

Theses of Doctoral (PhD) Dissertation

DIFFICULTIES IN THE WAY OF BECOMING A PARENT: EXAMINATION OF MALE'S DEPRESSION RELATED TO A NORMATIVE AND A PARANORMATIVE CRISES

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The aim of the dissertation, definition of the subject

Life cycle transitions are considered to be vulnerable factors for developing mental disorders. Most of the researches that focus on the childbearing period often concentrate on women and children, and significantly less attention is paid to the mental health of men. Our research focuses on men: the aim of the research is to examine depression (especially male-type depression) of men experiencing a normative life crisis (childbirth) or a paranormative life crisis (facing infertility). Our examinations follow researches which emphasize that depressive symptoms of men and women should be measured in different ways. This approach has turned scientist's attention to the special features of depression in the case of men (Rochlen, Whilde and Hoyer, 2005).

According to Cochran and Rabinowitz (2000, 2003), the examination of men's depression should be a two-step process. Evaluation of the symptoms according to the established criteria for major depressive disorder (DSM-IV, 2001) is warranted. In addition, they emphasize that masculine-specific symptoms of depression should also be measured: anger management problems, heightened levels of irritability, impulsivity, poor stress tolerance, aggression, hostility, antisocial behavior, obsession with work or sports, alcohol and substance abuse (Rihmer and Rutz, 2000; Winkler, Pjrek and Kasper 2006; Oliffe and Phillips, 2008; Ogrodniczuk and Oliffe, 2011; Branney and White, 2008). The fact that men and women may experience depression very differently can be explained as the result of gender role socialization. The expectations towards men may include ways of act and attitudes to hold such as independence, restricted emotional expression and competitive behavior, whereas in women, depression may be more likely to cause sadness while facing stressful situation (Nazroo, Edwards és Brown, 1998). Role transitions and developmental transitions seem to be relevant initial triggers of depression symptoms (Chuick, Greenfeld, Greenberg, Shepard, Chocran and Haley, 2009).

On the one hand, our investigation deals with relevant problems in connection with the childbearing period, describing masculine specific symptoms of depression. On the other hand, it presents the Hungarian version of the Proactive Coping Inventory which was used in the first research.

The first study: Men and postpartum depression

The aim of the first study is to examine parents' mental health in the first postpartum year with special attention to paternal mental health. Since paternal postpartum depression is a rarely discussed area of mood disorders, furthermore in Hungary fatherhood is also a not frequently studied area, therefore we examined the incidence of paternal postpartum depression and some significant factors influencing the appearance of depression and masculine specific depressive symptoms. One of the main purposes of this study was to examine how maternal depression and anxiety can affect the development of paternal depression and aggression. Finally we examined father's coping in this period.

Methods of the first study

The sample consists of 181 parents. 84 couples (84 men and 84 women) participated and an additional 13 men were examined whose partner did not participate. This additional 13 questionnaire was not considered in those results when referencing couples. The participants of the research must meet the requirement of having a 0-12 months old child. The average age of children was 6.6 months ($SD=3.26$).

All subjects were given a test- battery including self-report questionnaires. Mothers and fathers filled out slightly different questionnaires. However demographic questions and information about childbearing was included in both. Depression of fathers was measured with Edinburgh Postnatal Depression Scale (Cox, Holden and Sagovsky, 1987) and the Gotland Male Depression Scale (Innamorati et al., 2011). Mother's depressive symptoms were assessed with the Edinburgh Postnatal Depression Scale. To evaluate anxiety level, vital exhaustion level and coping strategies, State-Trait Anxiety Inventory (STAI-T) (Sipos, Sipos and Spielberger, 1994), Vital Exhaustion Questionnaire (Kopp and Kovács, 2006) and the Proactive Coping Inventory (Almássy, Pék, Papp and Greenglass, 2014) were used. Peer support was also measured. Men also completed the Buss-Perry Aggression Questionnaire (to measure depression which is considered to be one of the male-type depressive symptoms) (Gerevich, Bácskai and Czobor, 2007).

Results of the first study

The incidence of paternal postpartum depression was 12.5%, while 15.5% of fathers met the criteria for male-type depression. Based on previous researches, we predicted in the first hypothesis that 10-15% of men are at risk for depression. We also hypothesized that measuring masculine specific symptoms beside the traditional depressive symptoms (by using the two-step process) may help to detect more fathers at risk for postpartum depression.

