

**(Don't) Take It Lightly:
Humour's Impact on Anxiety and Coping**

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Abstract

Humour and laughter are innate, universal human experiences that are present across all cultures and have important cognitive, emotional, and social functions. The term 'humour' refers to things that people say or do that are considered funny and make other people laugh. Researchers proposed various theories to explain what we consider funny and grouping models were invented that enable the categorisation of different humour types, of which the most widely accepted is the Humour Styles Questionnaire. Humour has long been considered an effective way of coping with distress and anxiety, but research shows that compared to dark (negative) humour, light (positive) humour proved to be more effective for downregulating negative emotions. The purpose of this study was to explore the connection between different types of humour, cartoon humour preference and experienced anxiety. The data for the research was accumulated via a self-report online questionnaire filled out by 200 participants ($M_{age}=25.5$) from a multicultural background with an age range of 18 to 74 years. Apart from measuring their humour styles and trait anxiety, participants were also asked to watch short light- and dark-humoured cartoon scenes and report their experienced level of state anxiety before watching the videos and after each section.

Firstly, the research revealed that those participants who showed a preference for Self-defeating humour had higher reported trait anxiety, while those who engaged in Affiliative humour reported lower trait anxiety. There was no significant relationship between trait anxiety and either Self-enhancing or Aggressive humour styles. Secondly, it was found that the reported state anxiety of subjects was significantly lower after watching the light humour cartoon section than before the videos and after watching the dark humour cartoon block. Altogether, it can be stated that our experiment results on the different types of humour and anxiety mostly aligned with the findings of previous scientific research in the topic. At the end of the paper the limitations of the study are presented, and we also provided some implications for further research.

Keywords: humour, humour styles, trait anxiety, state anxiety, dark humour, light humour

Theoretical background

1. What is humour?

We all understand what it is like to experience humour, as most of us find ourselves laughing at something funny several times a day. The term 'humour' describes things that individuals say or do that are deemed funny and make other people laugh (Martin et al., 2003). While humour is a form of play, it has very important cognitive, emotional, and social functions (Martin & Ford, 2018). Polimeni and Reiss (2006) describe humour and laughter as universal and essential human experiences, present across all cultures, individuals, and types of interpersonal relationships. Despite cultural differences regarding what is considered funny and when laughter is appropriate, the sound of laughter is universal and indistinguishable across cultures (Condren, 2023). According to Martin & Ford (2018), laughter is also one of the first social vocalisations made by infants, and the fact that even children who were born deaf and blind laugh without having perceived others laugh, highlights the innate nature of laughter.

Laughter can be described as a physiological and behavioural reaction to humour, observable in numerous social interactions and situations. But what exactly do scientists mean by humour? According to Libera (2020), humour is the state of being amused, a form of social play triggered by recognizing playful incongruity, which elicits the emotional response of mirth, typically expressed through smiling and laughter. While the fundamental cognitive, emotional, and behavioural aspects of humour are consistent across all instances, the variety of events and cues that can trigger a humorous response is diverse. Martin and Ford (2018) explain that the complexity of human language and imagination allows the creation of humour in seemingly limitless forms. As human culture and technology have progressed, we have invented new ways and styles to convey humour, ranging from spontaneous interpersonal joking and humorous literature to comedy films, radio and television shows, and even memes and cartoons shared over the Internet (Stieger & Formann, 2014).

It has been reported that having a good sense of humour is a very valuable social trait because it is believed to co-occur with other desirable personality traits (e.g., Cann & Calhoun, 2001; Cann & Matson, 2014). People who are skilled at using humour are viewed as more credible (Wrench & Punyanunt-Carter, 2005), competent (Graham et al., 1992), and they are more appealing as friends (M. B. Wanzer et al., 1996) or romantic partners (Buss, 1988). Humour has also been linked to a reduction in perceived stress (e.g., Cann & Etzel, 2008; Ruch, 1997) and depression (e.g., Martin et al., 2003), a rise in feelings of self-worth (e.g., Kuiper et al., 1993), as well as an increase in optimism and general well-being (e.g., Martin et al., 2003).

Thus, it appears that using humour in everyday life can benefit both the one producing the humour and the person receiving it (Cann et al., 2009).

