

## Review Protocol

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*As part of the studies in his doctoral program investigating the role of humor in therapy*

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This protocol is revised by Dr. José Manuel García Montes on 16.12.2020  
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This protocol is based on the recommendations made by the authors Liberati et. al. (2009) in their article *"The PRISMA Statement for Reporting Systematic Reviews and Meta-Analyses of Studies That Evaluate Health Care Interventions: Explanation and Elaboration"*.

## 1. OBJECTIVES

To examine whether humor plays a role in increasing the psychological flexibility of clients and therefore their problem-solving skills in psychotherapy we will review randomized, controlled trials that assessed the effect of humor in psychotherapeutic interventions. Because we don't know how much information we can find about the role of humor in therapy, we want to keep the search as broad as possible. Of course, our aim is to find as many studies as possible that contain randomized controlled trials. But to prevent to skip information that could be relevant to our research we also want to include more type of studies as stated under point 2.5.

## 2. ELIGIBILITY CRITERIA

Inclusion criteria:

1. No restrictions are imposed on the date of publication.
2. Published, as well as unpublished, investigations will be included.
3. Articles in the English, Spanish and Dutch language will be included.
4. Participants:
  - a. Participants are at least 18 years and at most 65 years of age.
  - b. Participants can function normal cognitively. They are not cognitively impaired due to, for example, autism, dementia or an accident which led to brain damage.
5. Type of studies:
  - a. Randomized controlled trials.
  - a. Observational studies with the principal focus on humor as a therapeutic intervention.
  - b. Case studies with the principal focus on humor as a therapeutic intervention.
  - c. Cross sectional studies which contain humor at least a variable of the personality of the therapist or client.
  - d. Correlational studies that relate humor with one or more variables relevant to therapeutical interventions.
6. Type of interventions:
  - a. The focus of the investigations is on applying humor in therapy, on the influence of humor on the psychopathology of the clients and/ or their personality.
  - b. Primary we are looking at the clinical therapy setting of clients receiving some sort of psychotherapy.

- c. Secondly, we are including investigations in which clients receive therapeutical sessions in a medical treatment, in which the biomedical treatment is supported by psychological support.
  - d. Lastly, we are including investigations in which sessions are investigated in which psychologists perform coaching.
  - e. The length of the interventions investigated should be at least a minimum of three sessions (brief therapy). There's no maximum to the amount of sessions.
7. Type of outcome measures:
- a. Although in the doctoral study we're interested in the role of humor in increasing the psychological flexibility of clients and therefore their problem-solving skills, in the systematic review we are interested in any result of applying humor in psychotherapy.
  - b. Outcome measures are derived from standardized and validated scales.
  - c. Quantitative and or qualitative outcome measures are available.

### 3. INFORMATION SOURCES

1. We will be using the services of the library of the university of Almería Nicolás Salmerón of the University of Almería. At the time of writing this protocol it wasn't clear yet whether we would collaborate with the Vrije Universiteit in Amsterdam in writing this systematic review. If so, we will expand the search for relevant studies with the extra resources available if those resources actively add new databases. We will mention any addition in the protocol and explain why we think it was useful.
2. Via the services of the library of the university of Almería Nicolás Salmerón we selected SCOPUS and Proquest as the main databases to start our search. Those databases contain among others the following databases:
  - Psychinfo (via Proquest)
  - Medline/ Pubmed (via SCOPUS)
  - Psycarticles (via Proquest)
  - PsycBOOKS (via Proquest)
  - PsycTESTS (via Proquest)
  - Psychology database (via Proquest)

Furthermore, we will include the database Psicodoc because it contains studies in the Spanish language, and the database Narcis or an equivalent that contains more articles in the Dutch language.

3. We will be using the following search terms:

a. English

- i. Humour\*
- ii. "Funny interventions"
- iii. Therapy or Therapeutic or Psychotherapy
- iv. Personality or "Personality trait"
- v. Depression or "Depressive disorder\*" or "depressive episode\*" or "depressive symptom"
- vi. Anxiety or "Anxiety disorder" or "Symptom\* of anxiety"
- vii. "Evaluation of humour"
- viii. Treatment or "Psychological treatment" or "Therapeutic treatment"
- ix. "Psychological flexibility"
- x. "Psychological rigidity"
- xi. "Problem solving skill\*" or "Problem Solving"
- xii. Creativity
- xiii. Confusion
- xiv. Resilience