More fathers who experience depression in the postpartum period will be identified by assessing masculine specific symptoms of depression beside traditional symptoms of depression: the percentage of men who were identified as depressed on both scales was 9.3%, while 3.1% were assessed using only the EPDS and 6.25% using only the GMDS.

The second empirically supported assumption is that women presented significantly higher levels of depression [$t(82)=3.18$; $p=.002$], [$t(82)=2.54$; $p=.013$], anxiety [$t(82)=2.54$; $p=.013$] and vital exhaustion [$t(82)=2.23$; $p=0.028$] than men. It was hypothesized that mothers experience more mental health problems than men in the postpartum period. Men report problems less frequently which is not associated with traditional male gender roles such as crying, feeling sadness or feeling miserable. This result supports the idea that measuring depression in different dimensions is relevant. Our third question is referring to the connection between depressive symptoms presented by men and women. Maternal depression is identified as one of the strongest predictors of paternal depression. In our research it was supported that paternal depression is linked to maternal depression. The incidence of paternal depression was 36.8% (measured with EPDS) and 31.6% (measured with GMDS) among men whose partners experienced postpartum depression. In the fourth hypothesis we predict that paternal depression is significantly higher among men whose partner experiences higher level of anxiety. Our results support the assumption in the case of EPDS scores [$t(81)=1.99$; $p=.05$]. Since there is no relationship between male specific symptoms and the anxiety of women, therefore our assumption was only partially verified.

The appearance of aggression is also part of our study. We assumed that dimensions of aggression in the symptomatology would be present having a correlation with the depression and the anxiety level of women. Based on the results we can conclude that the examination of aggression is relevant in the postpartum period. Reporting more intensive male type depression symptoms goes along with increased aggressiveness. Excluding verbal aggression, all other types of aggression are in a relationship with depression: anger [$t(81)=-2.75$; $p=.007$], hostility [$t(81)=-3.33$; $p=.001$] and physical aggression [$t(81)=-2.13$; $p=.037$]. The

anxiety level of women is associated with higher levels of male's aggression. Males express significantly much anger if their partner is more stressful, restless and doubtful: $t(75)=-1.95$; $p=0.054$. Those who report increased level of emotional symptoms of depression present higher level of aggression (anger, hostility, physical and verbal aggression). The partners of those mothers who meet the criteria of postpartum depression show significantly higher level of physical aggression, furthermore they express tendentially higher level of anger: $t(75)=-2.04$; $p=.045$ and $t(75)=-1.83$; $p=.071$.

In the next hypothesis we assume that the higher level of vital exhaustion and the lack of peer support go along with aggressiveness. Our results show that vital exhaustion is accompanied by higher level of depression, anger and hostility. Males reporting more intensive peer support can be characterized as having lower level of anger and physical depression.

Proactive individuals show lower level of depression. The age of the child and the strategic planning coping mechanism significantly and positively correlate to each other. Subjects having higher level of proactivity present lower level of anger ($r=-0,36$; $p=0.001$). The usage of preventive coping strategies ($r=-2.11$; $p=.005$) and the emotional support seeking ($r=-0.33$; $p=0.002$) negatively correlate with the level of physical aggression. Our results support the assumption that the positive nature of father's individual resources help adapt to the new life period.

The second study: Couples facing with infertility problems; men and depression

This examination was developed and carried out by our research group as part of a bigger research within the confines of the TÁMOP-4.2.2/B-10/1-2010-0024 project. Our goal with this part of the research was the examination of male's depression, taking into consideration the appearance of the male depression symptoms as a form of reaction to stressful situations. Similarly to the previous study, we also analyzed the correspondence between male and female symptoms.

The methods of the second study:

We only considered the data for analysis, if both the male and female questionnaire was available for a given couple. Altogether 202 subjects participated in the research, 101

female and 101 male. The research took place at the University of Debrecen, Department of Obstetrics and Gynecology between January 2012 and January 2013.

