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RELATIONSHIP BETWEEN SOMATIC AND PSYCHOLOGICAL FACTORS AND THE COPING STRATEGIES

THESES OF THE DOCTORAL DISSERTATION

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1. INTRODUCTION

1. Stress

It is a proven fact that our health is affected by the interaction of numerous social, psychological, behavioral and biological factors. In this system of interaction stress has an ultimate role (Urbán, 2006). Stress has a negative connotation in everyday life, though stress and its effect are not always adverse, but are essential to physical and mental development (Selye, 1956, 1976).

The three most important ingredients that make up stress are stressors, stress reactions and individual characteristics. Stress response is defined as a physiological, psychological and behavioral consequence of stressors. The behavioral component of stress is called coping (Bárdos, 2003, Urbán, 2006).

2. Coping

The most widely adopted definition of coping is by Lazarus: "Coping is a realization of constantly changing cognitive and behavioral efforts to manage specific external and/or internal demands that are appraised to tax or exceed the personal resources" (Lazarus, 1966; Oláh, 2005). At the cost of losing some information, we can simplify this definition: "Coping is a combination of cognitive and behavioral efforts that help handle (reduce, minimize, master, or tolerate) psychological stress" (Lazarus, 1993). Coping is a cognitive process that has two building blocks. During primary appraisal the situation is being perceived and assessed: this can be irrelevant, positive or stressful, depending on the individual. During secondary appraisal, the individual surveys the possible disposal at his sources, that is, which strategy would prove more successful in the specific scenario. Afterwards, we make efforts to execute the selected actions (Lazarus, 1984).

Coping are essentially twins with stress, because it depends on the person's unique coping abilities what kind of individual reactions an arduous and novel situation generates. However, stress on its own has no effect on health and well-being, but the way how we coping with it does (Folkman et al., 1987).

3. Significance of problem

Researching the psychological development, maturity and health of adolescents may greatly contribute to designing effective health protection and health education programs. Everyday stress on youngsters is inevitable; therefore preventive programs are necessary to help them learn how to successfully handle problems and how to effectively apply coping strategies. In this case, detrimental behavioral patterns could be avoided. Behavioral patterns that later have an effect on adult health are formed during adolescence (Kopp, 2003). To decrease the possibility of health problems, future generations should be educated about the value of health and how to preserve it.

4. Research hypothesis

In this paper I want to discuss different coping strategies and the connections between a) body development (nutritional status, body fat percentage, sexual development), b) socio-economic background, c) psychosomatic symptoms, d) subjective perception of health and satisfaction with life.

My basic hypothesis is that coping strategies are fundamentally affected by body development (such as body composition, body fat and the sexual maturity of the child). Differing from the average habit and maturity pace may result in emotional instability, so I would examine the coping strategies of children with different growing and maturing patterns.

I presume that beyond physical appearance, the different social-economic environment influences coping strategies, as the family is the primary scene of socialization and the forming of personality, and this micro-environment both has remarkable influence on and is a model for the developing child.

According to my hypothesis, successful coping strategies go together with less frequent psychosomatic symptoms, positive subjective perception of health and a high level of satisfaction with life.

2. SUBJECTS AND METHODS

Subjects of this research are a subsample of the Second National Growth Study (2003–2006, Bodzsár and Zsákai 2007, 2008, 2012; Zsákai and Bodzsár 2012). Altogether 1,601 male and 1,592 females between the ages of 10 and 18 were examined.

1. *Chronological subgroups* were created according to the following: a) Subgroup 1: pre-puberty: 10-12 years old; b) Subgroup 2: puberty: 13-15 years old; c) Subgroup 3: post-puberty: 16-18 years old
2. *Nutritional status:* a. BMI (Body Mass Index) was estimated according to the recommendation of WHO (weight [kg] divided by the square of height [m^2]). Considering characteristics of age, we composed the following categories based on the cut-off-points by Cole (Cole et al., 2000, 2007): underweight, average, overweight, obese

