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The Relationships Between Children's Experience of Somatic Symptoms, Life Events, Depression, and Anxiety, and the Moderating Effect of Self-Concept

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The aims of this study were to examine the relationships between stressful life events, depression, anxiety, and children's somatic symptoms, and the moderating effect of self-concept. The measures used to assess these effects with a sample of 266 5th and 6th grade children, included Children's Somatization Inventory, Life events questionnaire, Children's Depression Inventory, Spielberger Trait Anxiety Inventory for Children, and Self-Perception Profile of Children. The results showed that anxiety, depression, and the experience of hospitalization predicted children's somatic symptoms significantly, with anxiety being the best predictor. Further analyses showed not only the significant main effect of anxiety, but also the significant interaction effects between anxiety and self-concept of physical competence and between anxiety and global self-worth. These results suggest that anxiety affects the experience of children's somatic symptoms and that self-concept moderates this process.

Keywords : children's somatization, life events, depression, anxiety, self-concept, self-concept of physical competence, global self-worth, moderating effect

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Recurrent complaints of medically unexplained physical symptoms are common in children, adolescents and adults (Campo & Fritsch, 1994; Garralda, 1992). In a general population survey of Ontario Child Health Study, recurrent distressing somatic symptoms were present in 10.7% of girls and 4.5% of boys aged 12 to 16 years (Offord, Boyle & Szatmari, 1987). In an American community sample, 1.1% endorsed the threshold of 13 symptoms for two weeks that is required for DSM-IV diagnosis of somatization disorder (Fritz, Fritsch, & Hagino, 1997; Garber, Walker, & Zeman, 1991). Headache, recurrent abdominal pain(RAP), limb pain, aching muscles, fatigue, back pain, and blurred vision are the most frequently reported somatic symptoms (Garber et al, 1991; Larson, 1991; Tamminen, Bredenberg, & Escartin, 1991). Due to such symptoms, maladjustment in school may arise. According to a recent study of South Korean elementary school children, 17% of 5th and 6th graders have difficulties in academic achievement and 5% in peer relationships due to somatic symptoms (Shin, 2003). Somatization disorder in children and adolescents is closely related to personality disorders as it has a persistent course, long duration, and adult counterpart (Bass & Murphy, 1995; Lieb, Zimmermann, Friis, Hofler, Tholen, & Wittchen, 2002). Given the need to understand the mechanisms of somatization for prevention and treatment, this paper examines the effects of several variables on the experience of somatic symptoms.

In order to understand the mechanisms leading to somatic symptoms in children and adolescents, the roles of stressful life-events, depression, anxiety, self-concept, sense of self-worth, family characteristics, social and cultural factors must be considered. One source of stress is related with familial characteristics (Livingston, 1993; Klevan & DeJong, 1990; Poikolainen, Kanerva, & Lonnquist, 1995). Somatizing children have been found to share similar physical symptoms with family members (Garber, Zeman, & Walker, 1990; Livingston, 1993; Walker, Garber, & Greene, 1991). The presence of family members with chronic physical illness may be associated with increased somatic symptoms in the children (Wasserman, Whitington, & Rivara, 1988; Zuckerman, Stevenson, & Bailey, 1987). In addition, parent's marital conflict, anxiety, and depression are more common in the families of somatizing children. Family members of subjects with somatization disorder had more illnesses, used illness for stress reduction, reported more substance abuse and legal difficulties, antisocial personality, and attention deficit hyperactivity disorder and appeared more dysfunctional than the control families (Livingston, 1993; Garber, Zeman, & Walker,

1990; DeGruy, Dickinson, & Dickinson, 1989). Another source of stress is related with school. Poor academic achievement and deficient peer relationships are important factors to understand somatization. Sources of stress among Korean elementary school children mainly include being bullied at school, being ignored by friends, failure in school examinations, and unfair treatment from teachers. Reactions to such sresses are not only emotional, such as depressive mood and anxiety, but also physical, such as headache, low energy, and weakness (Hong & Joo, 1998).

