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REVIEW OF HUMOUR INTERVENTIONS TO REDUCE STRESS, ANXIETY, AND DEPRESSION IN ADULTS

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ABSTRACT

Humour interventions can be utilized for improving health status or as complementary therapy for physical, emotional, cognitive, social, or spiritual illnesses. The aim of this review is to identify the effectiveness of humour interventions on depression, anxiety, and stress in adults. Articles published from 2015 to 2020 were searched from various databases. The PRISMA strategy was utilized to identify articles that met the inclusion criteria. The search resulted in 1701 studies, although only sixteen studies were eligible for final review. Humour interventions are safe, inexpensive, and easy to use, and contribute greatly to reducing stress, anxiety, and depression in the adult population. The types of humour intervention are indirect humour, direct humour, social humour, and self-humiliating humour. All humour interventions were of planned humour. Planned humour was the most usable in all studies. It is recommended that more high-quality studies and follow-up assessments should be carried out for future research.

Keywords--- Humour, Stress, Anxiety, Depression, Adult

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INTRODUCTION

Mental diseases are becoming more common around the world, posing threats to individual function and quality of life, and creating an economic burden on patients, families, and entire countries as a result. The most common mental disorder of adults is depression, which commonly coexists with anxiety and stress (1). In the previous decade, the prevalence and severity of psychological health disorders, their symptoms, and mental health difficulties have increased. Approximately 300 million individuals worldwide suffer from depression, whereas 264 million suffer from anxiety. People who suffer from mental illnesses have a greater rate of disability and mortality (2). The WHO (2017) had stated that depression is a major contributor to suicide deaths, accounting for nearly 800,000 suicides annually (3). In a survey from Institute for Health Metrics and Evaluation (IHME), in 2017, depression ranked first for the Indonesian population. Anxiety disorders can be experienced by all age groups. The results of an Indonesian survey (2018) showed that depressive disorders begin in adolescence with a prevalence of 6.2%. The pattern of prevalence increases with increasing age, which is highest at the ages of 75+ at 8.9%, 65-75 years at 8%, and 55-64 years at 6.5% (4).

Depression is a mood condition characterized by emotions of melancholy, gloom, despair, and dissatisfaction. A depressed person has a negative perception of stressors and therefore views all problems as negative (5). Depression, according to projections, will be the world's second most common disability by 2020. Anxiety is a natural stress response, but anxiety disorder develops when it is combined with excessive dread or expectation of future worry, which can interfere with daily activities. In East Asia, approximately one in every fifty people was diagnosed with anxiety disorder in 2010 (1). Prolonged stress increases the risk of a weakened immune system and is associated with depression, anxiety. Adaptability and good coping mechanisms can be one

way to deal with stress more effectively to reduce its negative impact on declining health status (6). Several studies have shown that humour can serve as an effective way to cope with traumatic and distressing experiences in contexts such as mental disorders (stress, anxiety, depression) and physical health (7–9). Humour is ¹⁹ a protective factor against anxiety and depression (10). Humour can also boost the immune system, lower blood pressure and increase pain tolerance. Humour therapy ¹¹ can strengthen the perception of positive feelings ¹¹ and can contribute to an optimistic attitude towards life (11).

Humour is defined as a situation that can affect the emotions of people. Humour can be in the form of jokes, entertainment, and even satire. The ability to use humour is an art of life and a source of inspiration that individuals can peruse to solve problems in everyday life (12). The sense of humour of a person includes the sense of pleasure when listening and telling jokes or exploring funny things of certain situations, enjoying laughter or smiles, confirming the relationships of one another, and showing joy in life. There are four types of humour: spontaneous humour, social humour, satire humour, and self-deprecating humour (13).

Therapeutic humour is very important to be applied in the practice of health services in forming meaningful and carefree lives. Nurses must evoke the sense of humour of people with mental disorders to support and direct the individuals to properly make use of themselves (14). The development of a gradual humour model should also be applied by nurses working in psychiatric wards. In this model, the therapeutic humour process can be utilised to assist the recovery process from illness. The inability to laugh is related to a lack of humour. The reason for this may be related to the real relationship of the individual. The second step involves the explanation that everyone has problems and the search for other interesting perspectives on the situation. Here, problems can arise where the objective is a sense of superiority. The third step involves the

insights of individuals into themselves. Developed insights into their behaviour turn into self-confidence. Laughing at oneself is important for personal development. The third step in the model by Hirsch is to emphasize the benefits that nurses will obtain from the usage of therapeutic humour in practice. In the fourth and fifth steps, other people can laugh at oneself and one can laugh at oneself with others (12).