In order to measure the male's depression symptoms, the GMDS were used as in the previous research. In this research, two subscales of the questionnaire were used (Almássy, Baksa, Papp and Szemán-Nagy, in press). The first subscale was titled as typical depressive symptoms subscale which measures the severity of symptoms according to the established criteria (melancholy, burnt-out, feeling empty, sleeping disturbances, hopelessness, tiredness). The second subscale was titled as externalized symptoms subscale containing items such as aggressiveness, decreased frustration tolerance, stress and restlessness. Besides the GMDS, the short version of the Beck Depression Inventory (BDI) was also used (Kopp and Kovács, 2006). The anxiety was measured using the STAI-T, whereas the hopelessness was measured using the Beck Hopelessness Scale (Perczel Forintos, Sallai and Rózsa, 2010).

The results of the second study:

Based on previous researches, we assumed in our first hypothesis that women present a higher level of mental problems than men when facing with infertility problems. Our results show that women display higher level of depression [$Z=-5.49$, $p<0.001$] and anxiety level [$Z=-5.05$, $p<0.001$] than men. No significant differences were found with respect to hopelessness. Therefore it can be concluded that the results partially verified our assumption.

Based on our results, we concluded that experiencing their own infertility problem is one of the most determining factors of the psychical well-being of men, and it corresponds with their age: the higher age and infertility problem together increase the level of depression. The two-factor analysis of variance test showed that both the age $F_{age}(1;94)=7.79$, $p=.006$ and the problem $F_{problem}(1;94)=13.29$, $p<.001$ has a significant main effect on the BDI total score. Older male subjects having their own infertility problems report higher level of aggression, irritability, restless and decreased frustration tolerance level. The significant main effect of both variables is reflected in the externalized symptoms [$F_{age}(1;94)=6.92$, $p=.01$, $F_{problem}(1;94)=6.35$, $p=.014$] as well as in the total score of GMDS [$F_{age}(1;94)=4.77$, $p=.032$, $F_{problem}(1;94)=13.28$, $p<.001$].

In our second and third hypothesis we assumed that higher age, the duration of infertility and the male's own infertility problem have a negative effect on their psychical well-being. In light of the results of our study more detailed correspondences can be revealed. The male type depression together with the infertility problem experienced by males

determines the appearance of hopelessness. Having examined the combined effect of these factors we concluded that both has a significant main effect on hopelessness: [$F_{\text{problem}}(1;97)=54, p=.001$; $F_{\text{GMDS}}(1;97)=33.39, p<0.001$; $F_{\text{problem}\times\text{GMDS}}(1;97)=17.99, p<.001$].

Men who don't have a child with their current partner and have their own infertility problems show significantly more anger, irritability and anxiety than those who have their own child ($U=230, p=0.012$).

Finally we hypothesized strong association between men and women depressive and anxiety symptoms. Our assumption is partly proved, and the interrelationships shows more detailed associations. Men whose partner shows higher anxiety levels can be described with higher anxiety levels too, and express significantly higher levels of externalizing symptoms: ($U=848.5, p=.037$) and ($U=896, p=.056$). The appearance of externalizing symptoms are determined by the anxiety level of women and the men's own infertility problem: [$F_{\text{STAI_woman}}(1;94)=4,68, p=0,033$] and [$F_{\text{problem}}(1;94)=3,9, p=0,051$]. The age of the women and their feelings of hopelessness have a main significant effect on the externalizing symptoms of men [$F_{\text{woman_age}}(1;87)=7.99, p=.006$]; [$F_{\text{woman_hopelessness}}(1;87)=10.83, p=.001$]. The interaction between the two variables are also significant: [$F_{\text{age}\times\text{hopelessness}}(1;87)=8.18, p=.005$].

The third study: The adaptation of the Proactive Coping Inventory

Positive psychology uses proactive coping as a definition of coping. In contrast to research concentrating on the traditional concept of coping, proactive coping is not focusing on the strategies which reduce stress levels related to burdening situations or emphasise the process of how people cope with problems and stressful situations in their life. The main function of coping in this case is to increase personal growth (Schwarzer and Knoll, 2009; Greenglass, 2002). Proactive coping is a multidimensional coping strategy which is future-oriented. A proactive person has a vision of the future stressful situations, builds up general resources, and acts beforehand.

The purpose of the present study was to adapt the Proactive Coping Inventory to a Hungarian language context, and to evaluate its psychometric properties. It was aimed to assess the structural validity of the questionnaire, present results referring to the reliability, describe the subscales and the relationship between the subscales of the inventory, furthermore show gender differences in the subscales.

