

Effectiveness of a training programme based on acceptance and commitment therapy aimed at older adults – no moderating role of cognitive functioning

Skuteczność programu treningowego opartego na założeniach terapii akceptacji i zaangażowania w grupie osób starszych – brak moderującej roli poziomu funkcjonowania poznawczego

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Abstract

Aim of the study: To assess the effectiveness of psychological skills training based on Acceptance and Commitment Therapy (ACT) in lowering the psychopathological symptoms and increasing the quality of life in older adults over 60 years of age ($N = 60$). Also assessed was the moderating role of the level of cognitive functioning measured by the Mini Mental State Examination (MMSE) scale.

Material and methods: Volunteers were randomly assigned to two groups: the experimental group whose training comprised a total of 12 sessions which took place 2–3 times a week, and the passive control group. The level of the participants' cognitive functioning was assessed with the MMSE. The participants filled in the questionnaires (DASS-21, WHOQL-Age) twice: at the baseline and after a month.

Results: The depressive and anxiety symptoms decreased significantly in the experimental group between the measurements. A similar effect did not occur in the control group. The level of quality of life increased significantly during the month, again, only in the experimental group. The mental state level did not significantly moderate the aforementioned changes.

Conclusions: A vast number of reports confirm the effectiveness of ACT-based interventions in many aspects of mental health and general functioning. This study shows the potential of implementing an ACT-based training programme in the group of older adults, regardless of their mental state or possible dementia processes.

Key words: psychopathology, ACT, ageing, cognitive functioning.

Streszczenie

Cel pracy: Ocena efektywności treningu umiejętności psychologicznych opartego na terapii akceptacji i zaangażowania (ACT) w zmniejszeniu nasilenia objawów psychopatologii (lęku i depresji) oraz podwyższeniu jakości życia w grupie osób starszych powyżej 60. roku życia ($N = 60$). Oszacowano moderującą rolę poziomu funkcjonowania poznawczego badanych mierzonego skalą *Mini Mental State Examination* (MMSE).

Materiał i metody: Ochotnicy zostali losowo przydzieleni do dwóch grup badawczych: eksperymentalnej, w której trening składał się z 12 sesji odbywających się 2–3 razy w tygodniu prowadzonych przez psychologa przeszkolonego w ACT oraz pasywnej grupy kontrolnej. Oszacowano poziom funkcjonowania poznawczego badanych z wykorzystaniem testu MMSE. Badani dwukrotnie wypełnili kwestionariusze (DASS-21, WHOQL-Age) na początku badania oraz po upływie miesiąca.

Wyniki: Nasilenie objawów depresji i lęku zmniejszyło się istotnie w grupie eksperymentalnej pomiędzy pomiarami. Podobny efekt nie wystąpił w grupie kontrolnej. Poziom jakości życia podwyższył się istotnie jedynie w grupie eksperymentalnej po miesiącu. Poziom stanu umysłowego nie okazał się istotnym moderatorem powyższych zmian.

Wnioski: Liczne badania potwierdzają skuteczność interwencji opartych na ACT w wielu aspektach zdrowia psychicznego i ogólnego funkcjonowania. Badanie pokazuje potencjał prowadzenia programu treningowego opartego na ACT w grupie osób starszych, szczególnie wśród osób zagrożonych wykluczeniem społecznym ze zwiększonym nasileniem objawów lęku i depresji, bez względu na poziom funkcjonowania poznawczego i ewentualnych procesów demencyjnych.

Słowa kluczowe: psychopatologia, ACT, starzenie się, funkcjonowanie poznawcze.