Recently, a study was conducted to examine the relationship between RAP and recent stressful life-events among school children aged from 9 to 15 in an urban setting in Malaysia (Boey & Goh, 2001). Six schools were selected at random and Life Events Questionnaires were administered to each child in the classroom, i.e., group administration. This was followed by one-to one interview with each of the 1,488 children in order to examine whether the RAP criteria were fulfilled. The results from this study showed a RAP prevalence of 9.6% and many affected children had experienced hospitalization themselves or of a family member, change in occupation of parent, failure in a major school examination, and bullying at school. However, a contrasting result has been reported in a study (Walker, Garber, & Greene, 1993) comparing children with RAP to controls with respect to life events, emotional and somatic complaints, family illness behavior, and functional disability. The subjects were patients who visited for evaluation of RAP to the pediatric clinics of Vandervilt University Medical Center. Children aged from 6 to 18 years, from 236 families, participated in the study. A trained interviewer read the measures to the children and parents completed their protocols in the waiting area or by mail. Mothers and children completed the RAP Frequency Rating and the Children's Somatization Inventory. The child-report Life Events Questionnaire and parent-report Family Inventory of Life Events were administered. When the RAP group (n=88) was compared with comparison group (n=56), children with RAP had significantly more emotional and somatic complaints with their families promoting illness behavior more than healthy controls. Nonetheless, no differences were found in the number of negative life events or levels of family functioning. Although the findings of the two researches differed due to cultural differences, sample characteristics, and research methods, somatization may be affected more by emotional problems such as anxiety and depression, than by negative life events. This has been further supported by high rates of anxiety and depression in both somatizing

children and their parents (Biedel, Christ, & Long, 1991; Garber et al., 1991; Kowal & Pritchard, 1990; Larson, 1991; Last, 1991; McCauley, Carlson, & Calderon, 1991).

In an investigation of the association between somatization and emotional problems, 600 10～12 year-old children and their mothers, residing in Kyiv, Ukraine, were interviewed by trained interviewers to obtain self-report measures. The subjects were 300 evacuees to Kyiv from radiation-exposed areas around the Chernobyl nuclear power plant and 300 gender-matched classmates. Children's Somatization Inventory score was significantly related to the children's self-reports of depressive and anxiety symptoms (Litcher, Bromet, Carlson, Gilbert, Panina, Golovakha, Goldgaver, Gluzman, & Garger, 2001). Children and adolescents usually experience emotional distress in the form of physical symptoms, with RAP and headache being the most common somatic complaints (Faull & Nicol, 1986; Garber et al., 1990).

The close relationship of somatization with anxiety and depression may be moderated by children's self-concept. Self-concept is related with children's mental health and successful adjustment, including relationship and academic achievement (Beth & Wolfgang, 1994; Damon & Hart, 1982; Frankel & Myatt, 1996; Neary & Joseph, 1994 Sim, 1997). Self-concept has been proven to be a multi - dimensional construct by theoretical and empirical studies (Byrne, 1984; Harter, 1982, 1983; Harter & Connell, 1984; Song, 1982).Six facets were suggested: global self-worth, cognitive competence, physical competence, social behavior, peer acceptance, and appearance (Harter, 1985). The suggestion that not only older children but also younger children have differentiation of specific facets of self-concept (Harter, 1982) was supported by a recent study (Marsh, Craven, & Debus, 1998).The researchers sampled 396 children, aged 5-8 years, in Sydney, Australia. Self-Differentiation Questionnaires were administered as an individual interview. The results showed a clearly differentiated factor structure for very young children. Based on this result, it is possible to use specific facets of self-concept in the sample of the present research.

Global self-worth has been defined as 'the extent to which one liked oneself as a person' (Harter, 1982, 1990). This is a very important concept in explaining stress or maladjustment. Emotional adjustment is directly affected by global self-worth which is consistently related with depression or anxiety (Chansky & Kendall, 1997; Harter & Connell, 1984; Marold, Harter, & Whitesell, 1993). As an example, a study investigating relationships between self-perception, depression and delinquent behaviors in 1,078 high school students, delinquent adolescents, and college

students in Korea showed that self-worth explained depression in high school students (Kwak, 1997). The correlation between depression and self-worth was -.44, $p<.001$.

Studies on the relationship between self-concept and somatic symptoms rare. In one study, using adults, 46 patients who fulfilled the criteria for somatization syndrome and 16 patients of hypochondriasis were administered the Screening for Somatization Symptoms measure and the Whiteley Index, and were interviewed (Rief, Hiller, & Margraf, 1998). The result showed that the subjects with somatization or hypochondriasis had some cognition of bodily weakness. The correlation between somatization score and cognition of bodily weakness was .55, $p<.01$. A study using the Adolescent Symptom Checklist and Self-Esteem Scale by Rosenberg in 794 Korean high school students showed the correlation between self-worth and somatic symptoms to be -.25, $p<.01$ (Lee, Choi, & Yoo, 2000).