Humour therapy can improve health status or be utilised as a complementary therapy to help cure disease and improve coping, whether physical, emotional, cognitive, social, or spiritual. Humour can be experienced passively, for example by watching entertainment programs or funny movies, or actively, by telling jokes or participating in stand-up comedy, as well as through a combination of active and passive participation by joining a humour group (15) or focusing on various topics of humorous behaviour (8). The provision of humour interventions has shown effectiveness by increasing positive effects and life satisfaction and reducing depression, anxiety, or stress (8).

Different approaches can be utilised in developing humour therapy to promote humorous behaviour; some researchers have conducted online humour interventions (16,17) while other researchers presented audio-visual comedy or sing-along during certain periods (16–19). All of these methods of humour have been shown to improve social functioning or reduce depression and anxiety. Furthermore, a face-to-face humour training program was developed that is very effective in improving humour coping skills and reducing depression and mood disorders (20). The aim of this systematic review is to identify the effectiveness of humour interventions on depression, anxiety, and stress in adults.

METHODS

Search Strategy

The systematic review steps were carried out following the Preferred Reporting Items for

Systematic Reviews and Meta-Analyses (PRISMA) guidelines. Research article searches were conducted with the following databases: Scopus, PubMed, CINAHL/EBSCO, Science Direct, and ProQuest, with the search strategy described in Figure 1. Articles published in English from the last five years (January 2015 to December 2020) were included. Search keywords utilised MeSH (Medical subject heading). Keywords with Boolean operators that were searched in each database included (humor OR jokes OR funny) AND (intervention OR method OR therapy OR training) AND (anxiety) OR (stress) OR (depression) AND (adults).

Inclusion and Exclusion Criteria

This study included all articles in English that were published between January 2015 and December 2020 with the topic of humour intervention to reduce stress, anxiety, depression in adults. The preferred research method was randomized control trials (RCT), quasi- experiments, and mixed methods; the latter two together with randomized control trials were excluded. Research articles were considered eligible if they involved a population of eighteen years of age and older, who are healthy or with a mental or physical health condition (as described in their title or their abstract objective), and where humour intervention was compared with all forms of control or comparison groups, assessing stress, anxiety, and depression as the main outcome.

Quality Assessment

Assessment of the quality of research articles was carried out with a quality assessment checklist from the Centre for Evidence-Based Medicine (CEBM). Each article was rated by one reviewer and checked for accuracy by another reviewer. Studies were assessed twice and differences were resolved by discussion. No studies were issued based on quality.

Data Collection and Extraction

Data from the research articles that met the inclusion criteria were extracted using a structured

sheet containing information about author/year/country, study type, participants/sample, intervention, comparison, follow-up period/time, study quality, measured results, and main findings. Data extraction and checking of the extracted data were performed by different people.

Data Synthesis

Based on various results such as different methodological approaches, different findings, and a limited number of articles on the effectiveness of humour interventions for reducing stress, anxiety, and depression in adults, it was not possible to perform a meta-analysis of these results. Therefore, the results are presented in narrative form, including tables to clarify. Figure one shows the selection process for articles by the PRISMA strategy. The total number of articles taken from the databases that had the potential to be selected was 1,701 articles. There were three hundred seventeen duplicate articles, which reduced the total articles to 1,384. Subsequently, the research articles were screened according to the inclusion criteria. First, 1,213 articles were removed because they were not related to the topic of the study, leaving one hundred seventy-one articles. Next, 171 articles were filtered based on the titles, which left sixty-one articles; one hundred ten articles were removed because the titles were not related to the research. The remaining sixty-one articles were filtered by abstracts, and this left thirty-two articles, while the other twenty-nine articles were removed because the abstracts were not related to the research. Finally, for the remaining thirty-two articles, the full texts were read, and seventeen articles were kept. The other fifteen articles were excluded for these reasons: the participants were under eighteen years of age; they were published in a language other than English; the research design was not RCT, quasi-experimental, or mixed methods; or the results were not about the effectiveness of humour interventions to reduce stress, anxiety, and depression in adults. It was found that sixteen studies met the inclusion criteria for this review. The sixteen selected articles were

assessed for quality, data extraction, and synthesis.

