

Reactions to Teasing and Their Relationship with Adolescent Mental Health

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The aim of this study is to investigate the mediation effect of reactions to teasing on the relationship between teasing and in adolescent mental health. A standardized, pilot-tested survey was administered to a stratified, multistage, random sample ($n = 1579$) of Taiwanese 7-9 graders in 2007. Structural equation modeling (SEM) was used to investigate the mediation effect of reactions to teasing and their impact on mental health. Results of factor analysis indicated that reactions to teasing could be divided into feel-threatened reactions and non-defensive reactions. The results of SEM indicated that reactions to teasing mediated the relationship between experiences of being teased and mental health. Adolescents who had feel-threatened reactions to teasing are more likely to report poor mental health.

KEY WORDS: adolescents' mental health, teasing, reactions

Teasing has been defined as a specific form of bullying (Boulton & Hawker, 1997; Roth, Coles, & Heimberg, 2002); an aggressive verbalization that occurs during certain playful situations (Alberts, 1992; Kowalski, 2004; Shapiro, Baumesiter, & Kessler, 1991). It is also recognized as an annoying or irritating activity that allows unpleasant qualities to be treated lightly (Pawluk, 1989). In a review article, Keltner, Capps, Kring, Young and Heerey (2001) defined teasing as an intentional provocation accompanied by playful off-record markers that together comment on something relevant to the target.

In adolescence, some degree of teasing is a normal part of development; however, chronic teasing can be harmful to young people's psychosocial health and general well-being (Hayden-Wade, Stein, Ghaderi, Saelens, Zabinski, & Wilfley, 2005). Being teased about physical appearance is significantly associated with increased loneliness and decreased participation in social activities in 10 to 14 year old

children (Storch, Roth, Coles, Heimberg, Bravata, & Moser, 2004). Teasing about academic grades, performance, social skills, family background, and appearance have all been associated with increased depressive symptoms, anxiety, fear of negative evaluation and loneliness (Jones, Newman & Bautista, 2005; Roth et al., 2002). Teasing is also associated with bulimic behaviors in over-weight children (Storch et al., 2004). Although much research has reported negative health effects from hostile teasing experiences in adolescence, few studies have elucidated the mechanisms through which teasing affects health.

Reactions to teasing are one possible intermediate factor through which teasing experiences could influence mental health. Although many people have similar teasing experiences, their reactions to such teasing are often different. Some people respond neutrally or even positively to being teased, whereas others respond negatively by withdrawing or seeking retribution (Kowalski, 2004). Victims' reactions to being teased can be related to their relationship with the perpetrator, earlier personal experiences with teasing, personality traits, what they are being teased about, age, and especially gender (Kowalski, 2000; Lindeman, Harakka, & Keltijangas, 1997). Some research (Jones et al., 2005; Kowalski, 2004; Lightner, Bollmer, Harris, Milich, & Scambler, 2000; Lindeman et al., 1997) has indicated that girls are more likely to be negatively affected by teasing than boys and are more likely to respond with withdrawal.

To cope with teasing experiences, choosing different reactions may result in different health outcomes. Referring to the transactional model of stress and coping (Lerman & Glanz, 1996), the teasing event can be considered as a stressor and the reactions to teasing as the coping strategies. The perpetrator (source of stress) can be influenced by the target's reactions (coping strategies) which then affect the ensuing interaction between them (Kowalski, 2004; Lindeman et al., 1997). Reacting positively would not be detrimental to health status due to easing of the stressful situation by interpersonal communication (Kowalski, 2004). In contrast, reacting negatively or with hostility may lead to a vicious circle of more negative interactions and resulting deterioration of the victim's health status (Kowalski, 2004).

This study aims to investigate the relationship between experiences of being teased, reactions to teasing and mental health using structural equation modeling. We hypothesized that reactions to teasing would act as mediators between teasing experiences and mental health.

Method

Participants

Study participants were junior high school students who participated in the "Taiwan Adolescent Humor and Health Project" (TAHHP) in 2007. To recruit a representative sample of school-attending adolescents, a stratified, two-staged, cluster sampling procedure was used. A list of schools obtained from the Ministry of Education was divided into four geographic areas (northern, central, southern and eastern). In the first stage, schools within each area were ranked according to the number of enrolled students, and 5 schools were selected using a systematic sampling method. In the second stage, one class from each grade (three grades at each school) within the sampled school was randomly selected, and all of the students in the selected class were given a consent form. A total of 1913 students (7-9 graders, 13-15 years old) were invited to participate from 60 selected classes. After excluding those who did not return informed consent, 1638 (85.6%) students completed the questionnaire.

For the present study, participants with missing data on teasing experiences, reactions to teasing or mental health were excluded. Of the 1579 students with complete data (51.92% boys, 48.08% girls), 92 (5.8%) students reported that they had never experienced any form of teasing throughout their childhood and were therefore excluded due to their lack of possibility of having reactions to teasing. This left a remaining 1487 participants to be included in subsequent analyses, including exploratory factor analysis (EFA), confirmatory factor analysis (CFA), and structural equation modeling (SEM).

Measures

A self-report questionnaire, the 'Taiwan Adolescent Humor Scale' (TAHS), was developed to measure adolescents' life experiences. Data was collected on experiences of humor, teasing experiences, health status, and demographic variables. Critical evaluation of the questionnaire was carried out by a panel of experts, including a child psychologist, an educationalist, and two behavioral scientists. A pilot study was then carried out on 831 7-9 grade students (mean age is 14.4) in 4 junior high schools. Detailed information about the development of the instrument has been reported elsewhere (Chiang, Yen, Wu, Chiu, Cheng, & Sheng, 2011). The specific questions about teasing experiences, reactions to teasing and mental health indicators are provided in Appendix 1.