Similarly, from a sample of college students in Korea, the low self-esteem group experienced more psychological symptoms than the high self-esteem group in stressful situations (Lee, 1994). These results suggested that self-worth as an inner resource may moderate between stress and adjustment. In the case of children, there is one study where RAP children showed low self-esteem along with depression and anxiety (Wood, 1989). However, no empirical study on the moderating effect of self-concept on children's experience of somatic symptoms has been attempted.

As mentioned above, only simple relationships between two relevant variables, such as somatization and anxiety, and somatization and self-concept, were considered in previous researches. In order to overcome this limitation and provide a more comprehensive explanation of child somatization, the present study examined the relative importance of several variables and tested the assumption about the moderating effect of self-concept. That is, although negative life events may affect somatization, depression and anxiety may be more closely related, and the moderating effect of self-concept is suggested to affect the relationship. Although self-concept is differentiated into several facets, most antecedent studies on somatization were focused on self-worth or self-esteem. Furthermore, specific relationships between somatization and several dimensions of self-concept in children have not yet been examined. Elucidating the inadequacies in specific dimensions of self-concept may provide a basis for suggestions to reduce somatic symptoms. Hence, this study hypothesizes that self-concept of physical competence and global self-worth may be particularly related to somatization. These hypotheses are supported by the fact that adult somatization patients

had a cognition of bodily weakness (Chansky & Kendall, 1997). In spite of stressful life events, depression, or anxiety, positive self-concept about physical competence may reduce somatic symptoms. Moreover, because global self-worth is known to affect most adjustment problems, it may affect the experience of somatic symptoms as well. With a sample of 5th and 6th grade children who have introspective ability and can complete self-rating inventories, this study examined the relationships between life events, depression, and anxiety, and children's somatic symptoms, and the moderating effect of self-concept.

Method

Participants

Data were collected from 5th and 6th graders, aged 11-12 years, at 4 elementary schools in Seoul, Korea, between September and October, 2002. Schools were selected from different areas of Seoul and permission was obtained from the principals. At each school, one to three classes were selected to provide between 34 and 97 5th and 6th graders to give a total of 276 subjects. Students were informed of the study purpose and assured of the study's confidentiality. Most students (96%) agreed to participate (266 participants 5th grade boys = 73, girls= 60; 6th grade boys = 72, girls = 61). Because there was not expected the potential harm associated with participation in the research, parental consent was not obtained.

Counselling teachers were trained for one hour to administer the measures. They completed the measures by themselves and were informed of the guidelines for administration. Subjects completed the 5 measures described below in their classrooms according to instructions given by the teachers. Participants completed the measures for approximately 25 minutes.

Measures

Korean Version of Children's Somatization Inventory (K-CSI)

This measure is a self-report inventory of 36 psychophysiological symptoms to assess the experience of somatic symptoms(Shin, 2003; Walker, Garber, & Greene, 1991). Subjects indicated the extent to which they had been bothered in the previous 2 weeks by each symptom, using a 4-point Likert scale (0 = not at all, 1 = a little, 2 = a lot, and 3 = a whole lot). The total score reflected the intensity of the somatic complaints reported. Coefficient alpha was .87 and the test-retest reliability was .88. Criterion validity was also sufficient in that the clinical children group

with somatic symptoms acquired a higher total K-CSI score than the normal children group (Shin 2003).

Life Events Questionnaire

This questionnaire consists of life events related to children's somatic symptoms (Boey & Goh, 2001). It includes questions regarding the occurrence of the following 13 life events in the previous year: 3 death-related life events (death of parent, sibling, and grandparent), 4 hospitalization-related life events (hospitalization of parent, sibling, grandparent, and the child), 4 life events related to changes in home circumstances and environment (change of address; change in occupation of a family member including a change in the father's job, a parent recently losing a job and mother starting to work; marital problems of parents including divorce or separation; and birth of a sibling), and 2 life events at school (failure in a major school examination and being bullied at school). Participants responded 'yes' or 'no'. Items were scored individually and totally.