Introduction

Today, for the first time in history, most people can expect to live beyond the age of 60. The increasing life expectancy and the falling birth rate lead to rapid aging of societies all over the world (Beard *et al.* 2016). In this context, and in the face of increasing longevity, it is necessary to understand the processes, limitations and challenges connected with ageing, in order to create and develop initiatives aimed at supporting the wellbeing of older people. The chronological age of around 60–65 years is considered the beginning of late adulthood (Stuart-Hamilton 2012). Most people of this age experience significant psychological and physical changes which influence their everyday functioning. According to the World Health Organisation, old age begins at 60 (WHO 2001). It is a phenomenon caused by and connected with changes in the physiology, biochemistry and anatomy of body cells, influencing their functions. It is not an illness, but rather a natural process of change, which cannot be stopped or reversed. Neurons go through those changes too, which influences cognitive functioning.

The term “cognitive functions” includes a broad range of mental processes that allow people to control, adjust and coordinate their behaviour, in order to achieve goals. Both the scientific research of cognitive processes during the human lifespan and everyday observations confirm that cognitive capacity decreases with age (Nagel and Lindenberger 2015; Schmiedek *et al.* 2010). Older adults are less effective than younger people in many cognitive tasks, even if the groups are matched according to the level of education, and there is no evidence of neuropathology in the older participants (Logie *et al.* 2015). Deficits of cognitive functions result in worsened everyday functioning and are correlated with different dimensions of anxiety (Gallacher *et al.* 2009). Furthermore, weakened cognitive functions can be a risk factor, as well as a component supporting anxiety disorders (Sharp *et al.* 2015). High level of anxiety in older adults may be caused not only by weaker cognitive capacity, but also by the necessity to face many serious challenges: age-related deficits caused by diseases of the central nervous system (Alzheimer’s disease, Parkinson’s disease, dementia), myocardial infarctions, motor disability, cancer and many other chronic health problems which pose a challenge for both older individuals and their caregivers (Steuden 2014).

Older people often have to give up on their independence and start perceiving themselves as

dependent on other people. This can be a source of anxiety and insecurity (Steuden 2014). The elderly lose their partners and/or friends, which results in a sense of isolation, frustration, anxiety and loss of hope (Heravi Karimloo *et al.* 2008; Steuden 2014). It is estimated that between 1.2% and 14% of older adults suffer from an anxiety disorder (Wolitzky-Taylor *et al.* 2010; Bryant 2008). Sub-clinical forms of anxiety disorders are even more common. It is estimated that they affect between 15% and 52.3% of the older population (Witlox *et al.* 2018).

Unfortunately, this age group does not receive sufficient counselling and therapy, even though sub-clinical anxiety in older adults leads to worsened quality of life and wellbeing (Witlox *et al.* 2018). Furthermore, even sub-clinical anxiety symptoms predispose older adults to develop a fully symptomatic mental illness (Wolitzky-Taylor *et al.* 2010; Bienvenu *et al.* 2001). Another important issue is the comorbidity of anxiety and depression (Gum and Cheavens 2008).

It is unfortunate that older people do not receive adequate care: many older persons requiring counselling or therapy do not receive help (Beard *et al.* 2016). This is due to the lack of access to those services (Andrade *et al.* 2014; Gamm *et al.* 2010) and limited mobility (Wetherell *et al.* 2004). Even if older adults do receive help, it is often limited to pharmacological treatment (Gum *et al.* 2010). The prevalence of full blown anxiety and depression disorders, as well as subthreshold anxiety and depression symptomatology in the older people’s everyday functioning is extensive. This means there is a pressing need to introduce evidence-based therapeutic interventions.

In the context of limited accessibility to adequate psychological care for older adults, we need to develop programmes of therapy which can be conducted with minimal contact with a therapist, or in a self-help mode. This paper proposes an intervention employing the premises of the Acceptance and Commitment Therapy (ACT) to support older adults. ACT combines the principles of mindfulness and acceptance with the therapeutic techniques adapted from behavioural therapy and experimental psychotherapy (Stockton *et al.* 2019). Psychological inflexibility is considered a factor of susceptibility to psychopathology, and a characteristic of several disorders (Kashdan 2011). In the ACT model, psychological inflexibility is considered a useful target for preventative and therapeutic interventions in many clinical aspects. The literature quotes psychological inflexibility as