Teasing experiences

Very few instruments have been designed to measure adolescent teasing experiences. Vessey and colleagues developed a scale (Physical Appearance Related Teasing Scale-Revised, PARTS-R) to evaluate experiences of teasing about physical appearance in school-age youth (Vessey, Duffy, O'Sullivan, Swanson, 2003). The Perception of Teasing Scale (POTS) (Hayden-Wade et al., 2005) was revised and extended from the PARTS to measure weight related and competence related teasing. These instruments focus on the topics or contents of teasing which are often too numerous to be measured comprehensively unless a large number of items are used (Vessey, Horowitz, Carlson, & Duffy, 2008; Horowitz, et al., 2004). Thus, this study adopted a teasing scale which focused on the hostile ways in which the teaser treats the victim rather than the topics of teasing.

An instrument was developed by the project team to measure adolescents' hostile teasing experiences based on the literature (Hayden-Wade et al., 2005; Roth, Coles, & Heimberg, 2002; Storch et al., 2004; Thompson, Cattarin, Fowler, & Fisher, 1995; Vessey, Horowitz, Carlson, & Duffy, 2008; Muris & Little, 2005). In addition to a literature review, the research team also conducted four focus group sessions for boys and girls (32 boys and 32 girls) to understand teasing experiences from an adolescent's point of view.

The instrument contained five items about the frequency of being teased. Participants were asked whether they had ever experienced the following: being made fun of, being bad-mouthed, having their behavior or expressions imitated, being criticized or belittled, and being teased about past hurts. The internal consistency (Cronbach's alpha) of the scale was .79 and indicated good reliability. Exploratory factor analysis (EFA) indicated that these five items could be explained by one latent factor which accounted for 55% of the variance. We then used confirmatory factor analysis (CFA) to validate the latent structure and found that the model had a good fit (RMSEA = .0799, CFI = .973, GFI = .994). A five point scale (never, a few times, sometimes, often and always) was used to measure the frequency of being teased.

Reactions to teasing

The constructs of reactions to teasing are not consistent in previous research. One preliminary study showed that adolescents respond with a range of reactions including aggression, prosociality (non-defensively) and withdrawal when confronted with conflict situations (Georges, Harris, Milich, & Young, 1999). Meanwhile, Scambler, Harris and Milich (1998) demonstrated a range of reactions to teasing in elementary students (8 to 11 years-old) in a series of experiments. The reactions included totally ignoring the teasing, asking for empathy, responding by joking, or responding with hostility. Kowalski (2004) pointed out in his review article that if the target perceives teasing non-defensively or well intentioned, then he or she will experience positive effect, and may laugh or even join in. However, if the teasing is perceived as threatening, then the target will experience negative affect, and his or her reactions can include anger, embarrassment, seeking revenge, and retaliation.

The instrument for measuring adolescents' reactions to teasing was developed using the same procedure as that for measuring teasing experiences. Seven reactions to teasing were extracted from the focus groups and literature review (Georges, Harris, Milich, & Young, 1999; Kowalski, 2004; Scambler, Harris, & Milich, 1998). They were revised into seven quantitative items and measured using a five-point scale. Participants were asked about how they react when they are the target of teasing. These reactions included getting annoyed, feeling hurt, feeling ashamed, getting angry and fighting back, stopping the teaser, laughing along with the teaser and feeling nothing. The recall period was not defined for measuring general reactions in the adolescents' lifetime.

EFA with oblimin rotation (eigenvalues greater than 1.0) demonstrated that two latent factors could be extracted from the reaction items. Referring to the literature (Kowalski, 2004), we named the latent factors as feel-threatened reactions and non-defensive reactions (Table 1). The feel-threatened reactions included getting annoyed, feeling hurt, feeling ashamed, getting angry or fighting back, and stopping the teaser. The non-defensive reactions included laughing along with the teaser and feeling nothing. These two latent factors explained 58.2% of the variance. CFA confirmed the latent structure of the reactions to teasing (RMSEA = .061, CFI = .957, GFI = .993). The Cronbach's alpha for feel-threatened reactions was .75. Since there were only two items classified as non-defensive reactions, a Cronbach's alpha was not estimated for this sub-concept. In addition, the latent structure of two factors for reactions to teasing remained after conducting EFA for boys and girls separately and did not show any obvious difference.

Procedures

Data were collected in classrooms during regular class sessions. A trained interviewer was arranged to distribute the questionnaires, answer any questions, and maintain order within the classroom. Students completed the paper-pencil questionnaire by themselves within 45 minutes and received a little gift as a reward. The project was approved by the Institutional Review Board of the College of Public Health, National Taiwan University.

Table 1. Factor structure of reactions to teasing among adolescents in Taiwan

Reactions to teasing	Whole Sample		Boys		Girls	
	Factor 1 Feel-threatened reactions	Factor 2 Non-defensive reactions	Factor 1 Feel-threatened reactions	Factor 2 Non-defensive reactions	Factor 1 Feel-threatened reactions	Factor 2 Non-defensive reactions
27. Got annoyed	0.738	-0.138	0.743	-0.127	0.731	-0.153
19. Felt hurt	0.734	-0.143	0.751	-0.085	0.734	-0.188
18. Got angry or fought back	0.723	0.012	0.749	0.002	0.703	-0.001
20. Felt ashamed	0.721	-0.075	0.745	0.006	0.691	-0.148
11. Made the teaser stop	0.603	0.205	0.593	0.126	0.621	0.308
13. Laughed along with the teaser	0.053	0.879	0.042	0.870	0.035	0.884
12. Felt nothing	-0.124	0.796	-0.061	0.833	-0.232	0.726
Accumulated explained variance (%)	39.82	58.16	39.18	58.71	41.50	58.46

Note: The inter-factor correlation of the two factors was -.192 for the whole sample, -.162 for boys and -.205 for girls.