2. What do we consider funny?

The question of what makes something humorous has puzzled scientists for centuries. Philosophers and psychologists have developed various theories to address this question. The superiority theory of humour suggests that the main motivation for humour is the sense of triumph or pleasure derived from the pain, mistakes, or indignities of others (Morreall, 2023). This theory implies that laughter and humour are negative in nature, as they involve ridiculing or disparaging others. We laugh "at" something or someone because we perceive them as inferior to ourselves. Indeed, laughter based on insult and ridicule remains common today, from playgrounds to television shows and social media websites (Libera, 2020).

Another significant theory of humour is called the relief theory. This theory, based on Freud's concept of the unconscious, suggests that repressing sexual or aggressive thoughts and urges leads to a buildup of energy that is released through laughter (Freud, 1926). It is a hydraulic explanation in which "laughter does in the nervous system what a pressure-relief valve does in a steam boiler" (Morreall, 2023). Although the psychological foundations of this theory have largely been debunked, it is notable that modern comedy intentionally employs the technique of building tension and then releasing it.

The third and currently most widely accepted theory of humour is the incongruity theory (Morreall, 1987). This theory emphasizes the cognitive processes involved in perceiving and interpreting a stimulus, identifying the perception of incongruity as a fundamental element of all types of humour (Martin & Ford, 2018). According to this theory, humour arises when our brains recognize two things as existing together in a way that initially seems illogical, and humour occurs when the discomfort caused by this incongruity is resolved (Libera, 2020). Situations, incidents or things are considered incongruous when their existence causes a contradiction with the recipient's situation model (Zwaan et al., 1995). Some examples of incongruity are odd, unusual, unexpected events that are out of the ordinary. For instance, human beings acting rigidly like robots (a common theme of silent movies), peasants acting like kings on medieval carnivals, or even a sloth getting fined for speeding in the modern animation movie, *Zootopia* (Howard & Moore, 2016). In the case of jokes, the incongruity arises between the setting and the punchline, while in many other types of humour, it must be deduced from contextual clues like tone of voice, or facial expressions (e.g., Miczo et al., 2009).

3. The different types of humour

According to Ruch and colleagues (2018), people habitually differ in terms of humour behaviours not only quantitatively (some individuals show more humour production and appreciation than others) but also qualitatively (people enjoy different forms of humour). The qualitative aspect highlights that humour might have different forms, types, distinctive qualities or styles.

3.1 *Light and Dark Humour*

Humour can be grouped in several ways, one of which is differentiating between Dark and Light humour. Dark humour relies upon ridicule and includes the use of satire, mocking, insulting other people and/or groups, degrading widely accepted values, and making fun of the flaws in the world and the moral concepts that are deemed absurd (Mendiburo-Seguel & Heintz, 2020). It is strongly related to sick humour which depends on moral and social norm violations as well as deviations from norms; and it highlights the absurd aspects of life by contrasting tragic and comedic components (Kim et al., 2023). Moreover, Dark humour seems to elicit mixed emotions, such as amusement and embarrassment or disgust, because it has a wide negative content and can actually serve negative interpersonal aims (Aillaud & Piolat, 2012).

On the other hand, Light humour is associated with benign and pleasant influences, behaviours, and cognitions. A few of these are using wit, appreciating paradoxes and absurdities, displaying funny aspects of things that toy with rationality and logic, and overall employing pleasant topics to elicit mirth (Mendiburo-Seguel & Heintz, 2020).

3.2 *Humour styles*

Based on the results of numerous humour and well-being studies, Martin et al. (2003) developed the well-known and widely used four-category humour styles model. They identified four humour styles (*Affiliative, Self-enhancing, Aggressive, and Self-defeating*) as everyday functions of humour related to psycho-social well-being. Their framework distinguishes between two primary functions: enhancing oneself and enhancing relationships with others. Both functions can be achieved in adaptive ways (*Affiliative and Self-enhancing humour*) or maladaptive ways (*Aggressive and Self-defeating humour*; Martin et al, 2003). The four humour styles are not mutually exclusive: people may employ any or all of the styles regularly, however their frequency of use may vary. In the following section, each humour style will be discussed in more detail.

Affiliative humour improves interpersonal relationships. This humour style consists of telling jokes to make others laugh and put them at ease. People who score highly on this

dimension frequently make jokes, say amusing things, and engage in clever banter to elicit laughter from others, build relationships, and ease tensions between people. In an effort to make people feel comfortable, they may also partake in self-deprecating humour, which involves making humorous remarks about oneself and not taking themselves too seriously all the while embracing who they are and keeping a positive view of themselves. Individuals who score high on this scale generally seem to be happy, emotionally stable, socially outgoing, and kind towards others (Martin et al., 2003).