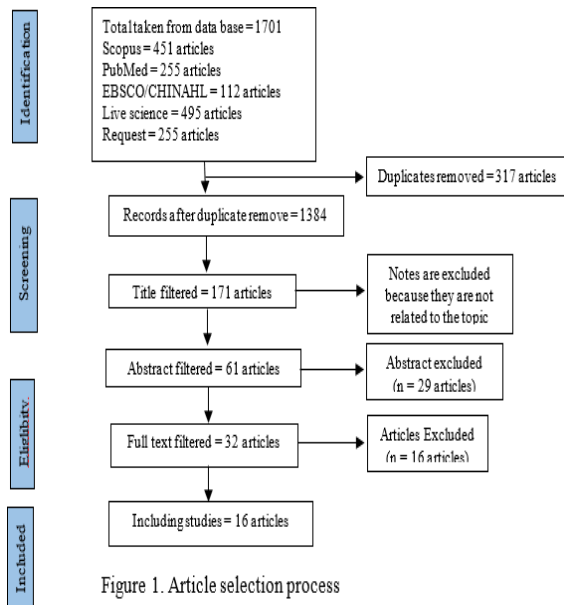


Figure 1. Article selection process

RESULTS

Characteristics of Included Studies

A systematic review was obtained from 16 selected articles from Turkey, Portugal, China, Austria, France, United States of America, Germany, United Kingdom, Philippines, Poland, Brazil, and Switzerland. The results of the systematic review and article assessment of the sixteen articles are shown in Table one in the Appendix. There were six articles of good quality, three articles of medium quality, and seven articles of low quality. The number of samples varied from 10-615 respondents. Participants were distributed randomly and non-randomly. The follow-up length also varied from two weeks to six months. Of the sixteen articles on intervention, eight involved the RCT method, five were quasi-experiments, two were online experiments, and one had mixed methods. Some articles did not have a control or comparison group. Population characteristics included non-clinical and subclinical communities, as online populations, students, elderly people, cancer patients, haemodialysis patients, and people with mental

disorders.

4 **The Effect of Humour Intervention on Stress, Anxiety, and Depression**

Seven studies involved the examination of the effectiveness of humour interventions for anxiety in adults (6,7,14,18,21–23). Four of them found a significant effect of the intervention on anxiety. Comparisons with control humour interventions before and after the interventions led to a statistical increase (or decrease) in anxiety with small to medium effects across the studies. There is substantial evidence of high heterogeneity.

For the results of nine articles (6,14,16,17,19,21,24–26) for overcoming depression, two of them showed significant effects. Humour intervention also has a significant effect on reducing stress. This was shown in two studies (6,22). There were two studies (8,20) that showed no effect on anxiety and depression.

Type of Intervention

The Humour-Based Intervention Program (HBIP) is a twelve-module program to reduce depression and increase the happiness of elderly people. HBIP combines humour theory and the PERMA model of happiness for elderly people. The following are the themes: general recognition, hopeful outlook, calming down, knowing yourself better, healing wounds that cause unhappiness, listening with heart and resolving anger, being free from the shackles of the past, forgiving and letting go, fostering interpersonal relationships, improving emotional capacity, calculating God's gifts, evaluation, and planning (26).

The humour intervention program for Chinese nursing home residents is an intervention for the elderly to appreciate and learn to use humour and release their emotions. The contents of the program involve warming up, watching funny videos, playing games, and sharing humour (21).

One study on people with mental disorders (2019) involved a German humour training program

by Falkenberg *et al.* that was a modification of The Seven Humour Habits Program by McGhee. Each session lasted ninety minutes per week and covered specific topics. They were sense of humour, benefits of laughing, detecting puns and ambiguity, humour in everyday life, laughing at yourself, humour as a way to deal with stress, and style of humour (20).

Another study involved humour-based online positive psychology intervention that consisted of five sessions and involved stating three funny things, collecting funny things, counting funny things, applying humour, and solving stressful situations in a funny way (17). The humour style model is divided into adaptive humour (affiliative humour and self-enhancing humour) and maladaptive humour (aggressive and self-defeating humour). People who have an affiliative humour style engage in humour to enhance social relationships. People who have a self-enhancing humour style find solace in the inappropriateness and absurdity of life and utilise humour to deal with stress and negative life events. People also utilise humour in maladaptive ways that have detrimental consequences. The aggressive humour style tends to peruse humour in the form of sarcasm and ridicule to manipulate or criticize others (23).

