

Why So Serious: Humor and its Association with Treatment Measurements Process and Outcome

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Abstract

Humor is an important social construct with various roles in human communication, yet clinicians remain divided on its appropriateness and effectiveness. Despite its importance, empirical research on humor in psychotherapy is limited. This study explores the theoretical concept of “humor” by examining the operational variable of “laughs” within psychotherapy. **Method:** We analyzed transcriptions from 872 psychotherapy sessions involving 68 clients treated by 59 therapists. Clients self-reported their symptoms and state of well-being before each session, while both clients and therapists provided self-reports on their therapeutic alliance after each session. Through text analysis, we extracted the number of laughs and words for each session. We investigated the within-client associations between laughs and symptoms, well-being, therapeutic alliance, and clients’ number of words. **Results:** We found session-level associations between laughs and well-being, symptoms, and the number of words. However, no significant associations were observed between laughs and the therapeutic alliance, either from the perspective of the therapist or the client.

1 Introduction

Humor offers numerous benefits in everyday life and is often employed to diffuse tension, particularly during intense conversations, such as those in psychotherapy sessions (Ramakrishna et al., 2018). Peterson et al. (2004) identified humor as one of the character strengths and virtues that contribute to psychological well-being. Additionally, humor can be viewed as an emotion, as recognizing something incongruous with one’s expectations can evoke feelings of pleasure. Over the past four decades, the medical community has increasingly acknowledged the healing power of humor and the positive emotions it fosters (Martens, 2004).

Not everyone has agreed on the beneficial role of humor in therapy. Kubie (1971) cautioned that

a psychiatrist’s use of humor could be potentially harmful to the therapeutic relationship, suggesting that it might lead clients to feel their concerns are not being taken seriously. Additionally, Freud argued that certain uses of humor reflect underlying aggressive and sexual impulses (Bader, 1993). As such, humor can sometimes function as a defense or resistance mechanism (Bader, 1993) and might be misused by therapists to manage their own anxieties or as a display of narcissistic showmanship (Kubie, 1971).

In a recent review of humor in psychotherapy, Hussong and Micucci (2020) noted that many therapists continue to believe in humor’s therapeutic benefits. For example, humor’s capacity to encourage new interpretations or perspectives can help clients reframe the issues that led them to seek therapy (Panichelli, 2006; Martens, 2004). From a cognitive standpoint, humor may aid in reducing depression by facilitating “rapid perceptual-cognitive switches in frames of reference” (O’Connell, 1976). Additionally, humor can be valuable for fostering insight (Poland, 1971) and promoting cognitive flexibility (Gelkopf and Kreitler, 1996).

Another crucial aspect of psychotherapy, the therapeutic alliance, has been linked to the use of humor, as evidenced by clinical experience. Gelkopf (2011) argues that humor’s primary contribution lies in strengthening the therapeutic relationship. He references Poland (1971), who suggested that humor is closely associated with a strong therapeutic alliance, allowing therapists to demonstrate their humanity and reduce barriers between clients and psychotherapists. Poland also noted that humor enables therapists to bridge the gap between themselves and their clients. Similarly, Martens (2004) hypothesizes that humor helps clients to open up and engage with their therapist, fostering a bond and reducing the atmosphere of rivalry, threat, and dependency. In line with this, psychoanalyst Bader (1993) presented clinical cases showing that a ther-

apist's humor can reveal aspects of their internal thoughts, thereby cultivating a sense of safety and confidence in the therapeutic relationship.

Additionally, Longe (2019) presents intriguing findings suggesting that humor might be an indicator of a healthy therapeutic relationship. In her thesis, she reports that most participants considered their therapists' humor to be beneficial to their therapeutic process. She found a positive correlation between the alignment of clients' and therapists' senses of humor and the overall ratings of their therapeutic relationship. Furthermore, she identified a positive correlation between clients' perceptions of the helpfulness of their therapists' humor and their evaluations of the therapeutic relationship.

In summary, limited studies suggest a connection between the use of humor in therapy and the enhancement of therapist-client relationships.