Methods of the third study

The sample consists of 87 males, 357 females, and 8 respondents did not indicate their gender. The average age was 25.84 years. The subjects were university and college students.

After filling out a demographic questionnaire, subjects completed the Proactive Coping Inventory (Greenglass, Schwarzer, Jakubiec, Fiksenbaum and Taubert, 1999) and the short version of the Beck Depression Inventory (Kopp and Kovács, 2006).

The Proactive Coping Inventory is based on Schwarzer's (2000) theory. The questionnaire is a 55 item self-reporting instrument and it is divided into seven subscales measuring different aspects of coping: proactive coping, preventive coping, strategic planning, reflective coping, instrumental and emotional support seeking and avoidance coping. It was a multi-stage process to develop the final version of the Hungarian version of the instrument. The translation was approved by the author of the inventory.

Results of the third study

In order to test the first hypothesis we assessed the structural validity of the PCI-H performing Confirmatory Factor Analysis (CFA). The results of the CFA verify that the seven-factor model appropriately represents the original factor structure of PCI ($RMSEA=.045$; $SRMR=.0678$; $CFI=.855$; $TLI=.845$).

The reliability of PCI subscales proved to be extremely good. Reliability indices ranged from $\alpha=.71$ to $\alpha=.86$.

The results of the examination of the construct validity proved our expectations in each of the scales. Emphasizing the strongest correlations: negative correlations were observed between depression and proactive coping ($r=-.439$, $p<.001$), while there is a positive correlation between avoidance coping and depression ($r=.228$, $p<.001$).

As concept of coping suggests the Proactive Coping Scale positively correlated with other subscales: the Reflective Coping Scale ($r=.495$, $p<.001$); the Strategic Planning Scale ($r=.268$, $p<.001$), the Preventive Coping Scale ($r=.321$, $p<.001$) and the Emotional Support Seeking Scale ($r=.147$, $p=.002$). The two subscales which focus on support seeking moderately correlated with each other ($r=.560$, $p<.001$), which was also an expected relationship. The Proactive Coping Scale negatively correlated with the Avoidance Coping Scale ($r=-.132$, $p=.005$). This supports the idea that using proactive coping means coping actively and not in a passive way, unlike the process involved in avoiding problem solving.

The Reflective Coping Scale showed moderate correlations with the Strategic Planning Scale ($r=.549, p<.001$) and the Preventive Coping Scale ($r=.593, p<.001$). The Strategic Planning Scale also had a moderate correlation with the Preventive Coping Scale ($r=.560, p<.001$). The interrelationships among the subscales are similar to the patterns that have resulted on the original instrument.

Examination of the gender differences resulted in the followings: women are more likely to use instrumental and emotional support seeking than men [$t(442)=-2.452, p=.015$; $t(442)=-4.342, p<.001$] in the interest of achieving their goals and solve their problems. Women seek specific help which can solve their problems. Men while facing with problems more likely analyze different solutions, their resources and their effectively in the situation. On four scales (Reflective Coping: $t(442)=2.736, p=.006$; Strategic Planning: $t(442)=2.571, p=.010$; Preventive Coping: $t(442)=2.451, p=.015$; Avoidance Coping: $t(442)=2.429, p=.016$) men scored higher than women. There were no significant differences between men and women in the case of proactivity.

Summary

The dissertation aimed to provide information about the mental health of men examining the symptomatology of male's depression. This work would like to supply information regarding practical and theoretical guideline while working with men in the childbearing period.

According to our results, assessing masculine specific symptoms of depression is relevant in this life cycle. Although it is widely accepted that male and female symptoms often concordance with each other, our results can reveal more detailed information, namely in the case of the appearance of externalizing symptoms and aggression. The extended knowledge of male's specific depressive symptoms contributes not only to the recognition and the therapy but also provide information to the field of prevention. It is beneficial not only to the individual, but also to the health of the family.

Identifying strength and adaptive coping mechanisms could contribute to planning the therapy sessions. The adopted instrument is valid and reliable: it is applicable and offers opportunities for research and practice in cases when the identification of strength of subjects could be the resolution.