   b. We estimated the nutritional status based on the median values of skinfolds under the scapula.
3. *Body composition* was estimated following the four-component model of Drinkwater-Ross (1980) (Bodzsár, 2004).
4. *Sexual maturity status* was estimated based on the existence/lack of menarche and oigarche, on the development of breasts in case of females, and external genitalia in case of males (Tanner, 1962). Early and late matures were categorized by the median value (± 1 category) of the development status of external genitalia (males), and breasts (females).
5. *Coping strategies* were examined using the Coping Way Preference Questionnaire (Oláh, 2005). Participant children were asked to state how typical statements of the questionnaire were of them: 1: hardly ever; 2: seldom; 3: often; 4: always. During the analysis of the 51 sentences we used average values. I categorized the 51 questions on the questionnaire into 8 big groups.
6. *Social-economic background* was described by the following factors: The social and economic status of the family was examined using a method similar to the one followed by the Health Behavior in School-aged-Children (HBSC), building on its thoughts (Németh and Költő, 2011).
7. To examine the frequency of *psychosomatic symptoms*, we used the standard symptom checklist authored by Haugland et al. (2001a, 2001b). We asked participants how often they had any of the 12 symptoms during the past 6 months (almost everyday, several times during the week, weekly, monthly, less frequently or never).

   We divided the 12 symptoms into three bigger groups: a) somatic health complains: headache, pain, backache, nausea, dizziness; b) mental health complains: feeling low, irritation, fear, nervousness; c) sleep problems: difficulties falling asleep, waking up during the night, being exhausted.
8. *Life satisfaction* was estimated using the 11-degree scale developed by Cantrill et al. (1965). Children could mark their satisfaction from 0 (least satisfied) to 10 (most satisfied).

9. The *subjective perception of health* was measured using a four-degree scale, depending on how good the child considered his/her own health: a) excellent; b) good; c) satisfactory; d) bad.

The statistical processing and analysis was done using SPSS for Windows. Figures and charts were authored using Microsoft Excel.

To characterize categories and subcategories divided on research considerations I used the following basic statistical parameters: item count (N); average ($\bar{x}$); median (M); standard error (SE); standard deviation (SD); minimal value (V_{min}); maximal value (V_{max}).

I used analysis of variance to examine the differences between various parameters of subgroups of children and coping strategies. Changes in age, sexual status, social-economic status and comparison of wealth were carried out using Scheffé's method. Variables of non-normal distribution were studied using Mann-Whitney U-statistics, significance level at 5% (Hajtman, 1971).

3. DISCUSSION OF RESULTS, CONCLUSIONS

The research can be considered original both domestically and internationally, as the eight coping strategies have not been examined before as variables of numerous parameters, among a high number of children between the ages of 10 and 18.

1. Changes in coping strategies according to age and gender

According to my results based on a subsample of Second National Growth Study, similarly to the conclusions of other studies (e.g. Feldman et al., 1995; Piko, 2001), we can demonstrate differences based on age and gender in the case of coping strategies applied by the individual.

Adaptive strategies targeting to solve the problem: According to my results, the frequency of problem-focused coping shows a growing tendency for both males and females as age progresses. This shows us that the older an individual is, the more frequent he/she focuses on the problem causing stress. The root cause of this is likely to be the fact that during cognitive development, problem solving skills of children get differentiated and specialized in line with their age (Skinner and Zimmer-Gembeck, 2007; Frydenberg, 2008).

By examining the connections between problem-focused coping and gender, my results show that during puberty and post-puberty females more frequently choose problem-focused coping. This result is controversial to what most researches show, as it is widely documented that it is the males who choose this coping strategy more often, and compared to females, take more direct steps to solve a situation (Folkman and Lazarus, 1980; Stone and Neale, 1984; Piko, 2001).

Considering these, my results that show females more frequently using problem-focused coping strategies compared to their male contemporaries, is novel. The background of this may be the slow disappearance of differences between gender roles. Researches prove the tendency that the gender differences between men and women are decreasing, gender roles and stereotypes are converging (Szabó, 2008).

Along with problem-focused coping, seeking support is an active coping strategy. The individual makes efforts to get closer to solving a problem, and to reach his/her goal, asks for advice of friends, parents and relatives, and takes them (Piko, 2001). Studying the relations between age and gender when seeking support, I conclude that females choose this strategy more often, at every age, than their male counterparts. I also found that as age progresses, females use this strategy

in a greater number, while I found stagnant values with males. My results show resonance with the rest of studies that show females are the ones seeking support (e.g. Gelhaar, 2007; Aldwin, 2007).

Coping strategies when handling emotions: My comparative studies of tension control, distraction of attention and emotion focus based on the subsample of the research show that the distraction of attention and emotion focused strategies during post-puberty are significantly more frequently used by females than their male counterparts. Neither of the strategies goes together with substantial change of age.