Humour intervention was also given by watching comedy films. This type of intervention differs from the simple act of switching the television to any channel with no specific programming, as is the case in the waiting rooms of many healthcare services, allowing for the possibility of programming that could have a negative impact (14). Positive psychological intervention was utilised as a kind of humour intervention. The first involved people having to record three funny things that happened during the day and how they felt in those situations for seven days in a row in a diary (24). The second intervention was coping humour, which was based on solving Wellenzohn's stressful situations in a humorous way. The third intervention was writing three good things in a diary (16).

DISCUSSION

Humour is beneficial in improving well-being and health (20). Humour activates the emotional center in the brain that triggers the release of dopamine. It helps the brain process emotional responses and enhances the experience of pleasure. Serotonin functions to maintain mood and endorphins are useful to relieve pain, stress and increase happiness. The results of the humour-based intervention program were reduced depression and increased happiness. The intervention program was developed for the elderly to conduct group activities to reduce isolation due to sadness and unhappiness, in order that daily life can run well and pleasantly. Cheerfulness and pleasant moments are antidotes to unhappiness and depressed mood (26).

This systematic review showed that humour intervention programs significantly reduced symptoms of depression, anxiety, and stress in adults. The findings of this study suggest that organisations planning to initiate humour interventions should pay attention to cultural aspects and interactive factors in creating humour intervention programs to ensure high participation of adults in activities. Humour therapy is very feasible and has the potential to be utilised as psychotherapy in clinical nursing. This is because humour intervention can be applied with various methods, have no time and geographical limitations, and is quite economical. Moreover, humour can influence the perceptions of patients regarding health and disease symptoms, enhance individual coping mechanisms, and lead to a tendency to report symptoms or seek health care and interact with healthcare professionals.

The grouping of study articles by the type of humour intervention (12) according to Bischofberger were based on their initiatives. All of the studies applied a type of planned humour. In some of the studies, humour therapy was given mostly in the form of programs that were

completed in various sessions; the number of sessions ranged from five until twelve program sessions, with intervention schedules ranging from one until four times per week and session durations of approximately sixty to one hundred twenty minutes (6,8,14,16,17,19–21,24,26). Humour intervention could also be given in a planned manner with at least three given sessions only (25). In others, the program was not given gradually; for example, some studies provided humour therapy for a few minutes before addressing health problems, as before surgery (7,18,27). Two articles did not explain humour program sessions specifically (22,23). Planned humour is the intended provision of humour as an intervention, for example by providing guidance or a journal about humour, giving clown pictures, or reading funny stories. Important planned interventions are applied in everyday nursing care (12). All of the studies in the articles applied humour therapy as planned intervention or planned humour.

Of the sixteen study articles, nine provided indirect humour, which utilises media to evoke humorous responses. Six studies provided funny clips or videos as humour interventions, but there were no specific mentions of the content of the clips or videos, for example whether they were satirical or depended on jokes involving movements or physical functions of the body (7,14,18,19,21,27). Indirect humour can be conveyed through funny images such as cartoons (23,25). Another study provided the humour in the form of a funny script or modules (22,26). Indirect humour is a type of humour that is characteristically provided through media such as funny magazines, comedy films, cartoons, books, and CDs. Therefore, the humour initiative does not appear directly in a person but is stimulated from a given tool (12).

The next type of humour is direct humour. Out of the sixteen articles, seven utilised humour interventions with direct humour. Three studies involved games as part of the method in their humour intervention programs. The applied types of games were word games or other games that

were played to produce muscle movements and laughter such as drumming or singing (8,20,21). Word games were found to have been applied in the humorous interventions. Humour intervention sessions with direct humour was more broadly applied by making verbal humour, telling jokes, creating ambiguity, finding humour in daily situations or activities, and writing funny things (6,17). Some funny things are not always expressed directly through words, but can be expressed through filling out an online diary for a specified duration of time (16). Direct humour is humour that is facilitated through verbal or non-verbal communication that is made directly and consciously, for example through word games or making jokes. In individual communication, humour must be experienced and expressed. Humour in this way is also associated with spontaneous humour, which is humour that is expressed in a sudden manner. Some individuals utilise the humour to make themselves superior to others. The goal is not to harm others. They generally possess a positive attitude. In addition, these people have a realistic perspective that is often utilised to regulate their sense of humour (12).