Self-enhancing humour style is associated with a funny and positive view of life. It operates similarly to a coping strategy by disregarding unpleasant feelings and using humour to see the positive aspects of every situation. Even under pressure, someone with this humour style can maintain a cheerful attitude. This component includes a general appreciation of humour, a propensity to find humour in life's incongruities, and the ability to have a light-hearted attitude in the face of stressful situations or hardships. Moreover, this dimension is hypothesised to be negatively correlated with unpleasant emotions, like depression and anxiety, and positively correlated with self-esteem, and mental well-being. This is because it focuses on the regulation of negative emotions via humorous perspective-taking (Martin et al., 2003).

Aggressive humour style is characterised by derogatory humour, mocking, sarcasm, and ridicule, all of which bring down others. When making jokes, those who employ this kind of humour disregard the emotions of other people. Generally speaking, it refers to the propensity to express humour without considering how it can affect other people (such as using sexist or racist humour). Additionally, this humour style might be a manifestation of compulsive displays of humour, which occur when a person is unable to refrain from making comical remarks despite knowing that they may be offensive to others. It also involves using humour as a tool for control over other people by subtly threatening to make fun of them (Martin et al., 2003).

Self-defeating humour is defined as a type of comedy that pokes fun at oneself to make other people laugh. This kind of self-deprecating humour could be an attempt to fit in, gain approval, become more popular or win over other people. This humour style also seems to include the tendency to act comically to cover up one's underlying negative emotions or to postpone solving problems productively. Hence, it is also considered to encompass the use of humour as a type of protective denial. The person displaying this type of humour may appear cheerful, bright, or funny to others, yet beneath this comedic approach lurk emotions of avoidance, emotional neediness, and low self-worth. This humour style is said to have a negative correlation with self-esteem, psychological well-being, and relationship satisfaction

and a positive correlation with negative emotions like anxiety and depression (Martin et al., 2003).

4. The relationship between humour, anxiety and coping

Anxiety is an adaptive emotional reaction that is characterised by an overwhelming feeling of fear, tension, and panic. It is understood to be a future-focused emotional state connected to being ready for upcoming stressful situations or possible unfavourable events (Pretorius & Padmanabhanunni, 2023; Tuma & Maser, 1990). Anxiety symptoms include exaggerated worrying, hypervigilance (Wittchen & Hoyer, 2001), withdrawal or avoidance, and physical manifestations (e.g., muscle tightness, heart palpitations) brought on by an elevated sympathetic nervous system activation (Alvares et al., 2016).

Numerous studies have explored the relationship between humour and anxiety. Martin et al. (2003) argue that positive and negative humour styles are differentially related to anxiety relief and psychological health. As mentioned above, they suggested that only positive humour styles (*Affiliative* and *Self-enhancing*) correlate positively with mental health and well-being, so only light (positive) humour can be considered an effective form of emotion regulation.

Humour has been considered an effective way of coping with negative emotions like anxiety for a long time (Samson & Gross, 2012). The ability to perceive humour in adverse situations may serve as a helpful and effective strategy within cognitive reappraisal (Perchtold et al., 2019). Cognitive reappraisal involves reinterpreting the subjective meaning of an emotionally arousing event to reduce its negative emotional impact on the individual (Wang & Yin, 2023). Perchtold and colleagues (2019) suggest that the use of humour may promote psychological well-being by fostering a more positive evaluation of stressful events. Generally, a greater tendency to use humour is linked to viewing events in a more positive and less threatening manner.

However, the findings of Samson and Gross (2012) suggest that positive and negative humour may have importantly different affective consequences. Compared to negative (Dark) humour, positive (Light) humour proved more effective for up-regulating positive and downregulating negative emotions. In the research procedure, subjects were shown arousing pictures of negative content (such as violence, accidents, dangerous animals etc.) and then they had to apply positive or negative humour to reappraise what they had seen. The results showed that only Light humour could decrease the negative affect experienced by the subjects, while Dark humour proved much less effective, or in some cases, totally ineffective in lowering anxiety levels (Samson and Gross, 2012).