Analysis

Statistical analyses were carried out using SAS (9.1 version) and LISREL (8.5 version). Frequency distributions were used to describe teasing experiences and reactions to teasing. The Chi-squared test and t-test were used to examine gender differences. Structural equation modeling was used to investigate the mediation effect of reactions to being teased on the relationship between teasing experiences and mental health. We used a polychoric and polyserial correlations matrix as the input and the weighted least squares estimation method to estimate the parameters (Jöreskog, 1990). Gender differences were also analyzed by SEM after dividing the sample into boys and girls. Comparative model fit indices such as the Comparative Fit Index (CFI), Non-Normal Fit Index (NNFI), and Incremental Fit Index (IFI) indicate a good fit to the data when values exceed .9 (Bentler, 1990; Bentler & Bonett, 1980; Hu & Bentler, 1999). The absolute fit index, the Root Mean Squared Error of Approximation (RMSEA), was below .05, and the Goodness-of-Fit Index (GFI) and the Adjusted Goodness-of-Fit Index (AGFI) were both above .9, indicating a very good fit to the data (Steiger, 1990). In addition, χ^2/df ratios between 2 and 5 also indicated a good fit to the data. Kelloway has pointed out that interpretative standards for χ^2/df ratios have very little justification other than a modeler's experience, and as a result, this index can be taken into consideration when assessing model fit but should not be used as a strict criterion for establishing model fit (Kelloway, 1998).

Model specification

Based on the literature review and transactional model of stress and coping (Lerman & Glanz, 1996), we proposed a hypothesized structural model (Figure 1) where the adolescent's experiences of being teased would be directly related to their reactions to teasing, including non-defensive reactions and feel-threatened reactions, and mental health indicators. In addition, non-defensive reactions to teasing would not negatively impact mental health indicators while feel-threatened reactions would. We controlled for correlations among somatic symptoms, depressive symptoms and social anxiety.

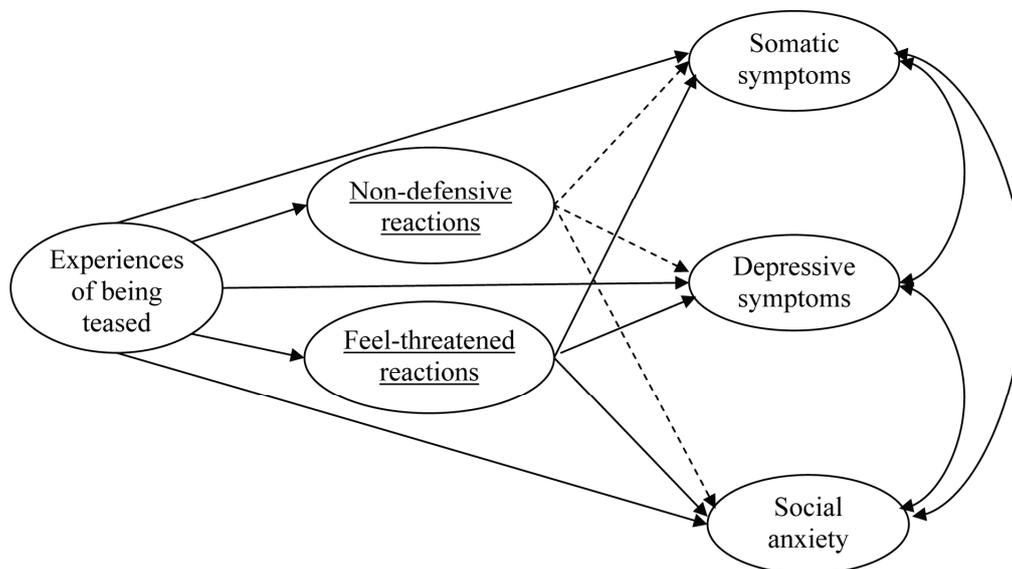


Figure 1. The hypothesized model of the relationships among adolescents' experiences of being teased, non-defensive reactions, feel-threatened reactions and mental health indicators.

Note: Dashed lines indicate non-significant or negative associations. Solid lines indicate positive associations.

Results

Table 2 shows the distribution of adolescents' experiences of being teased in Taiwan. The prevalence rates of teasing were estimated by summing the proportion of those experiencing a particular teasing experience 'often' or 'always'. The most frequently reported experience of being teased was imitation of behavior and facial expressions (15.3%), followed by being made fun of (14.6%), being bad-mouthed (9.0%), being criticized or belittled (8.0%), and finally being teased about past hurts (5.4%).

The distribution of reactions to teasing is also shown in table 2. The majority of adolescents (42.0%) reported that they often or always made the teaser stop when they had gone too far. The second most common reaction was getting annoyed (25.2%), followed by laughing along with the teaser (24.6%), feeling hurt (23.9%), getting angry and fighting back (21.4%), feeling nothing (13.4%), and finally feeling ashamed (12.8%).