Most studies examining coping strategies regulating emotions concentrated on the emotion focused strategy. Most research showed that females use the emotion focused coping strategy more frequently (Endler and Parker, 1990; Folkam and Lazarus, 1980; Stone and Neale, 1984; Aldwin, 2007). This finding was not fully confirmed by my results, females choose the emotion focused strategy only during post-puberty.

Research papers on coping often divide strategies into two main groups: problem focused and emotion focused coping. According to my results, both genders use problem focused approach instead of the emotion focused strategy. One study showed that males prefer the problem focused approach to the females' emotion focused strategy (Oláh, 1995).

Coping strategies less efficient in solving problems (maladaptive coping approaches): Examining the relations between age and gender, in terms of less successful coping methods, I conducted a study on the subsample of the Second National Growth Study; during pre-puberty, males react with uncontrolled bursts of emotion, display aggressive reactions (they are angry, would like to break and smash objects) – that is, use the emotion emptying strategy. As the process of coping is a cognitive and behavioral response reaction to stress, children and adolescents must learn not only to recognize, but to handle as well stressful situations. Cognition on its own is not an intention or a set of attempts to suppress emotions; it is more of an experiment to –in harmony with our individual abilities- control and regulate our emotions. In case of children with aggressive behavioral patterns, it can prove successful to teach them to first define what they feel, thus understanding the reflection of their emotions in their behavior. Later this can obstruct, suppress unwanted behavioral patterns, and can lead them to replace anger with socially accepted behavior and emotional manifestations (Aldwin, 2007).

It is an important result that in the case of the self-punishment strategy, females of all age more often blame themselves for the problem; during puberty and post-puberty the difference is significant. In the background of this may be the more sensitive, mentally more fragile nature of females, who tend to despair and blame themselves when a stressful situation is encountered. A bit of self-punishment may be inspiring: it forces the adolescent, by causing remorse, to face the problem, hence mitigating the unpleasant feelings, that were generated by the situation.

By examining all eight coping strategies at the same time, I concluded that Hungarian children more often use successful coping strategies than approaches less efficient in problem solving.

2. Relationship of physical and mental variables and coping strategies

2.1.The connection of coping strategies and nutritional status

There are few research papers that examine the relationship of coping strategies, nutritional status, antropometric measurement, body composition and body shape. Most studies concentrate on emotional eating, and how overweight people tackle negative stereotypes and the discrimination they experience due to the stigmatization because of their weight in their everyday lives.

According to my hypothesis, overweight and obese (based on BMI) children more frequently choose less successful strategies, that is, emotion emptying, self-punishment and resignation.

During my comparative research, in the following cases I have verified my theory:

- The emotion emptying strategy is more often used by overweight and obese males, of all ages, than their female counterparts, who apply this only during puberty.
- Examining the self-punishment strategy, overweight and obese males during puberty, overweight and obese females of all ages tend to blame themselves in a negative situation.
- Resignation: overweight and obese females of all ages more often resign and accept a problematic situation than their counterparts of normal nutritional status.

The relationship between body fat percentage and coping strategies confirm my results based on BMI during pre-puberty: in case of all three strategies, children with higher body fat are more likely to choose less successful coping methods in an unpleasant situation (except for girls in case of emotion emptying). As age progresses, the connection between higher body fat and less successful coping strategies is not so obvious, differences fade and a concrete tendency cannot be seen.

Summing up my results, it seems like males in pre-puberty (aged 10-12) are a risk group in terms of burdensome coping with stress, as well as females of all ages, who are overweight and obese (based on their BMI). Overweight or obese children are less popular among their peers and are more often victims of bullying and elusion.

2.2 Emotional eating as a coping method

Scientific research focusing on nutritional status and coping most frequently concentrates on emotional eating. Analyzing the results of different studies it is not obviously true that overweight children resort to emotional eating, or vice versa, overweight people compensate for stress by eating.

3. Maturity status and the way of coping

I used a new approach when studying coping strategies: I created subgroups based on sexual maturity (existence or lack of menstruation and pollution) and age.