Another study (Napp, 2023) explored the relationships between the four humour styles identified by Martin et al. (2003) and various indicators of well-being. The findings revealed that negative humour styles (*Aggressive* and *Self-defeating humour*) were significantly correlated to higher levels of psychological distress. Therefore, individuals who often belittle others for amusement or use self-deprecating humour to entertain other people, are likely to experience increased psychological distress. Moreover, humour may act as a masking tool for many distressed people to cover up their trauma. Individuals who tend to hide their true selves in the form of Self-defeating humour may be struggling with a deeper traumatic experience (Barrett, 2016). Additionally, the study found that individuals who frequently browse dark memes and seek out other Dark-humoured online content are more likely to experience anxiety and psychological distress. According to Napp (2023), frequent exposure to Dark humour memes could potentially worsen anxiety, as continuously confronting these depressing, negative subjects might increase distress, despite having the ability to laugh at them.

Research conducted by Perchtold et al. (2019) also indicated that the use of good-natured (Light) humour for cognitive reappraisal more effectively enhances (up-regulates) positive emotions and reduces (down-regulates) negative emotions compared to mean-spirited (Dark) humour. Individuals who habitually use benign (Light) humour and less frequently engage in malicious (Dark) humour reported higher life satisfaction and lower levels of general anxiety (Yue, 2017). Moreover, a greater use of positive humour as a reappraisal strategy was associated with fewer depressive experiences in everyday life (Perchtold et al., 2019).

The relationship between humour and anxiety is regulated by a number of processes, including emotion regulation, redirection, and rephrasing techniques for stressful situations (Dionigi et al., 2021; Kuiper et al., 2014). Benign humour is recognised as an effective coping mechanism (e.g., Dionigi et al., 2023; Papousek et al., 2017; Perchtold et al., 2019) because it can help people reframe the subjective meaning of an emotionally upsetting situation, hereby changing the emotional effect the event has on the individual (Perchtold et al., 2019). Studies have shown that those with a positive sense of humour are less likely than people with a negative sense of humour to experience anxiety, and tension, and to negatively perceive stressful situations in life (Kuiper, 2012).

Hypotheses

This particular research is aimed at exploring the relationship between different humour styles, cartoon humour preference and perceived anxiety. We expect that our results regarding Light and Dark humour preference and experienced anxiety will be congruent with the findings

of other researchers. Based on the literature and our own expectations, we formulated the following hypotheses:

1. There will be a connection between participants' preferred humour styles and their level of reported trait anxiety.
 - 1.1 Those individuals who have higher reported trait anxiety will be more likely to apply negative humour styles (Self-defeating and Aggressive humour).
 - 1.2 Those individuals who have lower reported trait anxiety will be more likely to apply positive humour styles (Self-enhancing and Affiliative humour).
2. The reported state anxiety of the subjects will be different before and after watching the light humour cartoon block versus the dark humour cartoon block.
 - 2.1 Light humour is expected to decrease distress, so it is hypothesised that subjects will experience the lowest level of state anxiety after watching the light humour cartoon block.
 - 2.2 Dark humour is generally associated with a higher level of distress and worse coping, so it is hypothesised that subjects will experience the highest level of state anxiety after watching the dark humour cartoon block.

Methodology

1. Participants

To measure and get an in-depth understanding of the demographics of the sample, the participants had to answer questions regarding their age, gender, nationality, and their highest level of education. A total of 200 answers were recorded, 135 females and 63 males took part in the experiment while 2 individuals preferred not to share their gender. The participants' ages ($M = 25.5$ $SD = 9.35$) ranged from 18 to 74 years (women: $M = 25.0$, $SD = 9.15$; men: $M = 26.6$ years, $SD = 9.83$). The majority of the respondents' highest level of education was a high school diploma ($N=129$), 49 people had a Bachelor's Degree, 20 had a Master's Degree, and 2 individuals held a PhD. While Hungarian individuals made up the great majority of the sample ($N=152$), the final sample pool featured an extensive degree of diversity:

1 Albanian, 1 Austrian, 3 British, 2 Chinese, 1 Egyptian, 2 French, 5 Germans, 1 Iranian, 2 Irish, 4 Italians, 1 Jordan, 1 Kashmiri, 3 Kazakhs, 8 Mongolians, 1 Norwegian, 1 Polish, 1 Russian, 2 Slovaks, 2 Spanish, 2 Thai, 3 Turkish and 1 Jemeni.