Table 2. Percentages of teasing experiences and reactions to teasing (N = 1487)

(%)	Never	A few times	Sometimes	Often	Always	Often & always
Experiences of being teased						
1. Made fun of	10.0	40.4	34.9	10.4	4.2	14.6
2. Bad-mouthed	22.0	45.5	23.5	6.3	2.7	9.0
3. Imitation of behavior/expressions	13.7	35.6	35.4	10.9	4.4	15.3
4. Criticized/belittled	27.2	47.3	17.6	5.5	2.5	8.0
5. Teased about past hurts	40.0	41.1	13.6	3.8	1.6	5.4
Reactions to teasing						
11. Made the teaser stop	7.6	18.6	31.8	21.6	20.4	42.0
12. Felt nothing	27.7	35.1	23.8	7.5	5.9	13.4
13. Laughed along with the teaser	13.7	28.0	33.8	14.9	9.7	24.6
18. Got angry or fought back	17.5	32.3	28.9	12.6	8.8	21.4
19. Felt hurt	15.8	31.9	28.5	13.6	10.3	23.9
20. Felt ashamed	19.9	39.3	28.0	7.1	5.7	12.8
27. Got annoyed	13.1	33.0	28.7	12.8	12.4	25.2

Note: The students who reported that they had never been teased (55 boys and 37 girls) were excluded.

Due to the sampling procedure, participants were equally distributed in terms of grade at school and geographical area (Table 3). The distributions of teasing experiences, reactions to teasing and mental health indicators were not significantly different among grades or areas. The average score for mental health indicators was statistically significantly higher in girls than in boys although the difference between them was actually small.

The estimated SEM regression coefficients for the relationships among experiences of being teased, non-defensive and feel-threatened reactions to teasing and the three mental health indicators are shown in figure 2. The correlation matrix of the subscales is shown in Appendix 2. The goodness of fit indices indicated that the model described the relationships adequately ($\chi^2/df = 4.04$, RMSEA = .0452, NNFI = .951, CFI = .955, IFI = .96, GFI = .976, and AGFI = .972). The model explained 16.5% of the variance in somatic symptoms, 19.8% of depressive symptoms, 23.3% of social anxiety, 3.9% of non-defensive reactions, and 11.1% of feel-threatened reactions.

Because the results of bivariate analysis showed strong associations between sex and mental health indicators (Table 3), we constructed a model including the associations between sex and the three mental health indicators as shown in Figure 3. The goodness of fit indices for this model were not dramatically different from the indices of the model shown in figure 2 ($\chi^2/df = 4.66$, RMSEA = .0496, NNFI = .944, CFI = .949, IFI = .949, GFI = .973, and AGFI = .968). However, including sex in the model greatly increased the explained variance of mental health indicators (33.7% of the variance in somatic symptoms, 28.2% of depressive symptoms, and 29.2% of social anxiety), moderately increased the explained

variance of feel-threatened reactions (12.0%), and hardly changed the explained variance of non-defensive reactions (3.7%).

The direct effect of teasing experiences was significantly related to the three mental health indicators (.3 for somatic symptoms, .32 for depressive symptoms and .30 for social anxiety) (Figure 3 and Table 4). The indirect effects of teasing experiences via feel-threatened reactions were positively associated with somatic symptoms ($.35 * .20 = .07$), depressive symptoms ($.35 * .22 = .077$) and social anxiety ($.35 * .29 = .1015$). In contrast, non-defensive reactions were negatively associated with social anxiety, but were not significantly related to somatic symptoms or depressive symptoms. The indirect effects of teasing experiences via non-defensive reactions to the three mental health indicators (somatic symptoms: $.19 * -.03 = -.0057$, depressive symptoms: $.19 * -.04 = -.0076$, social anxiety: $.19 * -.08 = -.0152$) were smaller than those via feel-threatened reactions.

The association between experiences of being teased and non-defensive reactions was smaller than the association between experiences of being teased and feel-threatened reactions (Figure 3 and Table 4), which indicates that feel-threatened reactions to teasing were more frequent than non-defensive reactions. Feel-threatened reactions had positive associations with all of the three mental health problem indicators (.20, .22, .29). In contrast, non-defensive reactions were negatively associated with social anxiety (-.08), and had no statistically significant association with somatic symptoms or depressive symptoms. In other words, Feel-threatened reactions had a greater negative impact on mental health outcomes than non-defensive reactions. This supports the mediatory effect of reactions to teasing on the relationship between teasing and mental health.

Table 3. Demographic characteristics and their associations with teasing experiences and mental health indicators in adolescent participants

