship and depression has been well examined (Hames, Hagan, & Joiner, 2013). Relevant results also indicated that, good social relationship, such as peer acceptance and high-quality friendship, could act as protective factors against depression (Brendgen et al., 2013; Swords, Heary, & Hennessy, 2011); while negative interpersonal experience, such as peer victimization and bullying, would lead to depression (Yabko, Hokoda, & Ulloa, 2008; Zhou, Liu, Niu, Sun, & Fan, 2017).

Ostracism, which is defined as being ignored or excluded by others, is a commonly negative and stressful experience in our daily lives (Williams, 2007a). Considering ostracism's negative influences on individuals' basic need for belonging and social connection, as well as the important role of good human relations in individuals' health and well-being, it is a painful and distressful experience with powerfully detrimental influences for the individuals being ostracized (Nezlek, 2012; Williams, 2009). It was found that, being ostracized by others would endanger the satisfaction of individuals' four fundamental human needs (i.e., belonging, self-esteem, control, and meaningful existence) (Williams, 2001), and further increased individuals' psychological pain and negative affect (Williams, 2007b). As to depression, studies also revealed that ostracism would greatly increase the risk of depression (Dewall, Gilman, & Sharif, 2012; Niu, Sun, Tian, Fan, & Zhou, 2016; Williams & Nida, 2011).

In recent years, there is a great increase in online communication among people of all ages throughout the world. Along with this trend, various forms of rejection or exclusion, such as feeling left out or ignored by others on Internet, also appear. Compared with the ostracism occurs in real life, cyber-ostracism may be more illusory and uncertain, because of such features as asynchronism, dependence on technology that occurs in real life, cyber-ostracism may be more illusory and uncertain, which has been found to moderate the relationship between negative or stressful experiences and psychosocial adaptation (e.g., self-esteem, depression and well-being) (Hirsch, Walker, Wilkinson, & Lyness, 2014; Lai, 2009). Research has also revealed that, positive personality traits, such as hope and optimism, could moderate the negative effects of ostracism (Johnston, 2010). On this basis, it was therefore hypothesized:

H1. Optimism will be positively correlated with depression;

H2. Optimism will moderate the relationship between cyber-ostracism and depression.

Thus, this study aims to investigate the association between cyber-ostracism and depression among adolescents, as well as the moderating effect of optimism between them.

2. Methods

2.1. Participants

Data for the main study were collected at two middle schools and two high schools in central China, 1797 adolescents between 12 and 18 years old were recruited to participate in this study. All parents and students received a detailed information letter about the study, and passive consent was obtained. Then a paper-pencil questionnaire was completed during class under the supervision of a researcher and teacher. After completion, students were compensated with a small gift (approximately 0.5 US dollar). At last, 1626 adolescents (Mage = 14.31, SDage = 1.52; 45.6% boys) completed the whole set of questionnaires without missing data.

2.2. Measures

2.2.1. Cyber-ostracism

A self-developed 14-item Cyber-ostracism Experience Scale for Adolescents was used, which was developed through below process.

Firstly, a semi-structured interview was conducted among 24 adolescents (12 boys) about the common ostracism they encountered with online, and initial items were generated through streamlining, refining, and integrating the interviews. Then, authors perused these initial items and individually removed any they felt did not capture the essence of cyber-ostracism or redundant (inter-rater agreement was over 90%). The above process led to 18 items, and respondents were asked to indicate how often they are encountered with each item. Response categories ranged from “Never” (1) to “All the Time” (5).

Then, a total of 623 adolescents (Mage = 14.78, SDage = 1.90; 48% boys) participated in pre-test survey to build and debug the instrument through exploratory and confirmatory factor analysis. Because confirmatory analyses requires larger sample size (Noar, 2003), a random
30/70 split was used to create two subsamples, i.e., sample A (n = 187, for exploratory factor analysis) and sample B (n = 436, for confirmatory factor analysis). The KMO test (KMO = 0.93) and Bartlett’s test of sphericity ($\chi^2 = 1786.45, p < 0.001$) suggested the correlation matrix is appropriate for factor analysis. Multiple criteria were used to determine retention of factors (Williams, Onsman, & Brown, 2010), including eigenvalues > 1, a visual analysis of the produced Scree plot, and interpretability of the factor solutions. Latent factors were extracted by principal components analysis and rotated with Varimax method, the optimal number of factors was determined by the parallel analysis with 95% percentile criterion. Items with low factor loadings and multiple cross-loadings were also removed. Consequently, the final result suggested 14 items with a three-factor solution (cyber-ostracism in online personal chat, cyber-ostracism in online group chat, and cyber-ostracism in personal web space), which explained 71.38% of variance. To further validate the factor structure, confirmatory factor analysis was conducted to test three different models (single-factor, three uncorrelated factors, and three correlated factors) using the sample B. All these three models were tested on the 14 items, and the results showed that the three-correlated factor model provided the best fit to the data (RMSEA = 0.064, NFI = 0.94, TLI = 0.91, CFI = 0.95, and $\chi^2/df = 2.05$); while the single-factor and three uncorrelated factors yielded poor fit indices (RMSEA = 0.25, NFI = 0.66, TLI = 0.57, CFI = 0.68, $\chi^2/df = 17.52$; RMSEA = 0.10, NFI = 0.82, TLI = 0.77, CFI = 0.85, $\chi^2/df = 6.64$). It is also noted that factor loadings of each latent variable with its corresponding variables observed are high (all above 0.5) and significant in the three correlated factors model; therefore, the existence of convergent validity can be inferred.

In the formal test, Cronbach’s alpha for cyber-ostracism in online personal chat was 0.85, cyber-ostracism in online group chat was 0.81, and cyber-ostracism in personal web space was 0.80, Cronbach’s alpha for the whole scale was 0.88.