Children's Depression Inventory(CDI)

CDI, a downward extension of the Beck Depression Inventory for adults was used to assess the level of depressive symptoms in the children (Kovacs, 1983). In this study, the Korean version of CDI was used (Choi & Lee, 1990). This measure consists of27 items, where subjects indicate their mood state in the past 2 weeks, using a 3-point Likert scale, from "0"(absence of the symptom) to "2"(the most severe form of the symptom). CDI has previously been found to have adequate internal consistency (α was .88 for 288 elementary school children in Seoul, Korea), and its test-retest reliability was .82(Choi & Lee, 1990).

Spielberger State-Trait Anxiety Inventory for Children (STAIC)

The trait anxiety scale of STAIC was used to assess the children's general level of anxiety (Spielberger, 1972). In this study, the Korean version of STAIC was used (Choi & Choi, 1989). This measure consists of 20 anxiety related statements about the self to which the children responded "hardly ever", "sometimes", or "often". The STAIC has previously been found to have adequate internal consistency (coefficient alpha was .83 for 522 elementary school children in Seoul, Korea). Split-half reliability for STAIC was .85 and test-retest reliabilities was .75 in a previous study (Choi & Choi, 1989).

Self-Perception Profile of Children (SPPC)

SPPC measures children's perceptions of six domain-specific areas in 3rd to 6th grade children (Harter, 1985). In this study, the

Korean version of SPPC was used (Lee, Shin, & Song, 1992). The subscales comprise two competence domains (cognitive and physical) and four self-adequacy domains (social behavior, peer acceptance, appearance, and global self-worth). In order to minimize social desirability, subjects must firstly select either positive or negative statement(e.g, some kids often forget what they have learned, while some don't), and then rate whether such statement is "sort of true" or "really true"; giving a 4-point Likert scale.

Fifth and 6th grade children were used in this study based on a previous report of SPPC factor analysis showing that while in the case of 3rd and 4th graders, appearance and global self-worth were not differentiated, 5th and 6th graders had clear differentiation (Lee, Shin, & Song, 1992). This measure consists of 36 items (19 reversed items), separated into six subscales of six items each. The internal consistency of the subscales in Korean samples ranged from .71 to .87 (αs of the cognitive competence subscale, physical competence subscale, social behavior subscale, peer acceptance subscale, appearance subscale, and global self-worth subscale were .75, .84, .75, .78, .87, and .71, respectively). Coefficient alpha of the total score was .89. SPPC showed adequate convergent validity in that correlations between children's self-perception and teacher's ratings of cognitive competence, physical competence and peer acceptance were statistically significant, as was the correlation between children's self-perception and peer's rating of peer acceptance (Lee, Shin, & Song, 1992).

Statistical analyses

Correlation analyses between somatic symptoms, 13 life events, depression, anxiety, and 6 subscale scores of self-concept were conducted. The nonparametric Mann-Whitney test was conducted to compare the experience of life events between high and low somatic symptom groups. Correlation and multiple regression analyses were conducted to examine the relative importance of predictor variables and the moderating effect of self-concept in explaining somatic symptoms.

Results

The relationships between life events and somatic symptoms

The score of somatic symptoms was not correlated significantly with either the total number of life events or the 13 individual life events. Mann-Whitney test was conducted to compare the experience of life events between the high and low somatic symptom groups.

Because the distribution of somatic symptom scores was skewed (M = 3.95, SD = 5.17), the selection criterion of the two groups was based on the median K-SCI score, 2. A score of 2 was included in the group of low somatic symptoms. The frequency of 13 life events in the two groups is shown in Table 1. Generally, many children had experienced death and hospitalization of grandparent, change of address, change in the father's job, and a parent recently losing a job in the previous year. Results from two-group comparison showed that the high somatic symptom group experienced more change in the father's job or a parent recently losing a job than the low somatic symptom group Mann-Whitney U = 7644.00, $p < .05$. Also, the high somatic symptom group failed more

Table 1. Frequency of 13 life events in two groups (N=266)

	Low somatic group (N=142)	High somatic group (N=124)	*Mann-Whitney U*
Death-related life events			
Death of parent	0	2	8662
Death of sibling	2	0	8618
Death of grandparent	48	30	8191
Hospitalization-related life events			
Hospitalization of parent	12	11	8634
Hospitalization of sibling	8	6	8669
Hospitalization of grandparent	39	42	7979
Hospitalization of self	6	9	8276
Changes of home circumstances			
Change of address	48	45	8585
Change in occupation of parent	28	39	7664*
Marital problems of parent	1	5	8511
Birth of a sibling	6	9	8537
Life events at school			
Failure in examination	6	19	7545**
Being bullied at school	6	9	8249

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

in a major school examination than the low somatic symptom group Mann-Whitney U = 7545.0, $p < .01$.