	[Score range]	Experiences of being teased		Reactions			Mental health indicators										
		[5-25]		Non-defensive		Feel-threatened		Somatic symptoms		Depressive symptoms		Social anxiety					
		n	(%)	Mean	(SD)	Item mean	Mean	(SD)	Item mean	Mean	(SD)	Item mean	Mean	(SD)	Item Mean	(SD)	
Grade																	
seventh	437	(29.39)	11.13	(3.43)	2.23	(2.05)	2.44	(4.47)	2.81	11.44	(4.27)	1.63	16.60	(7.03)	2.08	13.59	(6.34)
eighth	519	(34.90)	11.43	(3.51)	2.29	(1.90)	2.58	(4.00)	2.77	11.75	(4.59)	1.68	16.39	(6.59)	2.05	13.62	(5.95)
ninth	531	(35.71)	11.36	(3.48)	2.27	(1.91)	2.58	(3.94)	2.71	12.06	(4.23)	1.72	16.83	(6.14)	2.10	14.25	(5.60)
F-value			0.94				3.09		1.88	2.46			0.57		2.02		
Area																	
northern	352	(23.67)	11.51	(3.70)	2.30	(1.95)	2.48	(4.21)	2.82	11.80	(4.56)	1.69	16.94	(6.93)	2.12	13.97	(6.21)
middle	405	(27.24)	11.22	(3.43)	2.24	(1.92)	2.55	(4.22)	2.74	11.94	(4.57)	1.71	16.57	(6.48)	2.07	13.67	(5.91)
southern	384	(25.82)	11.18	(3.12)	2.24	(1.89)	2.59	(3.89)	2.75	11.74	(4.24)	1.68	16.39	(6.53)	2.05	14.19	(5.87)
eastern	346	(23.27)	11.40	(3.65)	2.28	(2.05)	2.53	(4.18)	2.73	11.56	(4.10)	1.65	16.57	(6.34)	2.07	13.51	(5.82)
F-value			0.70				0.90		0.89	0.48			0.45		0.95		
Sex																	
boys	772	(51.92)	11.42	(3.56)	2.28	(1.96)	2.55	(4.21)	2.73	10.90	(3.90)	1.56	15.44	(5.99)	1.93	13.11	(5.72)
girls	715	(48.08)	11.21	(3.38)	2.24	(1.95)	2.53	(4.03)	2.79	12.70	(4.65)	1.81	17.87	(6.93)	2.23	14.62	(6.10)
t-value			1.13				0.53		-1.38	-8.11	***	***	-7.24	***	***	-4.92	***

*** $p < .001$

Please refer to Appendix 1.

The total score for teasing experiences is the sum of the scores for 5 items.

The total score for non-defensive reactions is the sum of the scores for 2 items.

The total score for feel-threatened reactions is the sum of the scores for 5 items.

The total score for somatic symptoms is the sum of the scores for 7 items.

The total score for depressive symptoms is the sum of the scores for 8 items.

The total score for social anxiety is the sum of the scores for 6 items.

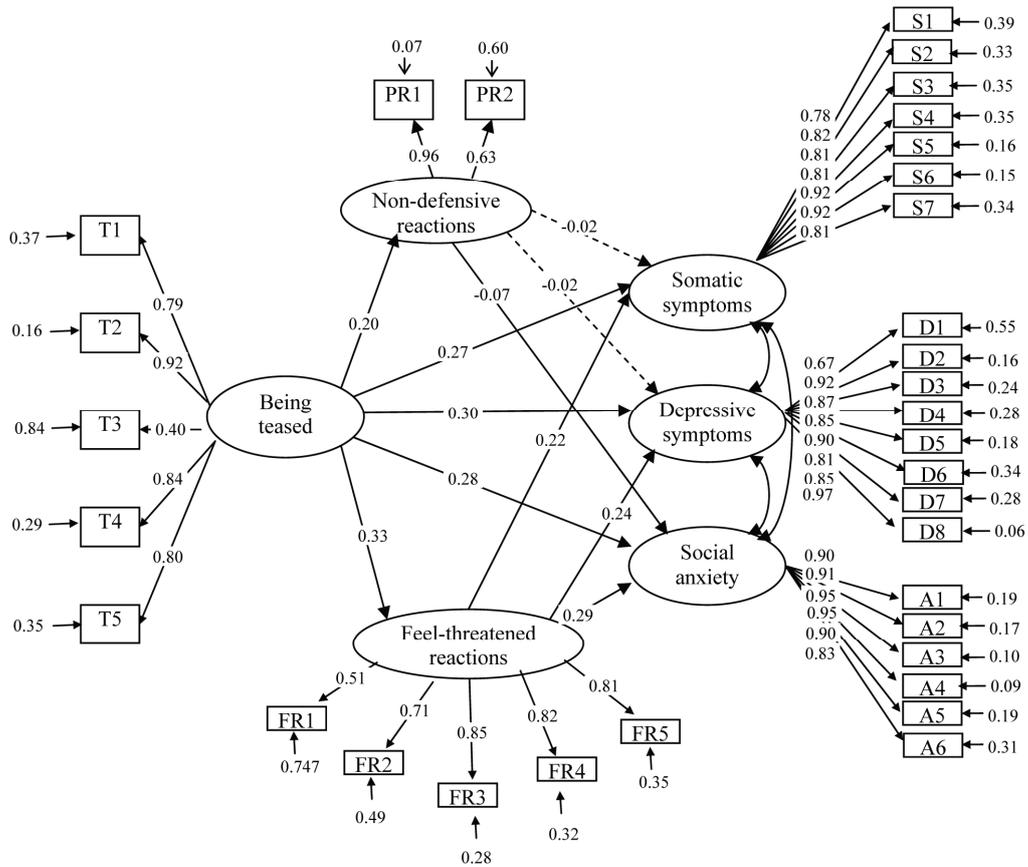


Figure 2. The standardized coefficients for relationships among adolescents' experiences of being teased, non-defensive and feel-threatened reactions to teasing, and the three health indicators.

Note 1. Solid line denotes a significant relationship ($p < .05$) and dashed line is a non-significant relationship.