Empirical studies have consistently shown a link between the use of humor in therapy and improved treatment outcomes or reductions in pathological symptoms. For instance, Panichelli et al. (2018) explored the relationship between humor and various therapeutic outcomes in psychotherapy clients, finding a strong positive correlation between the presence of humor during therapy sessions and their effectiveness, as perceived by both clients and therapists. Another study demonstrated that watching humorous movies led to a reduction in psychopathology, anger, anxiety, and depression symptoms, although it did not affect therapeutic alliance scores (Gelkopf et al., 2006). Similarly, Danzer et al. (1990) found that listening to humorous audio tapes resulted in decreased depression severity among participants.

Despite humor's potential to enhance therapy, it remains underemphasized in psychotherapy training, and there is a scarcity of empirical research supporting its use as an intervention (Longe, 2019). This lack of focus may contribute to some therapists' ambivalence about incorporating humor into their practice.

In this study, we aim to expand the current understanding of humor in psychotherapy. While previous research, such as Ramakrishna et al. (2018), has highlighted various methods for measuring humor, the challenge of quantifying humor, particularly in psychotherapy, might explain the limited empirical studies on the topic. Nonetheless, it is widely acknowledged that humor can elicit laughs and promote happiness (Mora-Ripoll, 2010). In

this study, we measure the use of humor in therapy by annotating instances of laughs during sessions. This approach assumes that laughs are clear, identifiable events that can often be traced back to humor. Although not all laughs are directly linked to humor, it is generally considered a reliable indicator of humor-related responses.

1.1 Laughs

Laughs is defined as a psychophysiological response triggered by humor or other stimuli (Mora-Ripoll, 2010). It is a physical reaction observed in humans and some primates, characterized by rhythmic, often audible contractions of the diaphragm and other parts of the respiratory system. Laughs typically occur in response to external or internal stimuli and are generally associated with positive emotional states such as joy, mirth, happiness, and relief. However, it can also arise from contrary emotional states like embarrassment, apology, or confusion, as seen in nervous laughs (Yim, 2016).

In exploring the therapeutic benefits of laughs, four potential mechanisms of action may illustrate its direct or indirect health advantages. First, laughs can induce immediate or long-term physiological changes that benefit the body. Second, it can foster positive emotional states. Third, laughs may enhance personal coping strategies and increase pain tolerance. Lastly, in terms of interpersonal relations, laughs can indirectly boost social competencies and improve interpersonal skills (Mora-Ripoll, 2010). In this context, Squier (1995) suggests that a therapist's spontaneous laughs can enhance a client's trust in both the therapist and the therapeutic process.

Similar to the broader field of humor, empirical research on laughs in psychotherapy is also limited (Longe, 2019). Marci et al. (2004) examined the frequency of laughs and skin conductance (SC) responses in client-therapist pairs. Their analysis revealed that SC score changes were significantly greater when both clients and therapists laughed together compared to when they laughed individually. This finding underscores the connection between humor and the therapeutic relationship. Additionally, the study found that clients laughed significantly more than therapists and produced more laughs alone while speaking. This challenges the notion that humor (whether appropriate or not) predominantly originates from the therapist (Poland, 1971; Kubie, 1971).

1.2 Hypothesis

As outlined, this study aims to empirically examine the relationship between laughs in psychotherapy, as an operational measure of humor, and improvements in various aspects of the treatment measurement process and outcome. Specifically, we will examine whether laughs are associated with the therapeutic alliance—the relationship between therapist and client. Additionally, we will examine the relationship between laughs and treatment outcomes, including client symptoms. We hypothesize that higher values of laughs during therapy will be positively correlated with higher results across these variables.

Hypothesis 1: At the within-treatment level, higher levels of laughs in psychotherapy sessions will be associated with higher levels of outcomes (**1a**) and lower levels of symptoms (**1b**) as reported at the beginning of the session, and higher therapeutic alliance as reported after the session (**1c**). These sub-hypotheses are consistent with previous studies that indicated that humor is associated with better treatment outcomes (Panichelli et al., 2018), reduction of pathological symptoms (Gelkopf et al., 2006), and ratings of the therapeutic relationship (Longe, 2019). However, it should be noted that these studies collected their data about humor retrospectively (not from transcripts) and did not use the laughs variable.