2. Measurement tools

2.1 HSQ (*Humour Styles Questionnaire*)

The Humour Styles Questionnaire (HSQ; Martin et al., 2003) consists of 32 self-report items, divided into four 8-item subscales, measuring the four distinct humour styles: *Affiliative*, *Self-enhancing*, *Aggressive*, and *Self-defeating humour*. Participants use a 7-point Likert scale, ranging from 1 (Totally Disagree) to 7 (Totally Agree) to rate to what extent they agree with each of the statements of the questionnaire regarding their everyday humour usage.

The reliability of each factor in the current study sample was the following for McDonald's α : Affiliative=.873; Self-enhancing=.810; Aggressive=.751; Self-defeating=.837.

2.2 STAI-5 (*Shortened version of the State-Trait Anxiety Inventory*)

Differentiating between the two subscales of anxiety, *trait* and *state* anxiety, has been an important topic of discussion in the discipline of anxiety research (Elwood et al., 2012; Zsido et al., 2020).

It is believed that *trait anxiety* is a personality trait or inherent inclination describing an individual's tendency to experience feelings of state anxiety in a stressful environment. Individuals with high trait anxiety frequently see threats where others may not (Pretorius & Padmanabhanunni, 2023; Zsido et al., 2020).

On the other hand, *state anxiety* describes a temporary emotional response of anxiety brought on by perceived stressors in a situation characterised by unpleasant emotions of tension and worrisome thoughts. State anxiety arises only in the face of stressful events, and it goes away as soon as things get resolved (Pretorius & Padmanabhanunni, 2023; Zsido et al., 2020).

The original Spielberger State-Trait Anxiety Inventory (STAI; Spielberger et al., 1970) is used to assess the level of anxiety that a person experiences in that particular moment (STAI-S subscale; measuring state anxiety) and the extent to which an individual feels anxious in general (STAI-T subscale; measuring trait anxiety). However, the original battery of assessments might prove to be too long for researchers who wish to incorporate several other measurement tools in their survey apart from STAI.

Consequently, Zsido and colleagues (2020) created the Shortened version of the State-Trait Anxiety Inventory (STAI-5) to resolve this issue. The STAI-5 is a shortened, yet valid and reliable measurement tool in situations where the employment of the full-form scale is impractical (Zsido et al., 2020). It consists of 10 self-report items with two 5-item subscales. The items are presented in a 4-point Likert scale, ranging from 1 (Not at all) to 4 (Very much so).

The reliability of each factor in the current study sample was the following for McDonald's α : STAIT-5=.805; STAIS-5=.824.

3. Procedure

The participants in our study were asked to complete a self-report Google Forms questionnaire that contained many different parts intended to measure the subjects' trait anxiety, preferred humour styles and cartoon humour preference. All of the applied measurement tools were used in their original language (English). Completing the questionnaire took around 20 minutes, and the participation of individuals was voluntary and fully anonymous. The study was carried out in compliance with the ethical requirements. Participants were mostly recruited from within our university and via social media platforms by posting the Forms questionnaire online and also sharing it via private chats.

In the second half of the questionnaire, participants were shown six short funny video scenes from different animated cartoons and they had to rate how much they liked each scene on a 10-point Likert scale ranging from 1 = "not at all" to 10 = "very much". The cartoon scenes were shown in two different blocks, based on whether their content was considered Light or Dark humour. Before watching the videos and after having watched each cartoon block, participants had to fill out questions measuring their level of state anxiety and experienced emotions. We used two different versions of the questionnaire: half of the participants (100) were shown the Light humour section first and the Dark humour section came second, while the other half (100) viewed the Dark humour cartoon block first, followed by the Light humour section. As some of the included cartoons had mature age ratings, only individuals above the age of 18 were allowed to participate in the research. The cartoon episodes used in the experiment were short scenes from different YouTube videos publicly available on the internet.

The participants' responses given to the Google Forms questionnaire were then transformed into an Excel sheet, in which the responses were collected. After having received all the 200 responses, the final results of individuals were calculated for each included questionnaire respectively, so that they were ready to be used for statistical analysis.

4. Stimulus material

The questionnaire involved 6 videos in total from various comedy cartoon shows and movies, which represented the different types of humour to measure what kind of humour participants enjoy, 3 of which contained Light, and 3 which contained Dark humour scenes.