Note 2. Please refer to appendix 1 for more detailed information on indicators

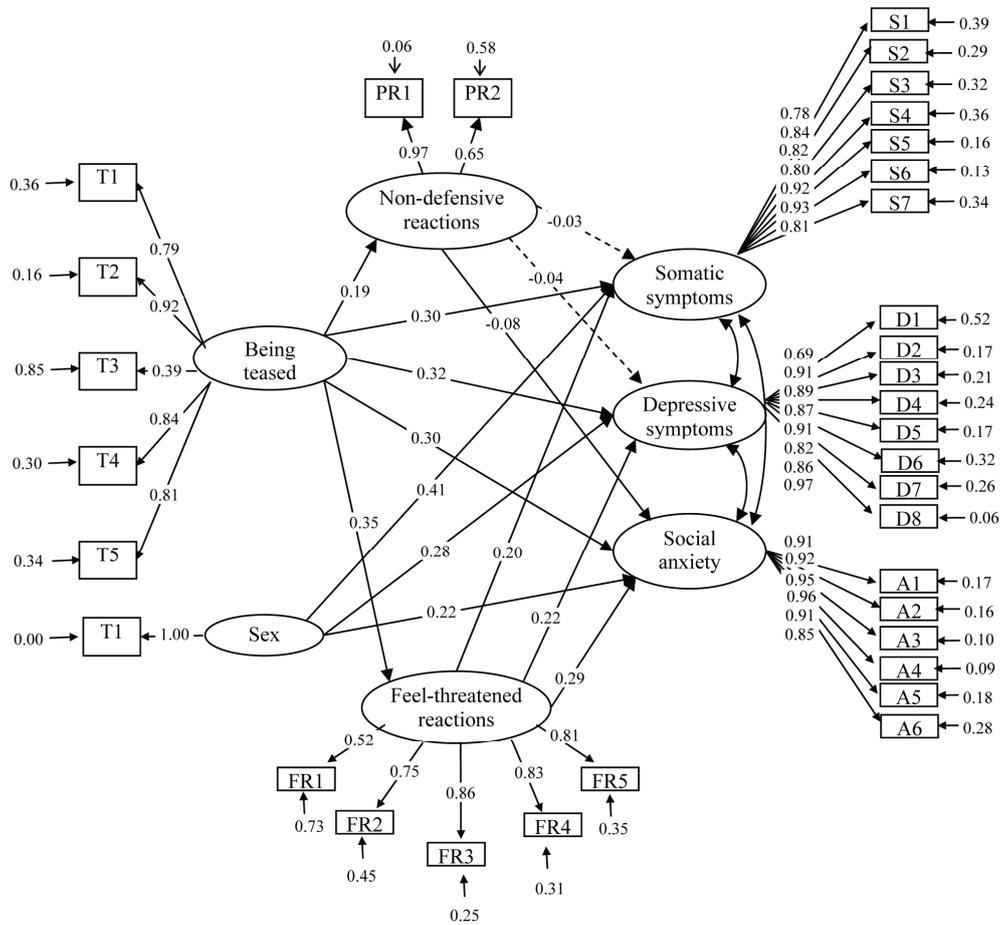


Figure 3. The standardized coefficients for relationships among adolescents' experiences of being teased, non-defensive and feel-threatened reactions to teasing, and the three mental health indicators whilst controlling for sex.

Note 1. Solid line denotes a significant relationship ($p < .05$) and dashed line is a non-significant relationship.

Note 2. Please refer to appendix 1 for more detailed information on indicators.

Table 4. Direct and indirect effects of non-defensive reactions and feel-threatened reactions on somatic symptoms, depressive symptoms, and social anxiety

	Non-defensive reactions			Feel-threatened reactions			Somatic symptoms			Depressive symptoms			Social anxiety		
	DE	IE	TE	DE	IE	TE	DE	IE (%)	TE	DE	IE (%)	TE	DE	IE (%)	TE
Experiences of being teased	0.191*	-	0.191*	0.347*	-	0.347*	0.295*	0.064* (17.4%)	0.362*	0.322*	0.069* (17.3%)	0.411*	0.296*	0.086* (21.9%)	0.392*
Non-defensive reactions	-	-	-	-	-	-	-0.032	-	-0.032	-0.039	-	-0.039	-0.083*	-	-0.083*
Feel-threatened reactions	-	-	-	-	-	-	0.197*	-	0.197*	0.215*	-	0.241*	0.286*	-	0.286*
Sex	-	-	-	-	-	-	0.410*	-	0.410*	0.284*	-	0.284*	0.217*	-	0.217*
R ²	0.037			0.120			0.296			0.232			0.191		

DE: direct effect, IE: indirect effect, TE: total effect (DE+IE), %: proportion of indirect effect (IE/TE)

* $p < .05$

Discussion

Our results demonstrate that the first and second most frequently experienced teasing events are being imitated and made fun of. In addition, stopping the teaser is the most frequently used reaction to being teased. The reactions to teasing can be divided into non-defensive and feel-threatened reactions. Our findings support the hypothesis that reactions to teasing act as mediators between teasing experiences and mental health.

Teasing experiences

There are two main types of instruments that measure teasing experiences. The first type are instruments that focus on the content of teasing such as asking those experiencing teasing if they have been teased about their weight, appearance, competence, family background and sporting ability (Gleason, Alexander, & Somers, 2000; Jensen & Stelle, 2012; Vessey, DiFazio, & Strout, 2012). The other type of instrument asks victims of teasing if they have experienced certain types of teasing such as being made fun of, being the butt of jokes, and being called nasty or mean names (Jensen, Cushing, & Elledge, 2013; Vessey, Duffy, O'Sullivan, & Swanson, 2003). Regardless of which type of measurement instrument is used, studies have found that the greater the teasing experiences the greater the psychological harm. In this study we used the second type of measurement instrument and our findings agree with those of past research in that increased teasing experiences were associated with greater somatic symptoms, depressive symptoms and social anxiety.