a susceptibility factor for depression, because it is characterised by a permanent, rigid style of reacting with rumination (Nolen-Hoeksema *et al.* 2008). A growing number of reports confirm that anxiety disorders are particularly connected with psychological inflexibility via a limited and stereotypical range of behavioural responses to fear and anxiety (Kashdan 2011). In the ACT model, psychological flexibility is conceptualised as the process of observing the currently occurring thoughts and emotions without unnecessary defences. It involves maintaining or changing behaviour, depending on the situation and in accordance with one's values (Hayes *et al.* 2006; Stockton *et al.* 2019). ACT promotes the development of psychological flexibility via six core processes of change: acceptance, being present, cognitive defusion, values, self as context and committed action (Hayes *et al.* 2006). Acceptance is a psychological process alternative to experiential avoidance. It involves a proactive and conscious recognition of the emerging personal experiences and events (Hayes *et al.* 2006). In older adults, acceptance is connected with better emotional wellbeing and higher quality of life (Wetherell *et al.* 2011). Cognitive defusion is a process of changing the attitudes towards thoughts, which consequently reduces the thoughts' negative effect upon the regulation of behaviour (Hayes *et al.* 2006; Twohig *et al.* 2010). Being present "promotes ongoing non-judgmental contact with psychological events and events in the environment" (Hayes *et al.* 2006, p. 8). The self as context process facilitates awareness of internal processes without being attached to them, and observation from some perspective. Values-based interventions strengthen the motivation to seek forms of behaviour serving those values via committed action (Hayes *et al.* 2006). Psychological flexibility is connected with life satisfaction, everyday wellbeing and mental health (Kashdan 2011; Wallace and Shapiro 2006). Psychological flexibility is founded on executive functioning, default mental states and personality configurations (Kashdan 2011). The neurochemical processes, anatomy and the dynamics of brain activity change during life, leading to cognitive deficiencies, particularly in fluid cognitive abilities (Nagel and Lindenberger 2015; Schmiedek *et al.* 2010). A significant reduction of cognitive capacity in older age is connected with the weaker functioning of the pre-frontal cortex, which plays an important role in the functioning of working memory (Nagel and Lindenberger 2015). Weakened executive

functions can contribute to psychological inflexibility, which in turn may result in a rigid range of responses to fear and anxiety, and consequently in avoidant behaviour (Kashdan 2011). According to the ACT model, psychological flexibility leads to better health and wellbeing, regardless of the experienced difficulties and painful events (Kashdan 2011; Malinowski 2013). The process of conscious acceptance and an open attitude towards negative experiences may be the precursors of psychological flexibility (Kashdan 2011). Researchers have examined this phenomenon using functional neuroimaging. Research participants with less open attitudes and low acceptance displayed activation within the limbic system when they described their thoughts and emotions, both positive and negative. People with a higher level of acceptance, who described thoughts and emotions with openness and interest, showed a different pattern of activation. Heightened activity in the pre-frontal cortex was accompanied by inhibition of the limbic system (Kashdan 2011). This means that the attitude of openness and acceptance is connected with emotional regulation (executive functions – activation in the pre-frontal cortex). Other scientific evidence also indicates that acceptance and openness to experience are connected with executive functions (Kashdan 2011; Malinowski 2013), which deteriorate with age. In this context, interventions aimed at building psychological flexibility through acceptance and mindfulness are recommended for older adults. In ACT, those processes are introduced via psychoeducation, use of metaphors and exercises, as well as through experiential techniques (Twohig *et al.* 2010). The core ACT processes of values and committed action are consistent with the recommendations included in the definition of healthy ageing proposed by the WHO (Andrade *et al.* 2014), which describes it as the process of developing and preserving the functional capabilities which facilitate wellbeing in older age. Health is therefore understood not merely as the absence of illness, but it includes the functional aspect of promoting living in harmony with one's values (Beard *et al.* 2017).