2.2.2. Optimism

Adolescent Optimism Scale was used, which was developed on the basis of the Life Orientation Test, the Life Orientation Test-Revised, The measurement of optimism and pessimism, and the Cognitive Appraisal Orientation Test (Zhang, Lei, & Wang, 2015). This scale is a 27-item self-report measure with good reliability and validity among Chinese adolescents, consisting of three dimensions (optimism, pessimism and self-efficacy optimism). Items are scored on a 5-point Likert-type scale with a variety of anchors (1 = “strongly disagree” to 5 = “strongly agree”). In this study, Cronbach’s alpha for the three dimensions was 0.81, 0.85 and 0.87, Cronbach’s alpha for the whole scale was 0.90.

2.2.3. Depression

The Chinese version (Wang et al., 2013) of Center for Epidemiologic Studies Depression (CES-D) Scale was used, it is one of the most commonly used measures of depression with 20-item (Radloff, 1991). Respondents were asked to rate how often they have been bothered by each item over the last week on a 4-point Likert-type scale (0 = “strongly disagree” to 3 = “strongly agree”). In this study, Cronbach’s alpha for the whole scale was 0.86.

2.3. Data analysis

All the data were input and sorted with SPSS. Firstly, a normality test was performed to decide whether parametric or non-parametric statistics should be used in further analysis. Then, descriptive statistics and correlations analysis were calculated with SPSS. At last, the SPSS macro PROCESS was used to test whether optimism could moderate the association between cyber-ostracism and depression. This SPSS macro PROCESS (http://www.afhayes.com) suggested by Hayes (2013) is specially developed for testing complex models with bootstrapping techniques calculating confidence intervals, which has been widely used in recent studies.

### Table 1

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<th>Boys M</th>
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<td>Cyber-ostracism</td>
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<td>Cyber-ostracism</td>
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<td>in online group chat</td>
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<td>Cyber-ostracism</td>
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<td>Cyber-ostracism</td>
<td>1.78</td>
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<sup>* p < 0.05.  ** p < 0.01.</sup>
As hypothesized, the results showed cyber-ostracism was positively correlated with depression. This further indicated that, though adolescents' cyber-ostracism experience is not serious, and cyber-ostracism is more uncertain and ambiguous than ostracism in real life (Mattila et al., 2012; Williams et al., 2002), it is still a negative interpersonal experience as the ostracism individuals encountered with in real life in (Filipkowski & Smyth, 2012; Kassner et al., 2012; Williams et al., 2002). In addition, the basic need for belonging and social connection play important roles for individuals' health and well-being, while ostracism endangers individuals' sense of belonging, self-esteem, and a greater increase in heart rate and skin conductivity (Coyne, Nelson, Robinson, & Gundersen, 2011). Thus, encountering ostracism on Internet could bring negative effects on individuals (Tobin et al., 2014; Williams et al., 2000; Williams et al., 2002), and these effects are even powerful (Filipkowski & Smyth, 2012; Kassner et al., 2012). So, cyber-ostracism was positively associated with depression.

Then, as relevant research on optimism showed, the results further found that optimism was negatively correlated with depression (Daukantasaité & Zaukauskienė, 2012). Further analysis showed that, optimism played a moderating role in the association between cyber-ostracism and depression, and this association was only significant for the group with low level of optimism. This finding also suits for the Diathesis-stress Model, which proposed that individuals with different personal traits or diathesis would not be equally influenced by the similar stress or negative experience, it is the dynamics of individual-context interactions that account for depression (Monroe & Simons, 1991). As a positive personal trait, being optimistic is often associated with a preferred outcome despite stressful circumstances (Carver et al., 2010), and it might serve as a protective factor to reduce the potential risk of negative or stressful experiences (Hirsch et al., 2014; Tucker et al., 2013). Though ostracism is a painful and distressful experience in daily life, optimistic individuals would look forward to a positive outcome, and look for some positive interpretations when encountered with negative situations. They also preferentially use more positive (e.g. problem-solving coping) coping strategies (Nes & Segerstrom, 2006). Thus, optimism could moderate the relationship between cyber-ostracism and depression.

This research investigated the association between cyber-ostracism and depression among adolescents, as well as the moderating effect of optimism between them. The results indicated that, cyber-ostracism is a painful and distressful experience, with a powerfully negative effect on individuals, while optimism could release the negative effect of cyber-ostracism.

### 4.3. Limitations and implications

The findings of the current study must be considered in the light of several limitations. First, this study used cross-sectional data. Longitudinal data from different sources would provide a more comprehensive understanding on the relations among cyber-ostracism, optimism and depression. Additionally, this study only investigates the association between cyber-ostracism and depression, without taking individuals' ostracism in real life into account. Further studies should investigate the relationship between cyber-ostracism and ostracism in real life, and their interaction on individuals' well-being.

Despite these limitations, this research not only deepens our understanding on adolescents' cyber-ostracism, but also contributes to the
prevention and intervention for adolescents’ depression. Firstly, it further suggests cyber-ostracism is a negative interpersonal experience as ostracism in real life, with a powerfully negative effect on individuals. Therefore, if individuals who are ostracized chronically in their real lives also experience ostracism online, then they may lose their last vestiges of social interaction and develop severe physical and psychological problems, and it might be important to encourage educators and parents to pay more attention to these adolescents. Then, taking the buffering effect of optimism into consideration, and that optimism can be improved with proper interventions such as (Liitmanovadia & Nir, 2013; Susan & Myrim, 2014), it is important to conduct such intervention strategies as “shift-and-persis”, which aims to reconstruct or improve individuals’ optimism, to enhance individuals’ well-being, especially for those who were ostracized online.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.paid.2017.10.032.

References