The research yielded new results: problem focused reaction is more frequent among polluating males and menstruating females, that is, adolescents who are more mature than their peers. This result may be explained by the fact that with maturing and gaining experiences, the likelihood of adolescents more successfully choosing the best coping strategy in a given situation rises proportionally (Thies and Travers, 2006). The only exception are females at the age of 11, when those already menstruating less often choose the problem focused coping method. The cause of this is likely that at this age females who are more mature than their peers are less balanced, are ashamed of their maturity and seek to hide it. In the case of females maturing earlier has a negative effect on them, at least in the beginning, and what is more, they judge their appearance less attractive, their performance at school drops and their self-appreciation falls (Simmons and Blyth, 1987; Karkus, 2010).

I have also examined active coping strategies, including seeking support, and I have concluded that non-polluating males between the ages 12 and 14 more frequently choose seeking support as a coping method compared to their polluating peers. This tendency changes later, at the age of 15, the difference diminishes, and by the age of 16, polluating males choose seeking support more often. Menstruating girls (except for the age of 11) more often ask for external help when solving a problem. In general, adolescents tend to be independent, especially of their parents, not only as they age, but as they mature. However, females already menstruating choose seeking support more

frequently. It is non-definite if seeking support is a manifestation of dependence or independence. This is an aspectual question, requiring further studies, including individual personal experiences (Frydenberg, 2008).

I have also found differences between subgroups categorized by maturity when examining how they treat emotions when utilizing coping methods, and differences are also present with less successful strategies. In general it can be ascertained that those who already menstruate, that is, who are more mature than their peers, utilize these strategies in a greater number.

To sum it up, it is true for active coping strategies that sexually more mature children use them, but the opposite is not true, we cannot state with great confidence, that those who are less mature choose less successful strategies more frequently.

4. Coping strategies in the light of social economic background

The primary scene of socialization is family. Children experience primary stimuli and see examples during their development, growth and maturing that will have an effect on their future lives. This is also true for observing stress and coping processes. The conditions for physical and mental development must be provided by this microenvironment.

4.1. Social-economic index

In my research paper, I have examined the coping methods as a variant of the family's social-economic status. By characterizing the result I had when examining active, that is, problem focused, coping strategies, I have confirmed my theory that the better SES an individual has, the more likely he/she is to choose successful coping strategies, independent of gender. Probably those who live in better condition, the older they are, the more they believe that they can control events and it is worth making efforts for a solution. During puberty, we can see the opposite, and the difference is bolder in the case of males. Those who live at a lower level of SES, choose the problem focused approach more frequently, and the cause of this may be that the child at this age has not faced complex situations requiring individual solution; or differences are more evenly balanced at primary school. This is rather controversial to the general opinion that children living in a family of lower SES face a wide range of stressful situations at an early age, e.g. conflict with neighbors, problems with money etc. (Adler et al., 1999)

When studying seeking support I have not seen the same result in all age groups that children at a lower level of SES more often ask for help. During pre-puberty, males who live at a worse SES, more often seek support. The difference fades by post-puberty in all subgroups. In the case of females, the picture has more shades, we can safely state only during post-puberty that the better conditions someone lives in, the more likely she seeks support as a coping method.

Strategies dealing with emotions it is clear that males during pre-puberty and puberty, females during puberty tend to choose distraction of attention as coping, that is, exit a situation and daydream; and this is true for those who live in a family of worse SES. The exact same is true for emotion focused coping. My results harmonize with researches that conclude that children of worse social-economic status respond not too well to challenges, are more likely to exit a situation and try to avoid it (Reid and Crisafulli, 1990; Repetti et al., 2002). My results also confirmed that individuals of a lower SES more likely choose emotion-focused coping. The cause of this may be that people with lower SES do not fully believe they have control over their life, on the other hand, they probably encounter situations that are not changeable or controllable, hence they put more emphasis on tackling their emotions with success (Caplan and Schoooler, 2007).

I have confirmed when studying my results on less successful, or passive, coping methods, that males of a lower SES, of all ages, tend to behave uncontrollably, or burst out in anger. This is true for females during puberty only. My results harmonize with results that show children of lower SES misinterpret or have difficulty with handling a challenging situation, and react aggressively in situations that are mildly stressful (Repetti et al., 2002).

4.2.Wealth

The questions regarding the wealth of the family and the results of coping strategies underpin the results I found when comparing SES categories at certain points. For example, the subgroups based on the wealth of the family and the frequency of applying the problem focused approach harmonize, as it is true that the better standard of living of males during pre-puberty and females of all ages is, the more often they use this coping strategy.