Hypothesis 2: At the within-treatment level, higher levels of laughs in psychotherapy sessions will be associated with higher levels of words said by the client in sessions. This prediction will be tested in an exploratory manner and is based on the hypothesis that humor helps clients to open up (Martens, 2004).

2 Method

We utilize a dataset of 872 psychotherapy session transcripts from 74 different therapist-client dyads (pairs), constructed by 68 clients and 59 therapists. See the appendix for more details about the participants, treatment, transcriptions, and ethical concerns. Within these transcripts, we extracted a total of 10,454 laughs (mean per session = 11.98, range = 0–129). The extraction process involves analyzing the transcribers' comments regarding paralinguistic events using a specialized paralinguistics lexicon "JOY". This lexicon includes terms such as "laughs," "amused," "with humor," "giggling," etc. that transcribers used to describe what they hear

(Shapira et al., 2021).¹ Before each session, clients self-reported their functioning using the ORS questionnaire (Miller et al., 2003) which is considered to be an indicator of treatment progress, and self-reported their symptoms using the HSCL questionnaire (Derogatis et al., 1974) which represents the global symptomatic level experienced by the client over the past week. After each session, therapists and clients reported their perspectives on the relationship quality during each session, measured by the WAI questionnaire (Horvath and Greenberg, 1989); see the appendix.

3 Results

For each session, we extracted the (1) number of laughs, and (2) number of client's words. The means, standard deviations, and ranges for all the variables are presented in Table 1.

Because the data had a multilevel structure (sessions nested within treatments; Bolger and Laurenceau, 2013), we used multilevel models (MLM, using R *lme4* library (Bates, 2010), using function *lmer*) also known as Hierarchical Linear Models. These models allow estimation of two levels, a within-treatment level, and a between-client level, and accommodate non-balanced data (Bolger and Laurenceau, 2013).

To examine the concurrent within-treatment associations between the laughs variable (Laughs) and session-level treatment measures: outcome measured by ORS (Hypothesis 1a) symptoms measured by HSCL (Hypothesis 1b), therapeutic alliance measured by WAI (Hypothesis 1c), and the number of client's words (Hypothesis 2), we applied a multilevel model predicting the session level treatment measure (client mean-centered) by the number of laughs used by the client and therapist in the session. The mixed-level equation was as follows:

$$Treatment_Measure_s^d = (\gamma_0^0 + u_0^d) + (\gamma_1^0 + u_1^d)Laughs_s^d + e_s^d$$

$Treatment_Measure_s^d$ for a dyad d in session s is predicted by the sample's intercept (γ_0^0), by dyad d 's deviation from this intercept (u_0^d), by the average (i.e., fixed) effects (γ_1^0) of the predictors, by this client's deviation from the fixed effects (i.e., the random effects: (u_0^d, u_1^d)), and by a level-1 residual term quantifying the session's deviation from these effects (i.e., the random effect at level 1, e_s^d).

¹"JOY" paralinguistic lexicon is separate and not intersecting other lexicons such as "SMIRK", "TUT-TUT", "SAR-CASM". For more details see Shapira et al. (2021)

Variable	SL Obs.	SL M(SD)	Range	DL Obs.	DL M(SD)
Laughs	872	11.98 (14.25)	0-129	74	13.04 (4.487)
Words	872	4524 (1408)	416-8176	74	4484.96 (1282.929)
ORS	860	24.4 (7.96)	0.3-40	74	24.5 (6.41)
HSCL	860	1.78 (0.51)	1.05-3	74	1.788 (0.4)
C-WAI	823	50.89 (23.82)	4-84	74	49.48 (23.02)
T-WAI	831	41.69 (18.61)	0-74	74	40.33 (17.88)

Note. Laughs = number of laughs annotation; Words = number of client's words; ORS = Outcome Rating Scale; HSCL = Hopkins Symptom Checklist; WAI = Working Alliance Inventory; C = Client; T = Therapist; SL = Session Level; DL = Dyad Level; Obs.=Observations

Table 1: Descriptive statistics of treatment measurements (processes and outcome) and laughs.