The scenes were chosen from a larger pool of 23 cartoon clips according to the adherence to different comic styles by 15 independent raters. The Comic Styles can be arranged

into Light and Dark humour categories, with Fun, Humour, Nonsense and Wit belonging to Light humour and Irony, Satire, Sarcasm and Cynicism representing Dark humour (Ruch et al., 2018). We had an online questionnaire where first, participants could read about the 8 comic styles proposed by Ruch et al. (2018) and then, after watching each clip, they had to indicate on a 10-point Likert-scale how strongly they think that one of the comic styles was represented in the video. Afterwards, we checked the means and standard deviations of the ratings for each clip. Finally, the final six scenes were selected according to the mean values and according to which videos had the lowest standard deviation within the sample.

Light humour scenes were chosen from *Zootopia* (Howard & Moore, 2016), and *SpongeBob SquarePants* (Hillenburg et al., 1999-present), while Dark humour ones were from *Family Guy* (MacFarlane et al., 1999-present), *The Simpsons* (Brooks et al., 1989-present), and *South Park* (Parker et al., 1997-present).

The Simpsons (Brooks et al., 1989-present), *South Park* (Parker et al., 1997-present), and *Family Guy* (MacFarlane et al., 1999-present), have been selected for the Dark humour block because these are sitcoms which are marketed at an adult audience (Smith, 2005), and have become known for using Dark humour, exaggeration, and stereotyping in conjunction with the depiction of controversial political and social topics (Zsila et al., 2021). Therefore, they can be expected to evoke negative feelings, anxiety and frustration in participants (Dhaenens & Van Bauwel, 2011; Raymond, 2013).

5. Analysis plan

For the statistical analysis of the accumulated data, correlation analyses and a repeated measures ANOVA were used to test our hypotheses. First, we ran four correlation analyses, to see whether there is a connection between the reported trait anxiety level of the individuals and the use of Self-defeating, Aggressive, Self-enhancing or Affiliative humour styles, as stated in hypothesis 1. Within all four analyses, we applied the Spearman variation, as the data of the STAI-T sum scores were not normally distributed (Shapiro-Wilk $p = .002$). Then, we applied a repeated measures ANOVA, to see whether the level of state anxiety reported by the participants was significantly different before and after watching the Light and Dark-humoured cartoon blocks, as stated in hypothesis 2. In addition, we tested whether the order of watching the Light or the Dark humour block (seeing one or the other first) resulted in different reported state anxiety levels. We used the non-parametric alternative of the independent samples t-test in both cases as the assumption of normality was violated (Shapiro-Wilk $p < .001$).

Results

1. Humour styles and trait anxiety

Regarding the connection between reported trait anxiety and the use of negative humour styles, the following results were found: A Spearman correlation analysis revealed a significant weak positive correlation between state anxiety and the use of Self-defeating humour ($\rho(198) = .288, p < .001$), meaning that participants who scored higher on trait anxiety (STAI-T), were more likely to apply Self-defeating humour regularly. The other correlation analysis regarding the connection between trait anxiety and the use of Aggressive humour showed no significant correlation ($\rho(198) = -.095, p = .181$).

Looking at the connection between reported trait anxiety and the use of positive humour styles, the results were the following: A Spearman correlation analysis revealed a weak negative correlation between state anxiety and the use of Affiliative humour ($\rho(198) = -.174, p = .014$). This means that subjects who scored higher on trait anxiety (STAI-T), were more likely to apply Affiliative humour regularly. The other correlation analysis regarding the connection between trait anxiety and the use of Self-enhancing humour showed no significant correlation ($\rho(198) = -.081, p = .254$). Within all four analyses, we applied the Spearman variation, as the data of the STAI-T sum scores were not normally distributed (Shapiro-Wilk $p = .002$).

Table I.

Relationship between humour styles and trait anxiety

		Self-defeating	Affiliative	Self-enhancing	Aggressive
STAIT-5	Spearman's rho	0.288 ***	-0.174 *	-0.081	-0.095
	df	198	198	198	198
	p-value	<.001	0.014	0.254	0.181

Note. * $p < .05$, ** $p < .01$, *** $p < .001$

2. Cartoons and state anxiety

Firstly, we counterbalanced the 2 versions of the questionnaires for the present study to see if it made any difference if the respondents had seen the Dark or the Light humour videos first.