Four studies were found to apply social humour. Social humour can be interpreted as a form of humour that relates to members of a social group. The form of humour intervention can be through a verbal presentation or listening to a person sharing interesting things or telling jokes, short pieces, or puzzles (6,21). Social humour is a form of humour that individuals utilise to improve relationships with themselves and with others. People who make this type of humour enjoy telling jokes. Generally, the objective is to relax and create a pleasant atmosphere. For them, humour serves as a social operator (12,28).

The final type of humour is self-humiliating humour or self-deprecating humour. Three studies as detailed in their articles utilised this type of humour for the intervention programs. Laughing at oneself or displaying a side of personal weakness that is then made fun of became the method of

humour therapy sessions (6,8,20). In this style of humour, individuals as comedians attempt to describe things that misrepresent information about them. The goal is to be accepted by others. Self-defeating humour is positively associated with physical stress, as predicted (28). Self-harming humour is associated with internalisation problems. One study was also found to provide humour therapy in the form of satire, although this was not specifically explained. The study showed many jokes that made fun of other people that were being applied as humour therapy in the article (23). This type of humour is utilised to belittle others. It may be sexist, racist, and even sarcastic. People who use this type of humour apply jokes impulsively (12).

CONFLICT OF INTEREST

No conflicts of interest were announced.

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CONCLUSION

This review provides strong evidence that humour interventions are safe, inexpensive, and easy to be utilised; they also contribute greatly to reducing stress, anxiety, and depression in the adult population. The types of humour in the interventions are indirect humour, direct humour, social humour, and self-humiliating humour. All the humour interventions are of planned humour. Planned humour was the most usable in all studies. For future studies, ¹ follow-up assessments and randomized controlled trials with large samples are needed to verify the effectiveness of humour interventions in various populations and enhance public awareness of the perception that humour intervention can reduce stress, anxiety, and depression.

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Appendix

Table I. Overview of Included Studies

Author/ Year/ Location	Intervention/ Duration, Frequency	Comparison	Results	Sample/Age	Design	Time/ Follow-up	Article Quality
Hasan & Saritas (19), 2020, Turkey	Watching comedy videos before surgery/ 10 minutes, 1 meeting	-	Watching classic comedy videos can lower anxiety levels before surgery	88 cancer patients, >18 years old	Pre-test post-test RCT	21 May - 17 August 2018	+++
Sousa <i>et al.</i> (20), 2019, Portugal	Watching humorous movies during haemodialysis/ 40-120 minutes	-	Watching humorous movies increases happiness and sense of humour and reduces symptoms of depression	67 haemodialysis patients (34 intervention samples and 33 control samples), >18 years old	Pre-test post-test design with an unequal control group	4 weeks, 2-3 times a week	+++
Zhao <i>et al.</i> (29), 2020, China	Learning to use humour and release parental emotions/ 60 minutes, 8 meetings	Ordinary lifestyle	Humour can reduce depression and anxiety, improve well-being, cognitive function and sleep quality in elderly people	74 elderly people (37 intervention samples and 37 controls), >60 years old	Quasi-experiment	8 weeks / 16 weeks	++++
Tagalidu <i>et al.</i> (23), 2019, Austria	Modification of 7 habitual humour programs by McGhee (2010)/ 90 minutes, 1x/week	Counseling, crisis intervention, Occupational therapy	Humour training for people with mental disorders can improve humour and humour coping but does not affect depression and chronic anxiety	54 respondents with mental disorders (28 T, 26 C), > 18 years old	Quasi-experiment	8 weeks/1 month	+++
Nabi (24), 2015, USA	<ul style="list-style-type: none"> Read a funny public service announcement (PSA) script Humorous or funny messages about BSE (women) or TSE (men). 	Study 1 Reading serious messages about self-examination	Perception of humour reduces anxiety about self-examination, which in turn is associated with more positive self-examination attitudes; usage of carefully constructed appeal of humour may be a viable messaging strategy to promote health detection behaviour	Study 1 187 students (68% female; 32% male) Study 2 267 students (78% female & 21% male), >18 years old	Quasi-experiment	1 week	++
Tagalidu & Distlberger (16), 2019, Germany	German humour training by Falkenberg, McGhee, and Wild/ 90 minutes, 1x/week	-	Depression, anxiety, and well-being did not change significantly	33 people with mild or moderate depression and anxiety, >18 years old	RCT (pre- & post-measurement)	7 weeks/1 month (2x follow-up)	++
Morgan <i>et al.</i> (7), 2019, UK/Engl and	<ul style="list-style-type: none"> High coping humour vs low coping humour Death salience vs pain salience Funny movie clips vs neutral movie clips / 10 minutes 	1989 world skating championship clip	People who regularly use humour to solve problems are better at managing everyday anxiety and lowering thoughts of death	556 respondents, >18 years old	Online experiment design	1X	++
Tagalidu & Lodere (6), 2018, Germany	7 humour habit programs to improve humour coping skills, including role play, games, and discussions/ 90 minutes, 1x/week	No control	Humour training was effective in reducing perceived stress, depression, and anxiety while improving humour coping, cheerfulness, and well-	35 people with subclinical symptoms >18 years old	Single-arm trial	7 weeks	+++