Predictors	Words		ORS		HSCL		WAI-C		WAI-T	
	Estimates	CI	Estimates	CI	Estimates	CI	Estimates	CI	Estimates	CI
(Intercept)	0.00	-45.39 - 45.39	24.52***	23.06 - 25.98	1.70***	1.69 - 1.88	49.50***	44.25 - 54.74	40.35***	36.29 - 44.41
Laughs	14.06**	4.14 - 23.97	0.07**	0.02 - 0.12	-0.01**	-0.01 - 0.00	-0.02	-0.10 - 0.07	0.01	-0.05 - 0.07
Observation	872		860		860		823		831	
R^2 (ICC)	0.078 (0.06)		0.632 (0.63)		0.590 (0.59)		0.929 (0.93)		0.916 (0.92)	

Note. *** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$; Laughs = number of laughs; R^2 = Conditional R; Words = number of client's words; ORS = Outcome Rating Scale; HSCL = Hopkins Symptom Checklist; WAI = Working Alliance Inventory; C = Client; T = Therapist;

Table 2: Treatment measurements, process and outcome association

The results of the multilevel model summarized in Table 2 show concurrent session-level associations between laughs and well-being, symptoms, and clients' number of words. No associations were found with the therapist's or the client's assessment of therapeutic alliance.

4 Discussion

Laughs were associated with better treatment outcomes, aligning with Panichelli et al. (2018). While we cannot establish a causal relationship, this suggests that laughs during therapy may contribute to improved client functioning. We propose that laughs may indirectly enhance social competencies, thereby boosting interpersonal skills (Mora-Ripoll, 2010). In this way, laughs in therapy—distinct from *laughter therapy*—can serve as a social tool that clients learn in therapy and later apply in their social lives. This potential benefit is reflected in ORS, which assesses social functioning.

Laughs were associated with lower levels of the client's symptoms. The current study does not allow us to determine whether it is laughs that lower the level of symptoms or a low level of symptoms that increases the amount of laughs. Previous studies support the conclusion that laughs may help reduce symptoms of mental disorders such as anxiety and depression (Gelkopf et al., 2006; Danzer et al., 1990). This may indicate that laughs provide a release for the client, as supported by medical and

psychological studies on the psychophysiological effects of laughs (Mora-Ripoll, 2010).

No association was found between laughs and the therapeutic alliance. This finding does not correspond with Gelkopf (2011); Longe (2019). However, the findings are compatible with the study of Gelkopf et al. (2006), which found no significant associations between the effect of humorous movies and the therapeutic alliance. To the best of our knowledge, there has not yet been any empirical study that examines the associations between laughs in psychotherapy and therapeutic alliance.

Laughs in treatment were associated with higher verbalization among the clients. This finding corresponds with providing assumptions in the literature that humor helps the client open up (Martens, 2004), and feel more comfortable with the therapist (Gelkopf, 2011; Bader, 1993).

Marci et al. (2004) claimed that previous research in laughs and psychotherapy has focused almost exclusively on the client. This study examined the role of laughs in general (of both therapist and client) in treatment. To gather evidence on whether the therapist's use of humor is positive and beneficial, further research is needed. In a future project, we aim to investigate whether the therapist influences the client's degree of laughs, whether humor increases throughout treatment, and how it relates to treatment outcomes.

5 Limitations

The current work acknowledges that laughs can arise from various emotions beyond humor, such as nervousness, embarrassment, and other emotional states. However, laughs were annotated regardless of whether they occurred due to humor.

We used “humor” as a motivation for the study but did not address the implications of humor in the present study. We limited our findings to “laughs” only. Future work is needed to determine how frequently laughs might occur due to non-humor-related reasons, and how this could potentially impact the results. Specifically, how these alternative sources of laughs might influence the conclusions and associations drawn regarding humor.

Acknowledgements

We thank Rivka Tuval-Mashiach and her team for the transcribed therapy sessions dataset.

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A Appendices

The following sections are taken from previous work on the same dataset (Shapira et al., 2022) and are presented here for the convenience of the reader.