b. Spanish

- i. Humor\*
- ii. "Intervenciones graciosas"
- iii. Terapia or Terapéutico\* or Psicoterapia
- iv. Personalidad or "Rasgo\* de la personalidad"
- v. Depresión or "trastorno\* depresivo\*" or "trastorno de depresión" or "episodio\* depresivo\*" or "síntoma\* depresivo"
- vi. Ansiedad or "trastorno de ansiedad"
- vii. "Evaluación de humor"
- viii. Tratamiento or "Tratamiento\* psicológico\*" or "Tratamiento\* terapéutico"
- ix. "Flexibilidad psicológica" or "Flexibilidad psicologica"
- x. "Rigidez psicológica" or "Rigidez psicologica"
- xi. "Habilidad de resolver problemas" or "Resolver problemas"
- xii. Creatividad
- xiii. Confusión
- xiv. Resiliencia

c. Dutch

- i. Humor\*
- ii. "Grappige interventies"
- iii. Therapie or Therapeutisch\* or Psychotherapie
- iv. Persoonlijkheid or Persoonlijkheidstrek\*

- v. Depressie or "Depressieve stoornis\*" or "Depressieve episode\*" or "Depressieve symptomen"
- vi. Angst or Angststoornis or "Symptomen van angst" or "Symptomen van een angststoornis"
- vii. "Evaluatie van humor"
- viii. Behandeling or "Psychologische behandeling\*" or "Therapeutische behandeling"
- ix. "Psychologische flexibiliteit"
- x. "Psychologische rigiditeit"
- xi. "Probleemoplossend vermogen" or "problemen oplossen"
- xii. Creativiteit
- xiii. Verwarring
- xiv. Veerkracht

In SCOPUS we first search for Humour\* OR Humor\* and get search results. Then we'll search for "Funny intervention\*", for "Therapy", etcetera and get individual search results for those keywords as well. We will do that for every keyword, also for the new keywords we might add during the search. Then we will combine the individual search results

#1 OR #2 AND #3 AND ..... in which #1 is the individual search result for Humour\*. That way we can combine all the search results for the different keywords. Humour or a synonym in the three different languages will be used in all the combined queries.

We will apply a similar search strategy when using Proquest or other data bases.

4. During the search other useful search terms could arise. We will add them to the existing list noting: "added during search process" and explain why we think that's useful.
5. We will inspect the reference sections of all selected studies.
6. We will contact the first authors of all selected studies to ask them for unpublished material, ongoing research and whether they knew of any other researchers having unpublished data or ongoing studies.

## Alterations to the original protocol:

### Added keywords during the search:

#### English

1. Coping OR "Coping strateg\*"
2. Creative
3. "Self efficacy" OR Self-efficacy
4. Banter OR Wit
5. Humor AND NOT Humoral

We filtered the search for the English language.

We also filtered the search for Humour\* OR Humor\* AND NOT Humoral for publications found in the subject area of medicine. Because the words 'humour' and 'humor' also refers to bodily fluids which is used frequently in medicine. Therefore resulting in thousands of articles not relevant to our search. For the other keywords we did include articles in the subject area of medicine.

#### Spanish

1. Humor\* AND NOT Humoral
2. "Habilidad de Solucionar Problemas" OR "Solucionar Problemas"
3. Creativ\* AND NOT Creative
4. Coping OR "Estrategia\* de afrontamiento"
5. Resiliencia
6. Autoeficacia
7. Gracia OR Broma OR Chanza
8. "Therapeutic uses of humor"

We filtered the search results for the Spanish language.

#### Dutch

1. Humor\* OR "Grappige interventies" OR "humor\* interventies" AND NOT Humoral
2. "Problemen oplossen" OR "Het oplossen van problemen"
3. Creatie\*
4. Coping OR Copingvaardigheden OR "Coping strategieën"
5. Veerkracht
6. Zelfeffectiviteit
7. Geestigheid OR Plagerij OR Scherts

We filtered the search for the Dutch language.

During the search process we used the filter Subject Area. We consequently used the next filters to include articles, and excluded all the others:

- Psychology

- Medicine
- Neuroscience
- Social Sciences
- Nursing
- Health Professions

On Friday the 18<sup>th</sup> of December 2020 we Found 2398 articles in English, Spanish and Dutch that met our criteria in SCOPUS.

On Tuesday the 21<sup>st</sup> of January 2021 we found 1625 articles in English, Spanish and Dutch that met our modified criteria in SCOPUS. We modified:

- Adding Humor\* in the English search
- Restricting the combined searches by excluding this time articles for medicine journals as we found out that 'humor' in medical terms means bodily fluids. Therefore the majority of the search results in medicine journals had nothing to do with the humor we are looking for.
- Adding Wit OR Banter and combining them with all the same search results we combined Humor\*, Humour\* and Funny as well
- The Spanish and Dutch equivalents of Banter and Wit only resulted in 5 extra articles to be reviewed.