Correlations between somatic symptoms with depression, anxiety, and self-concept

Table 2 shows correlations of the somatic symptoms with depression, anxiety and the 6 dimensions of self-concept. Somatic symptom score was significantly correlated with anxiety, depression and all 6 dimensions of self-concept. Particularly high correlation was found between somatic symptoms, anxiety, and global self-worth.

The effects of life events, depression, anxiety, and the moderating effect of self- concept on the experience of somatic symptoms

The above analysis showed that several life events, depression, and anxiety were associated with the experience of somatic symptoms. For the next step, stepwise multiple regression analysis using these variables the predictors was conducted the results are shown in Table 3. In order of predictive power, anxiety, depression, and hospitalization of child were significant predictors, and total variance explained was 38%. The observed 2% incremental variance of depression (R^2 Change = .02, F = 73.87, $p < .01$) may have been due to multicollinearity with anxiety (the correlation between depression and anxiety was

Table 2. Correlations between somatic symptoms with depression, anxiety and 6 dimensions of self-concept (N=266)

	K-CSI	STAIC	CDI	C.C.	P.C.	App	P.A.	S.B.
STAIC	.59***							
CDI	.46***	.58***						
C.C.	-.20***	-.31***	-.52***					
P.C.	-.13*	-.19**	-.29***	.23***				
App	-.19***	-.28***	-.44***	.41***	.48***			
P.A.	-.19**	-.29***	-.43***	.36***	.26***	.30***		
S.B	-.24***	-.27***	-.46***	.43***	.25***	.36***	.41***	
G.S.W.	-.27***	-.39***	-.56***	.39***	.25***	.61***	.43***	.44***

*** $p <$ .001, ** $p < .01$, * $p < .05$.

K-CSI: Korean Version of Children's Somatization Inventory, STAIC: Spielberger State-Trait Anxiety Inventory for Children
CDI: Children's Depression Inventory, C.C.: Cognitive Competence, P.C.: Physical Competence, App: Appearance
P.A.: Peer Acceptance, S.B.: Social Behavior, G.S.W: Global Self-Worth

Table 3. Results of regression analysis with the experience of somatic symptoms predicted by life events, depression, and anxiety (N=266)

	B	β	R^2	R^2 Change	F
Anxiety	.45	.51***	.35		135.93***
Depression	.13	.17**	.37	.02	73.87**
Hospitalization of self	-2.51	-.11*	.38	.01	51.41*

*** p <. 001, ** p < .01, * p < .05.

.58). In the case of life events, only hospitalization of child was a significant predictor, but its incremental variance contribution was only 1% (R^2 Change = .01, F = 51.41, p < .05).

According to the above analysis, anxiety was the best predictor and explained the most variance, in comparison to the weak effect of life events on the experience of somatic symptoms. Therefore, it was shown that anxiety is the main influence on the experience of somatic symptoms and that self-concept may moderate this process. In order to find the mechanism of the moderating effect, multiple regression analysis was conducted with anxiety, self-concept, and their interaction as the predictors. First, self-concept of physical competence was analyzed and the results are shown in Table 4. When anxiety and self-concept of physical competence were entered individually, only anxiety was a significant predictor. However, when the interaction variable was added as a predictor variable, it became a significant predictor in addition to anxiety. In combination they explained 39% of the total variance, with 4% incremental variance explained by the interaction variable (R^2 Change = .04, F = 54.73, p < .001). This result confirms the above suggestion that

Table 4. Results of regression analysis with the experience of somatic symptoms predicted by anxiety, self-concept of physical competence, and their interaction (N=266)

	B	β	R^2	R^2 Change	F
Anxiety(A)	.51	.59***a	.35		69.49***
Self-concept of physical competence(B)	-0.03	-.02b			
A x B	-0.04	-1.03***	.39	.04	54.73***