A.1 Dataset: Participants and Treatment

A.1.1 Clients

The dataset was drawn as a sample from a broader pool of clients who received individual psychotherapy at a university training outpatient clinic, located in a central city in Israel. Data were collected naturally between August 2014 and August 2016 as part of the clinic's regular practice of monitoring clients' progress. From an initial sample of 180 clients who provided their consent to participate in the study, 34 (18.88%) dropped out (deciding unilaterally to end treatment before the planned termination date). Clients were selected from the larger sample to match two criteria: (1) treatment duration of at least 15 sessions, and (2) full data including audio recordings to be used for the transcriptions and session-by-session questionnaires available for each client. These criteria corresponded to our analytic strategy of detecting within-client associations between linguistic features and session processes and outcomes. Clients were also excluded, based on the M.I.N.I. 6.0 (Sheehan et al., 1998) if they were diagnosed as severely disturbed, either due to a current crisis, had severe trauma and accompanying post-traumatic stress disorder, a past or present psychotic or manic diagnosis, and/or current substance abuse. Based on these criteria we excluded 77 (42.7%) clients. Thus, of the total sample, the data for 68 (38.33%) clients who met the above-mentioned inclusion criteria were transcribed, for a total of 872 transcribed sessions.

The clients were all above the age of 18 ($M_{age}=39.06$, $SD=13.67$, $range=20-77$), majority of whom were women (58.9%). Of the clients, 53.5% had at least a bachelor's degree, 53.5% reported being single, 8.9% were in a committed relationship, 23.2% were married and 14.2% were divorced or widowed. Clients' diagnoses were established based on the Mini International Neuropsychiatric Diagnostic Interview for Axis I DSM-IV diagnoses (MINI 5.0; Sheehan et al., 1998). Of the entire sample, 22.9% of the clients had a single diagnosis, 20.0% had two diagnoses, and 25.7% had three or more diagnoses. The most common diagnoses were comorbid anxiety and affective dis-

orders² (25.7%), followed by other comorbid disorders (17.1%), anxiety disorders (14.3%), and affective disorders (5.7%). A sizable group of clients (31.4%) reported experiencing relationship concerns, academic/occupational stress, or other problems but did not meet criteria for any Axis I diagnosis.

A.1.2 Therapists and Therapy

Clients were treated by 59 therapists in various stages of their clinical training. Clients were assigned to therapists in an ecologically valid manner based on real-world issues, such as therapist availability and caseload. Most therapists treated one client each (47 therapists), but some (10) treated two clients and (2) more. Each therapist received one hour of individual supervision every two weeks and four hours of group supervision on a weekly basis. All therapy sessions were audiotaped for supervision. Supervisors were senior clinicians. Individual and group supervision focused heavily on reviewing audiotaped case material and technical interventions designed to facilitate the appropriate use of therapist interventions. Individual psychotherapy consisted of once- or twice-weekly sessions. The language of therapy was Modern Hebrew (MH). The dominant approach in the clinic includes a short-term psychodynamic psychotherapy treatment model (e.g., Blagys and Hilsenroth, 2000; Shedler, 2010; Summers and Barber, 2009). The key features of the model include: (a) a focus on affect and the experience and expression of emotions, (b) exploration of attempts to avoid distressing thoughts and feelings, (c) identification of recurring themes and patterns, (d) an emphasis on past experiences, (e) a focus on interpersonal experiences, (f) an emphasis on the therapeutic relationship, and (g) exploration of wishes, dreams, or fantasies (Shedler, 2010). On average, treatment length was 37 sessions ($SD = 23.99$, $range = 18-157$). Treatment was open-ended in length, but given that psychotherapy was provided by clinical trainees at a university-based outpatient community clinic, the treatment duration was often restricted to be 9 months.

²The following DSM-IV diagnoses were assessed in the affective disorders cluster: major depressive disorder, dysthymia and bipolar disorder. The following DSM-IV diagnoses were assumed in the anxiety disorders cluster: panic disorder, agoraphobia, generalized anxiety disorder and social anxiety disorder.