References used in the theses

- Almássy, Zs., Pék, Gy., Papp, G., & Greenglass, E. R. (2014). The Psychometric Properties of the Hungarian Version of the Proactive Coping Inventory: Reliability, Construct Validity and Factor Structure. *International Journal of Psychology and Psychological Therapy*. 14(1), 115–124.
- Almássy, Zs., Baksa, N., Papp, G., & Szemán-Nagy, A. (közlésre elfogadva): Nemi különbségek vizsgálata a depressziós tünetegyüttesben az alexitímia mentén, különös tekintettel a férfi depresszióra. *Magyar Pszichológiai Szemle*
- Branney, P., & White, A. (2008). Big boys don't cry: depression and men. *Advances in Psychiatric Treatment*, 14, 256–262.
- Chuick, C. D., Greenfeld, J. M., & Greenberg, S. T., Shepard, S. J., Cochran, S. V., & Haley, J. T. (2009). A qualitative investigation of depression in men. *Psychology of Men and Masculinity*. 10(4), 302–313.
- Cochran, S. W., & Rabinowitz, F. E. (2000). *Men and depression: clinical and empirical perspectives*. San Diego: Academic Press.
- Cochran, S. W., & Rabinowitz, F. E. (2003). Gender-sensitive recommendations for assessment and treatment of depression in men. *Professional Psychology: Research and Practice*. 34(2), 132–140.
- Cox, J. L., Holden, J. M., & Sagovsky, R. (1987). Detection of postnatal depression. Development of the 10-item Edinburgh Postnatal Depression Scale. *The British Journal of Psychiatry*. 150, 782–786.
- Gerevich, J., Bácskai, E., & Czobor, T. (2007). The generalizability of the Buss–Perry Aggression Questionnaire. *International Journal of Methods in Psychiatric Research*. 16(3), 124–136.
- Greenglass, E. R. (2002). Proactive coping and quality of life management. In: E., Frydenberg (Ed.) *Beyond coping: Meeting goals, visions, and challenges*. (37–62). London: Oxford University Press.
- Greenglass, E. R., Schwarzer, R., Jakubiec, D., Fiksenbaum, L., & Taubert, S. (1999). The *Proactive Coping Inventory (PCI): A Multidimensional Research Instrument*. Paper presented at the 20th International Conference of the Stress and Anxiety Research Society (STAR), Cracow, Poland, July 12–14.
- Kopp M., & Kovács M. E. (2006). Melléklet: a Hungarostudy 2002 felmérésben használt kérdőívek. In: M. Kopp & M.E. Kovács: *A magyar népesség életminősége az ezredfordulón* (539-550). Budapest : Semmelweis Kiadó.
- Nazroo, J. Y., Edwards, A. C., & Brown, A. C. (1998). Gender Differences in the prevalence of depression: artefact, alternative disorders, biology or roles? *Sociology of Health & Illness*. 20(3), 312–330.

- Ogrodniczuk, J. S., & Oliffe, J. L. (2011). Men and depression. *Canadian Family Physician*, 57, 153–155.
- Oliffe, J. L., & Phillips, M. J. (2008). Men, depression and masculinities: A review and recommendations. *Journal of Men's Health*, 5(3), 194–202.
- Perczel Forintos, D., Sallai, J., & Rózsa, S. (2010). Adaptation of the Beck Hopelessness Scale in Hungary. *Psychological Topics*, 19(2), 307–321.
- Rihmer, Z., & Rutz, W. (2000). *Depresszió és Öngyilkosság férfiaknál*. Budapest: Springer Orvosi Kiadó
- Rochlen, A. B., Whilde, M. R., & Hoyer, D. (2005). The Real Men. Real Depression Campaign: Overview, theoretical implications, and research considerations. *Psychology of Men and Masculinity*, 6(3), 186–194.
- Schwarzer, R., & Knoll, N. (2009). Proactive coping. In: S. J., Lopez (Ed) *The encyclopedia of positive psychology*. (781–784). Oxford (UK): Wiley-Blackwell.
- Sipos, K., Sipos, M., & Spielberger, C. D. (1994). A State-Trait Anxiety Inventory (STAI) magyar változata. In: F., Mérei, F., Szakács (szerk.). *Pszichodiagnosztikai vademecum I/2*. (123–148). Budapest: Nemzeti Tankönyvkiadó
- Winkler, D., Pjrek, E., & Kasper, S. (2006). Gender-specific symptoms of depression and anger attacks. *Journal of Men's Health & Gender*, 3(1), 19–24.