ACT-based interventions have been proven effective with regard to a broad range of health and psychological problems (Kishita *et al.* 2017; Twohig and Levin 2017; Brown *et al.* 2016; Lee and Song 2018; Hayes *et al.* 2006; Bai *et al.* 2020). This paper contributes to the research on the effectiveness of ACT-based training in older adults. Its objective was to evaluate the effectiveness of training in people aged 60 and over,

who live in less accessible populations (small towns and villages), where older people have less access to the system of mental health care. The participants were recruited from groups at risk of social exclusion. They lived alone, suffered from chronic diseases or experienced financial difficulties. The research analyses the changes in the level of symptoms of depression and anxiety, as well as in the quality of life, measured before and after the training. It also evaluates the differences between the experimental group and the control group. In addition, the research verifies the hypothesis about a moderating role of cognitive functioning, as measured by the Mini Mental State Examination scale, in achieving the above changes.

Material and methods

The research project was approved by the Ethics Committee for Scientific Research of the Faculty of Psychology at SWPS University. The research and training of volunteers lasted from July until October 2020.

Participants

Sixty out of 64 volunteers completed the questionnaires and, where appropriate, the training procedures (4 volunteers did not fulfil the criteria of age – above 60 – or of not having participated in psychotherapy during the preceding year). The participants were aged between 60 and 91 ($M = 73.48$, $SD = 8.87$). Forty-two were female and 18 were male. 91.7% of participants were retired. Twenty-five participants had a primary level of education (7 or 8 years), 19 had vocational training, 15 had secondary qualifications and one had a university degree. All participants lived in villages or small towns. Their level of cognitive functioning measured with the MMSE scale did not significantly differ between groups [$F(1,58) = 0.35$, $p = 0.56$]. The mean for the control group was 27.10 ($SD = 2.91$), and for the experimental group 27.50 ($SD = 2.30$). Fifteen participants had the MMSE result below 27, of whom 3 had vocational training, and the remaining ones completed primary education. Three of those people were aged below 80 years. They were informed about the availability of neurological consultation concerning possible dementia.

Procedure

The volunteers were recruited directly by the researcher in their daytime locations. Everybody was extensively informed about the research and

the principles of personal data protection, and they signed a consent form. They were randomly assigned to research groups (random.org). The experimental group ($N = 30$) participated in training involving the ACT protocol (4 weeks of training 3-4 times a week, a total of 12 sessions). The control group ($N = 30$) was passive. The participants from both groups filled in a personal data form and then questionnaire tests. The training sessions took place in groups. People who were absent from a group session were trained individually, so that all the participants went through an identical training programme. The intervention was conducted by a psychologist trained in ACT therapy. After the training programme, i.e. after about 4 weeks, participants from both groups once again completed the same questionnaire tests.

Research methods

In order to evaluate the effectiveness of the training, participants in both the experimental and the control group completed the following tests:

The Mini Mental State Examination (MMSE) is a clinical scale measuring cognitive impairment (Pangman *et al.* 2000). The questionnaire comprises 30 questions/tasks allowing for quantitative evaluation of different aspects of cognitive functioning. The results are sensitive to age, level of education and cultural background, but not to gender (Tombaugh and McIntyre 1992). In this research the MMSE is used as the control variable describing the level of participants' cognitive functioning.

The Depression, Anxiety and Stress Scale (short version, DASS-21) contains 21 statements (Lovibond and Lovibond 1995). The scale is based on the dimensional approach to mental disorders, which defines psychopathological symptoms as present in non-clinical populations, albeit in a milder form. Affective symptoms, such as depression or anxiety, differ in intensity along a continuum, regardless of the specific diagnosis. This is why DASS-21 allows for an effective diagnosis of symptoms, particularly among people suffering from sub-clinical manifestations of a particular disorder. The scale is used for self-evaluation of the symptoms of anxiety, depression and stress, using three seven-item sub-scales. The authors list dysphoria, hopelessness, devaluation of life, self-deprecation, lack of interest/involvement, anhedonia and inertia as the symptoms of depression. They list physiological arousal as the main symptom of anxiety.