A.1.3 Transcriptions

To capture the treatment processes from session to session, and since the transcription process is highly expensive, transcriptions were conducted alternately (i.e., sessions 2, 4, 6, 8 and so on until one session before the last session). In cases where material was incomplete (such as the quality of the recordings, or the questionnaires for a specific session), the next session was transcribed instead. The transcriber team was composed of seven transcribers, all of whom were graduate students in the University's psychology department. The transcribers went through a one day training workshop and monthly meetings were held throughout the transcription process to supervise the quality of their work. The training included specific guidelines on how to handle confidential and sensitive information and the transcribers were instructed to replace names by pseudonyms and to substitute any other identifying information. The transcription protocol followed general guidelines, as described in (Mergenthaler and Stinson, 1992), and in Albert et al. (2013). The word forms, the form of commentaries, and the use of punctuation were kept as close as possible to the speech presentation. Everything was transcribed, including word fragments as well as syllables or fillers (such as "ums", "ahs", "uh huhs" and "you know"). The audiotope was transcribed in its entirety and provided a verbatim account of the session. The transcripts included elisions, mispronunciations, slang, grammatical errors, non-verbal sounds (e.g., laughs, cry, sighs), and background noises. The transcription rules were limited in number and simple (for example, each client and therapist utterances should be on a separate line ;each line begins with the specification of the speaker) and the format used several symbols to indicate comments (such as [...] to indicate the correct form when the actual utterance was mispronounced, or <number of minutes of silence >). The transcripts were proofread by the research coordinator. The final transcripts could be processed by human experts or automatically by computer.

There were 872 transcripts in total (the mean transcribed sessions per client was 12.56; SD=4.93) Each transcript incorporated metadata such as the client's code, which allowed the client data to be linked across sessions and for hierarchical analysis. The transcriptions totaled about four million words over 150,000 talk turns (i.e., switching between

speakers). On average, there were 5800 words in a session, of which 4538 (78%; SD=1409.62; range 416-8176) were client utterances and 1266 (22%; SD=674.99; range 160-6048) were therapist utterances with a mean of 180.07 (SD=95.37; range 30-845) talk turns per session.

A.1.4 Procedure and Ethical Considerations

The procedures were part of the routine assessment and monitoring process in the clinic. All research materials were collected after securing the approval of the authors' university ethics committee. Only clients that gave their consent to participate were included in the study. Clients were told that they could choose to terminate their participation in the study at any time without jeopardizing treatment. The clients completed the ORS before each therapy session and the WAI after each session. The therapist completed the WAI after each therapy session. The sessions were audiotaped and transcribed according to a protocol described above. All data collected was anonymized and only then exposed to a very small number of researchers, as agreed upon by the participants.

A.2 Outcome and Process Measurements

A.2.1 Outcome Rating Scale (ORS; (Miller et al., 2003))

The ORS is a 4-item visual analog scale developed as a brief alternative to the OQ-45. The scale is designed to assess change in three areas of client functioning that are widely considered to be valid indicators of progress in treatment: functioning, interpersonal relationships, and social role performance. Respondents complete the ORS by rating four statements on a visual analog scale anchored at one end by the word Low and at the other end by the word High. This scale yields four separate scores between 0 and 10 that sum to one score ranging from 0 to 40, with higher scores indicating better functioning. The ORS has strong reliability estimates ($\alpha=0.87-0.96$) and moderate correlations between the ORS items and the OQ-45 subscale and total scores (ORS total - OQ-45 total: $r = 0.59$).

A.2.2 Hopkins Symptom Checklist-short form (HSCL-11; (Derogatis et al., 1974))

The HSCL-11 is a shortened version of SCL-90-R (Derogatis, 1992) self-report questionnaire. It includes 11 items that assess symptoms. Participants rank each item on a Likert scale between 1 ("not at

all”) and 4 (“extremely”) depending on how much distress they feel regarding the item. The average items represent the global symptomatic level experienced by the client over the past week. The questionnaire was found to have high internal validity ($\alpha = 0.92$) (Lutz et al., 2006).

A.2.3 Working Alliance Inventory (WAI; (Horvath and Greenberg, 1989))

The WAI is a self report questionnaire (both for therapist and client). It is one of the most widely investigated common factors that was found positively correlated to treatment outcome in psychotherapy. It includes items ranging from 0 (“not at all”) to 5 (“completely”) to evaluate three components (1) agreement on treatment goals (2) agreement on therapeutic tasks and (3) a positive emotional bond between client and therapist (Falkenström et al., 2015)