			being in a subclinical sample				
Wellenzohn & Proyer (18), 2018, Germany	Writing down three funny things that happened throughout the day/ 1x/day for 1,3,6 months follow-up	Writing childhood memories	Humour-based psychological therapy can improve well-being and reduce depression	615 respondents (117 males and 55 females), >18 years old	Experiment	6 months	++
John & Tungol (28), 2017, Philippines	12 modular programs: short lectures, reading comic books, viewing funny cartoons, jokes, laughing yoga, laughing exercises, and games, sharing funny stories, magic shows, stimulating humour and fun	No control	Intervention programs reduce depression and increase happiness for older adults	10 seniors (4 boys & 6 girls), 60-75 years old	Mixed methods	3 weeks	+++
Braniecka <i>et al.</i> (27), 2019, Poland	Participants only saw 28 pictures and after each had rated their responses, participants looked at each picture a second time, under instruction: (a) use humour, (b) use positive reassessments, or (c) just see. In phase 2, images are randomly assigned to each of the 3 conditions with 8 images associated with each instruction	-	Humour reduces negative emotions, increases positive emotions, and increases the distance from adversity	54 people with major depression, 19-60 years old	Quasi-experiment	1-3 days	+++
Ford (25), 2017, USA	Participants read 4 cartoons and 4 jokes before doing a mathematics test, each given a pause of 10 seconds	No humour control condition	Self-enhancing humour can reduce state anxiety associated with stressful events	123 respondents (43 male & 80 female), 18-74 years	Quasi-experiment	-	++
Morais <i>et al.</i> (29) 2020 Brazil	Watching comedy movies during dialysis/ 2 hours/session, 2 times per week	Routine service standards	Watching videos reduces depression, anxiety, and intradialytic complications (hypertension and headaches)	61 patients (35 T; 26 C), >18 Years old	RCT	6 weeks/no follow-up	++++
Saritas <i>et al.</i> (30) 2019 Turkey	Watch funny videos of old Turkish comedies for 10 minutes before comedy via tablet device/ 10 minutes	Routine service standards	Watching Turkish comedy films has a positive effect on postoperative pain and anxiety in surgical oncology patients	88 patients (44 tests & 44 controls), >18 Years old	Pre & post RCT	No, follow up	+++
Tagalidou & Baier (31) 2019 Austrian, German	<ul style="list-style-type: none"> Overcoming humor Three cute things Three good things/ 1 week 	Early memories (writing 3 memories in the past)	Coping humor has the effect of increasing well-being and decreasing depression	182 respondents, >17 Years old	RCT	I'm the moon	++++
Wellenzohn <i>et al.</i> (24) 2018 Switzerland, Germany	Humor-based online positive psychology intervention <ul style="list-style-type: none"> Write down 3 funny things that happened during the day Participants were randomly assigned to one of five humor-based PPIs 	writing about early childhood experiences)	Extraversion affects the humor intervention, sense of humor has no moderating effect on the effectiveness of the five humor-based interventions. Humor interventions can improve well-being and reduce depressive symptoms.	Trial 1 104 women (55 T, 49 placebos) Trial 2 632 respondents (117 males & 515 females), 19-79 years old	Online experiment	1,3,6 months	+++

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