WHO Quality of Life – AGE scale (WHO-QOL-AGE) is a tool for measuring quality of life with a particular focus on the aspects related to older adults. Polish validation (Zawisza *et al.* 2016) shows the measurement to be valid, reliable and suitable for use in Poland in older populations.

Training programme

The participants in the experimental group underwent a 12-module original programme entitled *Arte Vitae*, which was based on the premises of ACT therapy and designed on the basis of scientific literature (Hayes and Smith 2019; Harris 2019; Forsyth and Eifert 2016). The intervention protocol is presented in a separate paper (Chojak and Papińska 2020). Each programme module (20–40 minutes) included elements of psychoeducation, breathing exercises, listening to a recording, and a written exercise. The contents of the *Arte Vitae* programme is related to building psychological competences, based on the core ACT processes.

Results

The statistical analyses were done using the IBM SPSS Statistics 26.0 programme. The first

step included the calculation of the basic descriptive statistics, which are presented in Tables 1 and 2.

The differences in the level of psychopathological symptoms for the initial and the final measurement, and between the experimental and the control group, were established using a 2×2 analysis of variance (2 groups \times 2 measurements). For the purpose of the analyses we assumed the significance level $\alpha = 0.05$. Training was the inter-object factor, whereas the intra-group factors were the measurements of the quality of life and psychopathological symptoms at the beginning of the research and after a month. The analyses were conducted for the results of WHOQOL-AGE and the depression and anxiety sub-scales of DASS-21. The detailed results of those analyses are reported in the further part of this article.

Symptoms of depression

The analysis did not show a significant main effect for the measurement, $F(1,58) = 3.37$, $p = 0.072$, $\eta_p^2 = 0.06$. The symptoms of depression after a month ($M = 4.10$, $SE = 0.44$) were not significantly different from the initial ones ($M = 4.78$, $SE = 0.47$). Also the main

Table 1. Descriptive statistics for measurements of control group

	M	Me	SD	Min.	Max.
Level of cognitive functioning (MMSE)	27.10	27.00	2.90	17.00	30.00
Quality of life – measurement 1	45.93	46.00	6.89	27.00	59.00
Quality of life – measurement 2	44.63	45.50	6.66	28.00	56.00
Psychopathological symptoms (overall) – measurement 1	16.33	15.50	9.79	2.00	43.00
Psychopathological symptoms (overall) – measurement 2	16.40	15.50	10.04	3.00	39.00
Depressive symptoms – measurement 1	5.23	5.50	3.31	0.00	13.00
Depressive symptoms – measurement 2	5.03	4.50	3.82	0.00	13.00
Anxiety symptoms – measurement 1	5.23	5.00	3.70	0.00	16.00
Anxiety symptoms – measurement 2	5.30	5.00	3.74	0.00	14.00

Table 2. Descriptive statistics for measurements of experimental group

	M	Me	SD	Min.	Max.
Level of cognitive functioning (MMSE)	27.50	28.00	2.30	18.00	30.00
Quality of life – measurement 1	46.47	47.00	8.27	25.00	60.00
Quality of life – measurement 2	51.87	53.50	7.99	26.00	63.00
Psychopathological symptoms (overall) – measurement 1	15.37	11.00	11.23	4.00	42.00
Psychopathological symptoms (overall) – measurement 2	9.77	7.00	7.69	1.00	30.00
Depressive symptoms – measurement 1	4.33	3.00	3.94	0.00	13.00
Depressive symptoms – measurement 2	3.17	2.50	2.90	0.00	10.00
Anxiety symptoms – measurement 1	4.40	3.00	3.78	0.00	15.00
Anxiety symptoms – measurement 2	2.67	2.00	2.51	0.00	9.00

effect for the inter-object factor, the training, proved insignificant, $F(1,58) = 2.79, p = 0.100, \eta_p^2 = 0.05$. People from the group participating in the training ($M = 3.75, SE = 0.59$) were not significantly different from the people in the control group ($M = 5.13, SE = 0.59$) as far as depressive symptoms were concerned.