Comparing to SES categories, the study of maladaptive strategies it turns out that the lower standard of living a female has, the more often she applies emotion emptying, self-punishment and resignation as coping strategy. The background of this may be the unequal access to different material and social goods (Németh and Költő, 2011).

5. The relationship between the frequency of psychosomatic symptoms and coping strategies

My research is by all means original, as there has not been such a detailed study on multiple parameters, based on Hungarian sample data regarding the interconnection of psychosomatic symptoms, stress and coping.

In general, we can conclude that regarding patterns, there is no substantial difference between the frequency of occurrence of psychosomatic symptoms and coping strategies, be it either successful or less successful coping. The root cause of this may be that no matter what kind of coping approach an individual may choose, it has an effect on both his/her physical and mental health, causing internal tension, that manifest themselves in the form of different psychosomatic symptoms (Simon, 2001).

It is also clear from my results that independent of age and gender, and even the type of coping strategy (successful/less successful), from the three main groups of psychosomatic symptoms, mental complains are more frequent, together with tiredness. This is a result that should draw a bigger attention. The frequency of symptoms is backed by numerous factors, such as anxiety, lack of sleep, being under pressure and lack of exercise. Regular exercise and sport are one of the main factors protecting health (Kopp, 2003). A domestic study has shown us that among children of an inactive life style (lower physical activity, less exercise, spending much time with computers and watching TV) psychosomatic symptoms are more common than among their peers exercising regularly (Vitályos et al., 2012).

6. The subjective well-being and health in case of individual strategies

The connection between coping and different medical consequences is obvious (Penley, 2002). Considering subjective well-being and judgment of health, we can make the following statements: According to the results based on subgroups of problem-focused and tension control strategies and subjective well-being, my theory is verified: those who behave in a problem-focused way during a stressful situation and judge their individual health better than their peers, use this coping strategy more often. Less adaptive strategies, like emotion emptying, self-punishment and resignation (aside from a few exceptions) are more frequently applied by those who judge their health worse.

Regarding subjective well-being, my presumption has been confirmed as well: those who are more satisfied with their lives are more likely to choose strategies targeting the solution of a problem. It has also been confirmed, aside from some exceptions, that those who are less satisfied with their lives are more likely to apply less successful coping strategies. It would need further studies to find out whether it is a cause or a consequence that negative health status and satisfaction with life go together with less successful coping strategies. It is feasible that these processes are inducing each other.

7. Summary

Examining the hypothesis formulated in the introduction section, we can make the following statements.

1. According to my results, it has been verified that age and gender fundamentally influence the frequency of the selected eight coping strategies.
2. It has been confirmed that overweight and obese children more frequently apply less successful coping methods that do not target the solution of a problem, moreover are absolutely unsuitable to handle negative emotions caused by stressful situations
3. During the analysis of the relationship between sexual maturity (existence/lack of menses and pollution) and coping strategies, I have found that those who are more mature in comparison to their peers more frequently utilize active coping strategies. However, it has not been verified that less mature choose less successful strategies. Females maturing earlier more frequently use less successful coping methods, as the analysis of subgroups (grouping based on maturity types; maturity level of breasts and external genitalia) and coping methods shows.
4. My hypothesis, being that children living in worse social-economic status more frequently choose maladaptive coping methods and strategies to handle emotions caused by unchangeable situations, is confirmed according to the results of the study.
5. Results show that psycho-somatic symptoms occur frequently both in the case of successful and less successful strategies.
6. The use of adaptive strategies was typical of those who considered their health better and were more satisfied with their lives.

We cannot avoid situations induced by stress, we must be able to cope with a given situation, be it a subtle everyday annoyance or a life event full with tension to the brim, to conserve the individual's integrity and dignity and to escape accidental negative consequences: depression, anxiety and other mental problems. However, being able to sense stress, is vastly dependent on individual sensitivity and further biological, social and environmental factors.

My results have shown that coping with stress in the case of children and adolescents discovers risk groups that need to draw more attention from parents and teachers. In general such a risk group are females maturing early, overweight children during pre-puberty and those living at a lower social-economic level.

The lack of proper coping strategies may more likely result in negative consequences that influence physical and mental health, drastically malevolently influencing the quality of life. It would be most beneficial for everyone to organize preventive sessions and raise attention in early childhood, as well as being aware of the fact that pressure caused by stress can be decreased by behavioral patterns protecting health.

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