*** p <. 001, ** p < .01, * p < .05.

ab : Beta values before entering interaction variable

Table 5. Results of regression analysis with the experience of somatic symptoms predicted by anxiety, global self-worth, and their interaction (N=266)

	B	β	R^2	R^2 Change	F
Anxiety(A)	.5	.57***[a]	.35		69.85***
Global self-worth(B)	-.06	-.04[b]			
A x B	-.04	-.89***	.40	.05	57.74***

*** p <. 001, ** p < .01, * p < .05.

[ab] : Beta values before entering interaction variable

anxiety is the main influence on the experience of somatic symptoms and further specifies that the self-concept of physical competence moderates this process.

Further analysis was conducted to examine the moderating effect of global self-worth. Table 5 shows the results of multiple regression analysis with the experience of somatic symptoms predicted by anxiety, global self-worth, and their interaction. When anxiety and self-worth were entered individually, only anxiety was significant predictor. Again, when the interaction variable was added as a predictor variable, it became a significant predictor in addition to anxiety. In combination they explained 40% of the total variance, with 5% incremental variance explained by the interaction variable (R^2 Change = .05, F = 57.74, p < .001). This result confirms the above suggestion that anxiety is the main influence on the experience of somatic symptoms and further specifies that global self-worth moderates this process.

Discussion

The aim of this study was to examine the roles of several variables that might affect children's experience of somatic symptoms. The study tested the hypotheses firstly that life events, depression, and anxiety affect the experience of somatic symptoms and secondly that this process is moderated by the self-concept of physical competence and global self-worth.

The relationships between somatic symptoms with life events, depression, and anxiety

The results from analyses of life events showed that children with high somatic symptoms were more likely to have experienced a change in the father's job or a parent recently losing a job and failure in a

major school examination than the low somatic symptom group. Such results imply that an insecure feeling induced by parental problems and the stress of academic achievement may manifest as an internalizing problem such as somatization in Korean society. However, these relationships between life events and somatic symptoms were not statistically significant. In addition, results from multiple regression analysis showed that most of the life events provided very little variance explained in the prediction ofsomatic symptoms compared with anxiety and depression. However, traumatic experiences during infancy or early childhood, as well as recent life events, can be associated with somatization (Klevan & DeJong, 1990). Thus, future research concerning the effect of early life events on somatization will be necessary. The life events considered in this study were confined to somatic symptom-relevant life events, but there are other life events experienced by children, including several types of difficulties in interpersonal relationships and academic achievement as well as problems of health, appearance, and physical environment (Wui, 2000). Other sources of stress include family-related stress such as parent's making comparisons between the child and other siblings or friends, and younger sibling using put-downs. According to a recent study, Korean adolescent's somatization was more affected by perceived parenting behavior than by academic stress and actual academic achievement. Specifically, somatization was best explained by mother's abuse, father's neglect and inconsistent parenting behavior (Shin, 2000). Thus, future study should examine the effect of these diverse stressful events.

In contrast with life events, depression and anxiety were significantly correlated with somatic symptoms. Somatic symptom score was significantly correlated with six domain scores of self-concept, particularly global self-worth. In order to examine the effects of life events, anxiety, and depression on somatic symptoms, multiple regression analysis was conducted and anxiety was the most significant predictor. While depression and hospitalization of child as life events were also included among the significant predictors, their incremental variance explained was small. So, anxiety was found to be the most important variable in explaining Korean children's somatic symptoms. This result is consistent with the results from previous studies. For example, a recent study using a structured interview based on DSM-IV and self-report questionnaire in patients with long-term dizziness showed anxiety disorder to be most common (Eckhardt-Henn, Breuer, Thomalske, Hoffmann, & Hopf, 2003). Adolescents with frequent headaches also experience more anxiety, depression, and maladjustment than a

normal control group (Smith & Martin, 1996).

The moderating effect of self-concept on the experience of somatic symptoms

In order to examine the moderating effect of self-concept on the relationship between anxiety and somatic symptoms, multiple regression analysis was conducted with anxiety, self-concept, and their interaction as the predictors. In the case of self-concept of physical competence, the interaction variable of anxiety by self-concept was a significant predictor as well as anxiety. The result that the interaction variable added 4% to the variance explained suggests that anxiety is the main influence on the experience of somatic symptoms and further specifies that self-concept of physical competence moderates this relationship. These results imply that if self-concept of physical competence is good, then the experience of somatic symptoms is mitigated in spite of anxiety.