Mainly because of discarding the articles from medicine journals led to a lower search result even though we broadened the search with the terms Wit and Banter.

In Proquest on the 4<sup>th</sup> of February 2021 we found 1648 articles that met our search criteria without being filtered for duplicates. Exporting them to Mendeley Desktop the amount was diminished to 1295 articles, because of the duplicates removed by Mendeley Desktop. Exporting to Mendeley Reference Manager only 938 articles remained, again because of automatic filtering for duplicates by Mendeley Reference Manager.

In Psicodoc on the 11<sup>th</sup> of February 2021 we found 442 articles in Spanish that met our criteria without being filtered for duplicates with articles found in SCOPUS or Proquest. Because we had to export the articles one by one, we already filtered the articles for relevance before exporting them to Mendeley Reference Manager. Of the 442 articles that we initially found, 76 remained being more or less relevant for the systematic review. Articles were rejected because of different reasons: other language than Spanish, most commonly Portuguese, Catalan or French; they had nothing to do with humour, but for example with humoral body fluids or with humor in the sense of 'mood'; because they were duplicates, for example the same articles appeared when we searched with 'depresión' and with 'ansiedad'.

In Narcis on the 12<sup>th</sup> of February 2021 we found 3 articles in Dutch that met our criteria.

On the 12<sup>th</sup> of February 2021 we checked for duplicates manually in Mendeley Desktop with the inbuilt function to check for duplicates. Merging the dataset found in SCOPUS and Proquest with the dataset of Psycodoc and Narcis, only 2514 remained. Again, duplicates were automatically removed. 355 sets of duplicates remained to be checked manually to see whether they were duplicates or not. After checking these sets 1980 articles remained after importing them into Mendeley Reference Manager for further filtering.

Added articles after the initial search in the selected databases:

Some articles have been added after the initial search, because of suggestions received by colleagues in the field

- o 26 in total (16-02-2021)

After the first filtering (finished on 09-04-2021), having removed another 6 articles that turned out to be duplicates exactly 2000 articles remained in the database. Of which:

- 398 were addressing humor/ humour in therapy
- 99 were addressing coping or resilience and humor in the field of Clinical Psychology
- 110 were addressing coping or resilience and humor in the field of Health Psychology
- 112 were addressing personality and humor
- 1281 were discarded because they were not relevant (not addressing humor or in other fields then the clinical psychology)

A second round of filtering and categorizing took place. We filtered articles to be relevant in the field of the Clinical Psychology for adults (18 -65 years). The following categories in order of importance are used for our systematic review:

1. Meta-analysis and systematic revisions.
2. Randomized clinical trials.
3. Comparisons between groups even though they don't meet the requirements for being randomized clinical trials.
4. Within group designs with pre-test post-test designs.
5. Case studies
6. Theoretical, conceptual and/ or speculative articles. (Won't be included in the revision)

On the 27<sup>th</sup> of May 42 articles remained for full article assessment for eligibility.

Another 31 articles that didn't meet the criteria fully but seemed to deliver important extra information on the subject of humor in therapy were screened again. Some of



which in a full article assessment. Those 31 articles focused mainly on investigating coping and resilience and the effect of humor was measured. Because coping and resilience are important determinants in therapy these articles were revised again to be mentioned in a separate section in the systematic review. Because of limitation of space we finally did not include this in the systematic review. But we have made this information available in table 1. After the screening, 12 articles were rejected because they didn't met the criteria of inclusion. The remaining 19 articles could be distinguished in:

*Table 1. Studies on coping and resilience*

Type of article	Independent variables	Dependent variables	Humor main focus?	No of articles	Remarks
Review	Neurobiological and psychosocial factors	Stress-induced depression and resilience to stress	No (1x) "Humor is one of the most mature defense mechanisms (Vaillant, 1977) and is a coping-mechanism that may lessen the likelihood of developing stress-induced depression." "	1	
Between group design, correlational	-Bulimia Nervosa (1x) -Panic disorder (1x) -Alcoholic patients (1x) -Depression (1X) -Adult childr	Differences in -depression -stress management -symptoms/severity of PTSD	- No (8x) - Yes (1x) - Significant differences between use of coping mechanisms between participants	9	- "a sense of humor" is seen more often than "humor" or "the application of humor" - Difference between