Publications related to the dissertation

- Almássy, Zs.**, Pék, Gy., Papp, G., & Greenglass, E. R. (2014). The Psychometric Properties of the Hungarian Version of the Proactive Coping Inventory: Reliability, Construct Validity and Factor Structure. *International Journal of Psychology and Psychological Therapy*. 14(1), 115–124.
- Almássy, Zs.**, Mohácsi, B., & Szemán-Nagy, A. (2014). Gyermekvállalás és mentális egészség a férfiak szemszögéből. In: Á Münnich (ed.): *Pszichológiai kutatások. Debreceni Egyetem Pszichológiai Doktori Program* (39–49). Debrecen: Debreceni Egyetemi Kiadó.
- Almássy, Zs.**, Baksa, N., Papp, G., & Szemán-Nagy, A. (közlésre elfogadva): Nemi különbségek vizsgálata a depressziós tünetegyüttesben az alexitímia mentén, különös tekintettel a férfi depresszióra. *Magyar Pszichológiai Szemle*
- Almássy, Zs.**, Mohácsi, B., Farkas, Á., Sápy, T., & Szemán-Nagy, A. (2013). Anxiety, Depression and Hopelessness Associated with Infertility. Examination of Couples with Infertility and Gynecology Related Diseases. In: G. Angyalosi, Á. Münnich, G. Pusztai (eds.): *Interdisciplinary Research in Humanities* (257–268). Nitra: Constantine the Philosopher University in Nitra, Faculty of Central European Studies.
- Mohácsi B., **Almássy Zs.**, Sápy T., Farkas Á., & Szemán-Nagy, A. (2013). Psychological approach to Polycystic Ovary Syndrome (PCOS) and Endometriosis. In: G. Angyalosi, Á. Münnich, G. Pusztai (eds.): *Interdisciplinary Research in Humanities* (247–256). Nitra: Constantine the Philosopher University in Nitra, Faculty of Central European Studies.
- Schuller, P., **Almássy, Zs.**, & Szemán-Nagy, A. (2013). Exhaustion, depression and pain: The psychological background of chronic spinal pain and tension headache. In: G. Angyalosi, Á. Münnich, G. Pusztai (eds.): *Interdisciplinary Research in Humanities* (287–296). Nitra: Constantine the Philosopher University in Nitra, Faculty of Central European Studies.

Almássy, Zs., Szekanecz, Z., & Pék, Gy. (2010). A rheumatoid arthritisben szenvedő betegek eredményes megküzdésében szerepet játszó tényezők vizsgálata. *Immunológiai Szemle*, 5. 9–13.

Publications besides the dissertation

Pék, Gy., Kőszeghy, A., Szabó, G., **Almássy, Zs.**, & Máth, J. (2012). Kollektív traumatikus esemény reakciói fiatalok körében. A magyarországi „vörösiszap” katasztrófával kapcsolatos kommunikációs és érzelmi reakciók jellemzői. In: E. Gabos (szerk.) *A média hatása a gyermekekre és fiatalokra* (313–321). Budapest: Nemzetközi Gyermekmentő Szolgálat Magyar Egyesület.

Pék, Gy., Kőszeghy, A., **Almássy, Zs.**, Szabó, G., & Máth, J. (2012). Magyarország legnagyobb vegyi katasztrófájának reprezentációi: az emlékezhely kialakulásának dinamikája. In: J. Kovács- Á. Münnich (szerk.) *Nemzeti emlékezhelyek. Attitűdök, reprezentációk, élmények, funkciók, struktúrák* (145–164). Debrecen: Debreceni Egyetemi Kiadó.

Szemán-Nagy, A., & **Almássy, Zs.** (2012). Disszociatív élmények, abszorpció és számítógépes játék-élmény vizsgálata. In: E. Gabos (szerk.) *A média hatása a gyermekekre és fiatalokra* (330–336). Budapest: Nemzetközi Gyermekmentő Szolgálat Magyar Egyesület

Pék, Gy., Kőszeghy, A., Szabó, G., **Almássy, Zs.**, & Máth, J. (2011). Characteristics of communication ensuing the red sludge disaster in Hungary, October 2010, *Applied Psychology in Hungary*, 1, 110–125.