Furthermore, there was no significant interaction of both factors, $F(1,58) = 1.68, p = 0.200, \eta_p^2 = 0.03$. The analysis of simple effects for training showed significant differences between the groups for depressive symptoms after a month, $F(1,58) = 4.54, p = 0.037, \eta_p^2 = 0.07$. People in the experimental group displayed a significantly lower level of depressive symptoms than people in the control group. The differences between groups in the initial measurement were insignificant, $F(1,58) = 0.92, p = 0.342, \eta_p^2 = 0.02$. The analysis of the simple effect for the measurement did not show significant differences in the level of depressive symptoms in the control group $F(1,58) = 0.14, p = 0.706, \eta_p^2 < 0.01$, whereas in the experimental group the difference was significant, $F(1,58) = 4.90, p = 0.031, \eta_p^2 = 0.08$. After a month of training, the level of depressive symptoms in this group decreased significantly. The means and standard deviations for the analysed effect are presented in Figure 1.

Symptoms of anxiety

The analysis found a significant main effect for the measurement, $F(1,58) = 5.08, p = 0.028, \eta_p^2 = 0.08$. The level of anxiety symptoms showed in the initial measurement ($M = 4.82, SE = 0.48$) was significantly higher than that for the measurement one month later ($M = 3.98, SE = 0.41$). Also significant was the main effect for the inter-object factor – training, $F(1,58) = 4.49, p = 0.038, \eta_p^2 = 0.07$. People in the experimental group ($M = 3.53, SE = 0.58$)

showed a lower level of anxiety symptoms than the people in the control group ($M = 5.27, SE = 0.58$). Also significant was the interaction of both factors, $F(1,58) = 5.93, p = 0.018, \eta_p^2 = 0.09$. The analysis of simple effects for training did not show statistically significant differences between groups during the first measurement, $F(1,58) = 0.74, p = 0.392, \eta_p^2 = 0.01$. It did find significant differences for the measurement carried out one month later, $F(1,58) = 10.24, p = 0.002, \eta_p^2 = 0.15$. People from the training group showed a lower level of anxiety symptoms than the people in the control group. The analysis of simple effects for the measurement did not show significant differences in the level of anxiety symptoms among the participants from the control group, $F(1,58) = 0.02, p = 0.899, \eta_p^2 < 0.01$, whereas the difference between measurements was significant for the experimental group (participating in the therapy), $F(1,58) = 10.99, p = 0.002, \eta_p^2 = 0.16$. After a month of training, the level of anxiety symptoms in the group was significantly reduced. The means and standard deviations for the analysed effect are presented in Figure 2.

Quality of life

The analysis showed a significant main effect for the measurement, $F(1,58) = 12.53, p = 0.001, \eta_p^2 = 0.18$. The level of quality of life measured after a month ($M = 48.25, SE = 0.95$) was significantly higher than in the initial measurement ($M = 46.20, SE = 0.98$). Also the main effect for the inter-object factor, training, proved significant, $F(1,58) = 4.43, p = 0.040, \eta_p^2 = 0.07$. People in the control group ($M = 45.28, SE = 1.30$) showed a lower level of quality of life than people in the experimental group ($M = 49.17, SE = 1.30$). The interaction of both factors was significant as well, $F(1,58) = 33.45, p < 0.001, \eta_p^2 = 0.37$.

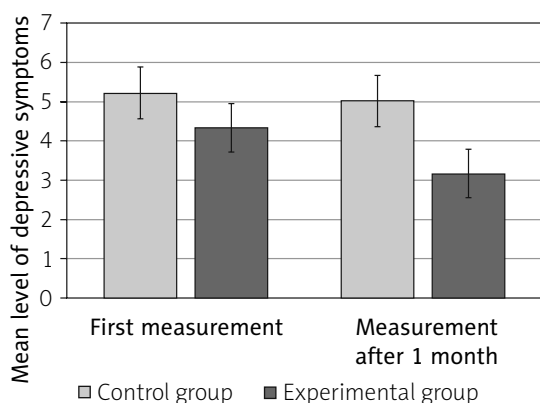


Fig. 1. The means and standard deviations for the symptoms of depression in two measurements