We found that the most common teasing experiences in junior high school students were imitation of behavior/expressions (15.3%) and being made fun of (14.6%). This could be the result of the influence of television programs. According to a report by the Child Welfare League Foundation (2012), junior high school students in Taiwan most frequently watch variety shows (63.5%) which commonly include content involving the imitation of the behavior/expressions of others or giving others a hard time (Chen, 2003). This could explain why these students are more likely to use imitation of behavior/expressions and making fun of others when they are teasing others as opposed to other styles of teasing.

Reactions to teasing

We named the two latent factors of reactions to teasing as non-defensive and feel-threatened according to the review by Kowalski (2004). Our results support his argument that reactions to teasing are derived from two major sources. One source is that the victim perceives or interprets the teasing in a non-defensive or well-intentioned manner. As a result, he/she will laugh or even join in with the teasing, in other words displaying non-defensive reactions. In the other approach, the victim perceives the teasing as identity threatening or face losing. As a result, he/she will experience negative emotions or try to fight back, in other words displaying feel-threatened reactions.

Past research on types of reactions to teasing

Past research on reactions to teasing has grouped these reactions as either affective or emotional responses, or behavioral reactions (Barnett, Barlett, Livengood, Murphy, & Brewton, 2010; Kowalski, 2004). Affective or emotional responses include anger, humiliation, embarrassment, fear, hurt, happiness, and sadness (Barnett et al., 2010; Kowalski, 2004). Behavioral reactions include retaliation, doing nothing, forgiving the teaser, demanding an apology, and reproaching the teaser. Barnett et al. (2010) used factor analysis to group 10 behavioral reactions as act friendly, avoid, complain or retaliate. However, under normal circumstances when responding to teasing behavioral reactions and emotional responses often occur together. Therefore, we did not carry out our analysis in the present study based on

the above categories but rather used focus groups to collect student reactions that were then grouped accordingly.

Past measurement instruments

Past research has tended to measure reactions to teasing based on particular situations. These studies frequently use two methods for the setting the circumstances in which teasing takes place: one approach is to show students short films and then ask them to evaluate the reactions to teasing they observe (Georgeson, Harris, Milich, & Young, 1999; Jones, Newman, & Bautista, 2005; Lightner, Bollmer, Harris, Milich, & Scambler, 2000; Scambler, Harris, & Milich, 1998); a second approach is to use text to describe a particular situation and ask participants what they would feel if they were in the same situation (Barnett, Barlett, Livengood, Murphy, & Brewton, 2010; Nowakowski & Antony, 2013; Platt, 2008). However, these types of measurement approaches do not measure the actual reactions of respondents to their usual experiences of teasing. Rather they are measuring the chosen reactions to hypothetical situations. In addition, for studies that use filmed examples of reactions to teasing as a research tool, each respondent will only watch specific teasing responses and may not observe all kinds of responses and different results could be obtained if all types of responses were observed (Scambler, Harris, & Milich, 1998). In the present study, we did not provide pre-specified circumstances as part of our measurement instrument but rather asked participants to answer based on the types of reactions to teasing they had used during past experiences of teasing. This could have resulted in a different frequency of observed reactions to teasing and may also be a better reflection of reality.

Reactions acted as a mediator between teasing and mental health

Previous studies have shown that teasing experiences are positively related to victims' development of depressive symptoms and anxiety (Hayden-Wade et al., 2005; Jones et al., 2005; Roth et al., 2002; Storch et al., 2004). However, none of these past studies have examined the mechanisms through which teasing experiences impact on mental health. Based on the transactional model of stress and coping (Lerman & Glanz, 1996), we proposed that reactions to teasing would act as a mediator between experiences of being teased and mental health indicators. The present study is the first to extend our knowledge about the role that reactions to teasing play in the association between teasing and mental health. The proportion of variance explained by the mediation effects of reactions to teasing ranged from 17% to 22% (Table 4).

Adolescents who displayed feel-threatened reactions to teasing were more likely to report somatic symptoms, depressive symptoms and social anxiety. Adolescents who displayed non-defensive reactions to teasing were less likely to report social anxiety. The results suggest that these different reactions can result in different mental health consequences. Reactions to teasing can be considered as a coping skill, and the targets can choose to react positively by laughing, downplaying the situation or feeling nothing which in turn defuses the teaser's hyper emotional state. They can act as if they are not disturbed by the teasing event, letting the teaser know that the taunting strategy does not work for them. The choices that the victim makes can be associated with his/her mental health.

In this study, we found that non-defensive reactions were negatively associated with social anxiety and not associated with somatic symptoms and depressive symptoms. Nevertheless, feel-threatened reactions were positively associated with the three mental health indicators. This finding is consistent with Kowalski's (2000 & 2004) argument that non-defensive reactions (ignore or feel nothing) can act as protective factors against deterioration in mental health, while feel-threatened reactions can worsen mental health.

Reactions to teasing as mediating factors vs moderating factors

It is possible that reactions to teasing may not just be mediating factors but could also be moderating factors. In other words, the relationship between teasing experiences and mental health indicators could also be moderated by the particular chosen reaction to teasing. As reactions to teasing is a continuous variable, we used linear regression with mental health indicators as the dependent variable and included the two types of reactions and teasing experiences as interactions and independent variables. This enabled us to test whether the two kinds of reactions were moderators of the relationship between teasing

experiences and mental health indicators. We found that none of the interactions were statistically significant and therefore we maintain our original hypothesis that reactions to teasing are mediating factors as opposed to moderating factors of the relationship between teasing experiences and mental health.