	<p>en of alcoholics (ACOA) which show more symptoms of depression than non ACOAs. (2x)</p> <p>-Depression and PTSD in abused Spanish women (1x) (qualitative research)</p> <p>-PTSD (2x)</p>	<p>- Difference in use of coping mechanism among which humor/sense of humor</p>	<p>with higher scores on depression and control group. Depressed participants (PTSD in 1 article) using less coping strategies (including humor) or less mature (7)</p> <p>- In some articles the participants used more humor than the control group (Klostermann K, et al (2011). Lashley M. (2006) (2)</p>		<p>Mature Defense Styles (MDS) and Immature Defense Styles (IDS). Humor is considered to be part of the MDS as a beneficial coping strategy.</p> <p>-Depressed patients seem to be less susceptible to humor and rate funny material less than healthy participants. This is not always demonstrated. But the use of humor as a coping strategy does seem to be negatively affected by depression. (Falkenberg I, Jarmuzek J, Bartels M, Wild, B., 2011)</p>
Within group design,	<p>-use of humor coping (1x)</p> <p>-Psychosis (1)</p>	<p>-substance abuse (1x)</p>	<p>-yes (2)</p> <p>- No (5)</p>	7	(*1) We don't understand why they

<p>correlation</p>	<p>- use of humor coping within Schizophrenia patients (1x)          -use of defense mechanisms like humor by North Korean refugees (1x)           -Spanish alcoholics, controlled for personality disorder (PD), cognitive impairment (CI) and benzodiazepine misuse (BM) (1x)          -music based affect regulation in patients suffering mental health problems from depression to schizophrenia (1)           -borderline personality disorder (1x)</p>	<p>-treatment satisfaction          -hostility, aggression and anger           -psychiatric symptoms (depression/anxiety/somatization/PTSD)          -coping strategies, among which humor           -relation music affect regulation and/or explanation of coping strategies like humor           -defense functioning among which humor</p>	<p>-no significant difference found (I)          -humor as coping strategy was linked to higher treatment satisfaction          -no clear relation was found between humor coping and aggression          -less use of humor predicted higher levels of anxiety          -alcoholics with PD tend to use more humor and other maladaptive coping strategies than alcoholics without PD          -the overall model and the variable 'discharge'= release of negative emotions through</p>	<p>claim that the model 'explains' humor coping. It shows a correlation, not more than that.</p>
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			music that express these emotions, explained humor (*1) -in BPD patients humor was one of the four defenses that predicted best a faster time to recovery.		
Within group design, correlational, qualitative	-PTSD (1x) -OCD (1x)	-explore use of coping strategies -Quality of Life	- no (2x) -humor was used, but not as much as other coping strategies as spirituality or community support -humor helped to cope with OCD in daily life	2	

The following information was used to select for eligibility:  
PICOS, follow-up and criteria to diminish the Risk of Bias.

After selecting for eligibility 23 articles remained, of which some didn't met the criteria entirely so might be rejected in the final selection. 21 articles and 3 books

were added during the process of selecting for eligibility. Only 2 met the criteria for eligibility.

21 articles and 3 books were added to the search because of references in relevant articles.

- Theoretical/ case studies : 10
- Empirical research : 11

In July we contacted Stephen Hayes. He has developed the ACT and conducted many scientific investigations to form a theoretical and scientific base for his theories and to provide outcome results to assess the applicability of the ACT. Because we didn't encounter any articles about outcome measurements on humorous interventions applied in the ACT, we asked whether he could recommend us scientific research on outcome measurements. He confirmed us that he doesn't know any such research. He did suggest 4 articles (included in the 21 articles mentioned above) on ACT and humor:

Chang, J., Chen, H., Hsu, C., et al. (2015). Flexible humor styles and the creative mind: Using a typological approach to investigate the relationship between humor styles and creativity.

Lovett, M. (2021). Examination of a behavior analytic intervention delivered via telehealth to teach humor comprehension to individuals with asd.

Persicke A, Tarbox J, Ranick J, et al. (2013). Teaching children with autism to detect and respond to sarcasm

Pilz, R. (2019). Relations between Psychological Flexibility, Humor Styles and Pain and the Mediating Role of Well-Being.

None of them turned out to be eligible.

## References

Liberati, A., Altman, D. G., Tetzlaff, J., Mulrow, C., Gøtzsche, P. C., Ioannidis, J. P. A., Clarke, M., Devereaux, P. J., Kleijnen, J., & Moher, D. (2009, July). The PRISMA statement for reporting systematic reviews and meta-analyses of studies that evaluate health care interventions: Explanation and elaboration. *PLoS Medicine*, *6*(7). <https://doi.org/10.1371/journal.pmed.1000100>