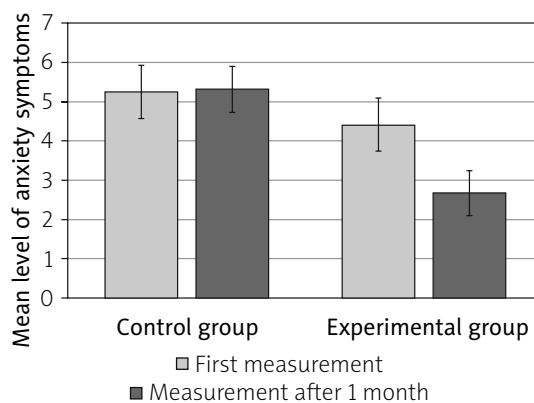


Fig. 2. The means and standard deviations for the symptoms of anxiety in two measurements

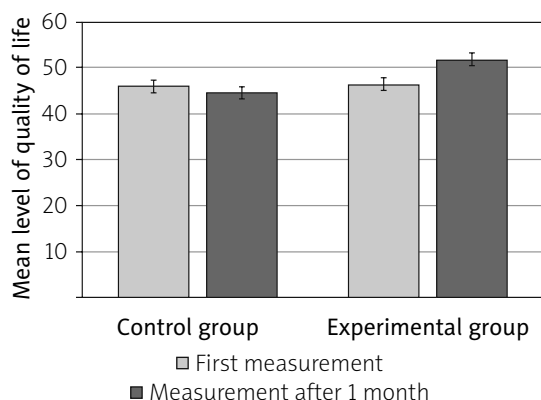


Fig. 3. The means and standard deviations for the level of quality of life in two measurements

The analysis of simple effects for training did not show significant differences in the initial level of quality of life between people from the control and the experimental group, $F(1,58) = 0.07$, $p = 0.787$, $\eta_p^2 < 0.01$. It did show significant differences for the measurement carried out one month later, $F(1,58) = 14.50$, $p < 0.001$, $\eta_p^2 = 0.20$. The quality of life of people in the experimental group was significantly higher than that of people from the control group. The analysis of simple effects for the measurement did not show significant differences for the control group, $F(1,58) = 2.52$, $p = 0.118$, $\eta_p^2 = 0.04$, whereas there was a significant difference between the measurements in the experimental group, $F(1,58) = 43.46$, $p < 0.001$, $\eta_p^2 = 0.43$. After a month of training, the level of quality of life in this group increased significantly. The means and standard deviations for the analysed effect are presented in Figure 3.

The level of cognitive functioning measured by the MMSE scale as a moderator of the relationship between the first and the second measurement of the symptoms of depression and anxiety

In the next step, we tested moderation models, using the PROCESS macro by A. Hayes

(model 1), in which the moderator was the level of cognitive functioning measured by the MMSE, the independent variable was the first measurement of anxiety and depression, and the dependent variable was the second measurement of those symptoms. The variables were subjected to centration. Cognitive functioning was divided into three levels, low, average and high, on the basis of the mean level ± 1 SD. The analysis showed that the level of cognitive functioning measured by MMSE was not a significant moderator of the relationship between the first and the second measurement of DASS-21 dimensions. The aggregate results of the analyses are presented in Table 3.

The level of cognitive functioning measured by the MMSE scale as a moderator of the relationship between the first and the second measurement of quality of life

The last analysed model concerned establishing the significance of cognitive functioning measured with the MMSE as a moderator for the relationship between the first and the second measurement of the quality of life. The analysis did not show a significant moderation effect for the level of cognitive functioning. The interaction between this level and the first measurement of the quality of life was insignificant. The detailed results of the analyses for the model are presented in Table 4.