Gender differences

Although previous (Jones et al., 2005; Kowalski, 2004; Lindeman et al., 1997; Lightner et al., 2000) studies have indicated that girls react more negatively after being teased, in this study, we found no significant gender differences in teasing experiences and reactions. Jones and Newman (Jones et al., 2005) have stated that gender differences in teasing are related to the specific content of teasing. Teasing regarding appearance and academic competence in girls may violate gender stereotypes more than it does in boys, resulting in the girls' greater negative reactions. Thus, the inconsistent result for gender differences reported in this study could be due to the measurement of teasing experiences without a focus on the specific topics or contents of teasing.

It is also possible that sex could have moderating effects on the relationship between teasing and health. As a result, we used a multi-group comparison approach to explain the potential moderating effects of sex on model parameters. We found statistically significant moderating effects of sex on the relationship between teasing experiences and non-defensive reactions and the relationship between non-defensive reactions and three mental health indicators. However, as we consider that the moderating effects of sex is an important topic to explore further in future, in the present study we have focused on the mediating effects of reactions to teasing and left sex as simply a control variable.

Limitations

The cross-sectional nature of this study has limited our ability to make causal inferences. There is a possibility that adolescents with good mental health are more likely to react positively or non-defensively to teasing, and vice versa. However, we have tried to examine these relationships with SEM and the model did not converge. Future longitudinal research could further clarify the causal relationships among teasing, reactions to teasing and mental health.

Conclusion

The results of this study extend our understanding of the association between reactions to teasing and mental health in adolescence. Health professionals and educators should pay more attention to adolescent's reactions to teasing because of their association with mental health.

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Appendix 1. Question items for teasing experiences, reactions to teasing and mental health indicators

Questions	Scale
[Experiences of being teased]	
Have you ever experienced the following?	
T1. Been made fun of	1 = never
T2. Been bad-mouthed	2 = a few times
T3. Had your behavior or facial expressions imitated	3 = sometimes
T4. Been criticized or belittled	4 = often
T5. Been teased about past hurts	5 = always
[Reactions to Teasing]	
When you were teased by others, how did you react?	
PR1. I felt nothing	1 = never
PR2. I laughed along with them	2 = a few times
FR1. I made them stop if they went too far	3 = sometimes
FR2. I got angry or fought back	4 = often
FR3. I felt hurt	5 = always
FR4. I felt ashamed	
FR5. I got annoyed	
[Somatic Symptoms]	
Have you experienced these symptoms in the last month?	
S1. Headache	1 = never
S2. Stomachache	2 = a few times
S3. Diarrhea	3 = sometimes
S4. Vomiting	4 = often
S5. Palpitations	5 = almost every day
S6. Chest pain	
S7. Trembling or numbness	
[Depressive symptoms]	
The following questions are about your experiences in the past two weeks:	
D1. In the past two weeks, did you not feel like eating even your favorite food?	1 = never
D2. In the past two weeks, did you feel sad or were you in a bad mood?	2 = a few times
D3. In the past two weeks, did you feel like crying for no reason?	3 = sometimes
D4. In the past two weeks, did you find it difficult to carry out tasks?	4 = often
D5. In the past two weeks, did you feel very frightened?	5 = almost every day
D6. In the past two weeks, did you have trouble sleeping?	
D7. In the past two weeks, did you lack motivation to do things?	
D8. In the past two weeks, did you feel gloomy and unhappy?	
[Social Anxiety]	
Did you experience any of the following when you were interacting with others in the past two weeks?	
A1. I was afraid of making new friends.	1 = never
A2. I was worried that others might dislike me or say something bad behind my back.	2 = a few times
A3. I was afraid of performing or answering questions in front of a lot of people.	3 = sometimes
A4. I felt uncomfortable around strangers.	4 = often
A5. I felt nervous when I spoke to teachers.	5 = almost every day
A6. I felt anxious and uneasy at social gatherings (such as barbeques, birthday parties).	

Appendix 2. Intercorrelations of experiences of being teased, non-defensive reactions, feel-threatened reactions, somatic symptoms, depressive symptoms and social anxiety

	experiences of being teased	non-defensiv e reactions	feel-threatene d reactions	somatic symptoms	depressive symptoms	social anxiety
experiences of being teased	1.000					
non-defensive reactions	0.202***	1.000				
feel-threatened reactions	0.196***	-0.268***	1.000			
somatic symptoms	0.196***	-0.008	0.154***	1.000		
depressive symptoms	0.226***	-0.021	0.208***	0.545***	1.000	
social anxiety	0.234***	-0.060*	0.266***	0.520***	0.800***	1.000

*: $p < .05$; ***: $p < .0001$

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青少年對嘲笑經驗的反應及其與心理健康的關係*

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本研究之目的乃了解對嘲笑的反應在嘲笑經驗和青少年心理健康的關係中是否具有中介效果。本研究之資料來自於 2007 年時所進行的一項經由分層多階段抽樣之全國代表性調查，此調查之工具乃經由預試修正後發展而成，施測過程遵照標準化程序，最後共有 1,579 位七至九年級的國中生完成調查。本研究先運用因素分析來了解對嘲笑的反應之潛在因素，另外再運用結構方程模式來了解對嘲笑的反應在嘲笑經驗和心理健康的關係之間所扮演的中介角色。因素分析的結果發現被嘲笑的反應可以區分為兩個因素，即感覺威脅的反應和非攻擊式的反應。結構方程式的結果發現，對嘲笑的反應在嘲笑經驗和心理健康的關係之間具有中介效果。因此，本研究結論為，若青少年較容易對嘲笑感受到威脅的反應者，心理健康的情況較差。

關鍵詞：反應、青少年心理健康、嘲笑經驗

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