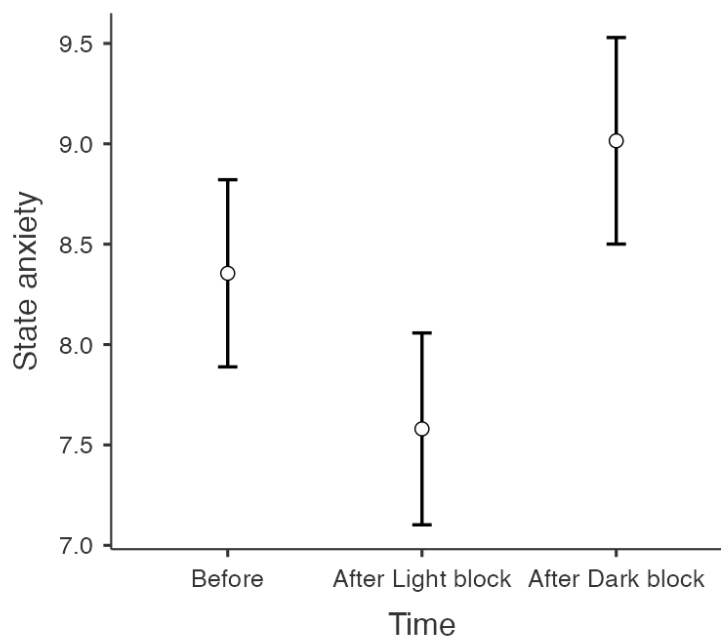
No significant difference was found between the state anxiety of the two groups in either the “after-the-Light block” ($U = 4812, p = .632$) or “after-the-Dark block” ($U = 4621, p = .350$) conditions. The state anxiety levels of the group who saw the Light cartoon block first were the

following: after the Light block: ($M = 7.38$, $SD = 3.25$), after the Dark block: ($M = 9.44$, $SD = 3.77$). The state anxiety levels of the group who saw the Dark cartoon block first were the following: after the Light block ($M = 7.78$, $SD = 3.60$), after the Dark block ($M = 8.59$, $SD = 3.58$). We used the non-parametric alternative of the independent samples t-test in both cases as the assumption of normality was violated (Shapiro-Wilk $p < .001$).

Regarding the difference between participants' state anxiety before the videos, after watching the Light-humoured cartoons and, after viewing the Dark-humoured scenes, the results were the following: A Repeated Measures ANOVA indicated that a significant difference can be found between the three conditions ($F(1.83, 363.65) = 26.3$, $\eta^2_p = 0.117$, $p < .001$). Within the analysis, we used the Greenhouse-Geisser sphericity correction, as the assumption of sphericity was violated ($p < .001$). A post hoc analysis with Tukey correction revealed that the reported level of state anxiety was significantly lower after people watched the Light humour videos ($M = 7.58$; $SE = 0.242$) than after watching Dark humour videos ($M = 9.02$; $SE = 0.261$) ($t(199) = -7.35$, $p < .001$) or Before ($M = 8.36$; $SE = 0.236$) watching any videos at all ($t(199) = 4.52$, $p < .001$). Moreover, the difference between the reported level of state anxiety after watching the Dark cartoon block ($M = 9.02$, $SE = 0.261$) compared with before having seen any of the videos ($M = 8.36$, $SE = 0.236$) was also significant ($t(199) = -2.95$, $p = 0.010$). The difference in state anxiety before watching any videos, after the Light cartoon block and after the Dark cartoon block is depicted in *Figure I.* and in *Table II.*

Figure I.

The differences in reported state anxiety before seeing the cartoons, after seeing the light humour cartoon block and after seeing the dark humour cartoon block

**Table II.**

Difference between state anxiety levels before watching any videos, after the Light block and after the Dark block

Comparison		Mean Difference	SE	df	t	ptukey
Time	Time					
Before	- After Light block	0.775	0.171	199	4.52	< .001
	- After Dark block	-0.660	0.224	199	-2.95	0.010
After Light block	- After Dark block	-1.435	0.195	199	-7.35	< .001

Discussion

1. General discussion

The aim of this study was to look into humour's impact on somebody's life both in broad (e.g., trait anxiety) and in a narrower sense (e.g., state anxiety in relation to visual stimuli). We based our hypotheses on the scientific foundation presented in the *Theoretical background* and gathered data using an online questionnaire that had several self-report measurement tools along with cartoon clips showing Light and Dark humour scenes. The data for the research was accumulated via an online questionnaire filled out by 200 participants from a multicultural

background. The sample included individuals from various age groups, with a mean age of 25.5 years. The questionnaire contained the HSQ (Martin et al., 2003), SP-CSM-24 (Torres-Marín et al., 2023) and STAI-5 (Zsido et al., 2020) self-report measurement tools along with Light and Dark-humoured cartoon scenes. The experiment replicated several previous findings.