Because global self-worth has the largest effect on adjustment problems and psychological disorders, it was assumed to moderate the relationship between anxiety and somatic symptoms. Results of multiple regression analysis with the experience of somatic symptoms predicted by anxiety, global self-worth, and their interaction showed that the interaction variable was a significant predictor as well as anxiety. The result that the interaction variable added 5% to the variance explained suggests that anxiety is the main influence on the experience of somatic symptoms and further specifies that global self-worth moderates this relationship. These results imply that if global self-worth is good, then the experience of somatic symptoms is mitigated in spite of anxiety.

These results of the moderating effect of self-concept in the relationship between anxiety and the experience of somatic symptoms go a step further than those obtained by Rief et al.(1998). These researchers found that adult patients with somatic symptoms had weaker self-concept than the normal control group. However, in Korean children, a direct relationship between somatic symptoms and self-concept of physical competence was not strong. Rather, self-concept of physical competence elicits or maintains somatic symptoms, more than moderating the relationship between somatic symptoms and anxiety or depression. Self-worth was found to play a similar role and may be a more important moderator than self-concept of physical competence. This result is consistent with previous results that showed self-worth or self-esteem affects most psychological problems and maladjustment (Harter & Connell, 1984; Chansky & Kendall, 1997; Marold & Harter, 1993). This study has progressed further than

previous studies because the moderating effect of multi-facets of self-concept was considered and children samples were used. Because other domains of self-concept were correlated with somatization also, these variables can be moderator variables and further study is needed.

The implications and limitations of the present study

Results from this study provide further understanding about the mechanisms of children's somatization and suggestions for enhancement of children's mental health, prevention, and treatment of somatization. Because anxiety explains somatization considerably, amelioration of anxiety will be helpful for the prevention and treatment of somatization. Not only relaxation and cognitive-behavioral therapy for children but also parent-education for parenting style and familial conflicts may decrease anxiety. Furthermore, improving global self-worth, self-esteem, and self-concept of physical competence will be helpful for decreasing somatic symptoms. Techniques such as decreasing self-defeating talk, modifying cognitive errors will be helpful for enhancement of self-worth.

Nevertheless, some limitations of the present study must be acknowledged. There is a possibility of sample bias because all subjects were from Seoul, Korea, the sample size was small without random sampling. Thus, future study using representative samples from both rural and urban areas is recommended, as is a cross-cultural study. Although there was not expected the potential harm associated with participation in the research and permission was obtained from the principals, the fact that parental consent was not obtained may elicit ethical problem. In the present study, age and gender differences were not elucidated due to the small sample size and the narrow age range of the sample. Future research into the differential effects of age and gender in children's experience of somatic symptoms is needed. The present study was based only on the children's self-report data, whereas, in order to obtain more information, an extensive interview with children and reports from both parents and teachers are required. Finally, although the role of life events in the children's experience of somatic symptoms was not strong in the results, because the present study was restricted to only 13 life events and was conducted with a small sample, future study should examine the effect of diverse stressful life events.

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아동의 신체증상경험과 생활사건, 우울, 불안 간 관계 및 자기개념의 중재효과

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본 연구의 목적은 부정적인 생활사건, 우울, 불안 등과 아동의 신체 증상과의 관련성 및 자기개념의 중재 효과를 규명하고자 하는 것이었다. 연구대상은 초등학교 5, 6학년 266명이었고 측정도구에는 아동 신체화척도, 생활사건척도, 우울, 불안 척도, 자기개념 척도 등이 포함되었다. 중다회귀분석 결과, 불안, 우울, 그리고 아동의 입원경험이 신체증상을 유의미하게 예언하였고, 특히 불안이 신체화를 가장 잘 설명하였다. 또한 불안과 신체적 자기개념 및 전반적 자기가치감의 상호작용 효과가 유의미하였다. 이 결과는 불안이 아동의 신체 증상 경험에 주된 영향을 주며, 그 과정을 자기개념이 중재한다는 것을 보여준다.

주요어 : 아동 신체화, 생활사건, 우울, 불안, 자기개념, 신체적 자기개념, 전반적 자기가치감, 중재효과