Discussion

The results of statistical analyses confirmed the hypothesis about the effectiveness of ACT-based training of psychological competences in lowering the symptoms of psychopathology and improving the quality of life. The initial level of symptoms of depression and symptoms of anxiety showed no significant differences between the experimental and the control group. Significant differences occurred after a month. Both the depressive and the anxiety symptoms

Table 3. Linear regression models with interactive component for moderative role of cognitive functioning for the relationship between the first and second measurement of depression and anxiety symptoms

	<i>B</i>	<i>SE</i>	<i>t</i>	<i>p</i>	<i>F</i> (3,56)	<i>R</i> ²
Depressive symptoms – measurement 1	0.65	0.10	6.81	< 0.001		
Cognitive functioning	0.07	0.14	0.54	0.591		
Interaction	0.02	0.03	0.66	0.511	15.50***	0.454
Anxiety symptoms – measurement 1	0.61	0.09	6.68	< 0.001		
Cognitive functioning	-0.21	0.14	-1.50	0.139		
Interaction	0.05	0.03	1.97	0.054	16.91***	0.475

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 4. Linear regression models with interactive component for moderative role of cognitive functioning for the relationship between the first and second measurement of quality of life

	<i>B</i>	<i>SE</i>	<i>t</i>	<i>p</i>	<i>F</i> (3,56)	<i>R</i> ²
Quality of life – measurement 1	0.80	0.10	8.03	< 0.001		
Cognitive functioning	0.08	0.34	0.24	0.813		
Interaction	0.03	0.05	0.51	0.613	24.46***	0.567

p* < 0.05, *p* < 0.01, ****p* < 0.001

decreased significantly between measurements, but only for the people in the experimental group. The difference between the groups was significant. A similar effect was observed for the quality of life. Initially there was no significant difference between the groups. The second measurement showed better quality of life only in the experimental group, and the difference between the groups was statistically significant. The hypothesis about the moderating role of the level of cognitive functioning measured with the MMSE scale in the change of psychopathological symptoms, depression and anxiety, and the change in the quality of life was not confirmed.

Conclusions

The number and proportion of people aged over 60 is constantly increasing. In 2019, there were a billion people of that age. By 2050, the number may exceed two billion (WHO 2020).

Older age brings new challenges and difficulties. The stress related to ageing changes people's priorities in life. Physical wellbeing, psychological health, sense of security and the need to stay active and stimulated come to the forefront (Steuden 2014). This is why older adults need comprehensive support to enjoy a healthy and fulfilling life for as long as possible. ACT-based interventions have the potential to support older adults in improving their wellbeing in spite of the many age-related challenges. This paper contributes to the research confirming the effectiveness of ACT-based interventions for older people. The analyses showed that cognitive functioning measured with the MMSE did not play a moderating role for the relationship between the first and the second measurements of psychopathology (depression and anxiety) and quality of life. This means that ACT-based training may be effective regardless of the participants' level of cognitive functioning. Consequently, this type of intervention can be recommended for use in care homes, day centres and other institutions looking after the wellbeing of older people, including for patients with initial symptoms of cognitive impairment.

An intervention in the form of a self-help book or a mobile application could deliver support to people in danger of social exclusion who live far from the centres of psychological support. Even though almost a half of participants (48.3%) had MMSE results lower than 28, it is important to remember that 41.7% of them had only primary education. Older participants stated that they had discontinued their education not due to a lack of talent or desire, but because of financial hardship suffered by their families in rural areas after the war. Consequently, MMSE results below or equal to 27 may not indicate cognitive impairment processes when we control for age cohort and education. The results may be clinically applicable. ACT-based programmes can be conducted for older adults at risk of social exclusion or suffering from a higher level of psychopathological symptoms. The English National Institute for Health and Care Excellence (NICE 2009) recommends that mild forms of therapy should last for 12-16 weeks. It is recommended for the results to be replicated in further research on older adults, which will involve longer duration of therapeutic intervention, in order to achieve lasting improvement of participants' wellbeing and quality of life.

Disclosure

The authors declare no conflict of interest.

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