2. Humour styles and trait anxiety

We hypothesized that there would be a connection between participants' preferred humour styles and their level of reported trait anxiety. Specifically, we theorized that people with a higher level of trait anxiety will be more likely to use negative humour styles, while individuals who have lower reported trait anxiety will be more likely to apply positive humour styles.

The first part of the hypothesis was partially supported by the statistical analysis since a significant positive correlation was found between participants' trait anxiety and the preference for Self-defeating humour, but no relationship was revealed with the Aggressive humour style. This result supports the findings of Napp (2023), who stated that people who often use Self-defeating humour to conceal their true selves and to entertain others are likely to experience increased psychological distress, moreover, according to Barrett (2016), they may be struggling with some deeper trauma. Our result is also congruent with Martin et al. (2003), who described Self-defeating humour as a form of defensive denial, used to mask negative feelings, to avoid confrontation and dealing constructively with problems. He found that Self-defeating humour is positively related to anxiety and depression and negatively connected to psychological well-being (Martin, 2003). Furthermore, Self-defeating humour is used to avoid dealing with issues related to emotional neediness and to conceal negative perceptions about oneself. Ultimately, Self-defeating humour has been linked to less resistance to life's challenges (Kuiper, 2012), which can manifest in higher anxiety levels. Regarding Aggressive humour, our result did not support Napp's (2023) finding, that individuals who often belittle others for amusement are more likely to experience anxiety. This could be explained by the relief theory of humour (Freud, 1926), which suggests that using Aggressive humour can help to get rid of the buildup of aggressive energy that causes inner tension if not released from time to time.

The other part of our first hypothesis regarding the use of positive humour styles was also partially supported by the statistical analysis, as only Affiliative humour showed a negative correlation with trait anxiety, Self-enhancing humour was not significantly related to it. This finding is congruent with Martin et al.'s (2003) result that Affiliative humour is primarily associated with positive emotional states, as it facilitates relationships with others and helps to

reduce interpersonal tension. Affiliative humour can also act as a buffer between unpleasant life experiences and psychological instability, thus, it can serve as a protective element that aids in stress management (Martin & Ford, 2018) and decreases unpleasant emotions, including anger, depression, and anxiety (Mendiburo-Seguel et al., 2015). Unexpectedly, however, Self-enhancing humour was not negatively correlated with state anxiety in our sample, as previous research results show that Self-enhancing humour involves maintaining a humorous outlook even in stressful situations and finding amusement in life's incongruities, thus it is positively related to psychological well-being and inversely related to negative emotions like depression and anxiety (Martin et al., 2003; Yue, 2017).

3. Cartoons and state anxiety

Regarding state anxiety levels, people became significantly less anxious upon watching the Light humour video block, compared to their score recorded before watching any videos. At the same time, participants became significantly more anxious after watching the Dark humour video block in comparison with their score after watching the videos containing Light humour or before watching any videos at all. Thus, the experiment's results confirmed both parts of our second hypothesis.

Our second hypothesis stated that the reported state anxiety of the subjects would be different before and after watching the Light humour cartoon block versus the Dark humour cartoon block. More specifically, we assumed that participants would experience the lowest level of state anxiety after watching the Light humour cartoon block and the highest level of state anxiety after watching the Dark humour cartoon block. The facts that firstly, Aggressive humour causes more negative affect than Affiliative humour (e.g., Cann et al., 2015), and secondly, since the Dark humour videos could have aroused more negative affect in the subjects than the Light humour ones (Cann et al., 2015) can together serve as an explanation for the study results. In addition, they can answer the question why there was such a substantial difference between people's reported state anxiety levels in response to the videos depicting the two different types of humour. Our results were also congruent with the results of Samson and Gross (2012) who suggested that positive and negative humour have different affective consequences: compared to Dark humour, Light humour is more useful for up-regulating positive and downregulating negative emotions. In their experiment, only Light humour proved to be an effective tool for reducing distress induced by negative pictures, Dark humour was ineffective. In our experiment as well, Light humour videos caused a significant decrease in participants' reported state anxiety, both in the group which had not seen any videos before the

Light-humoured cartoons and the group which had seen the Dark humour block first, supporting Samson and Gross' (2012) finding. Our results replicated the research findings of Perchtold et al. (2019) too, who also found that mean-spirited humour is much less effective for cognitive reappraisal, thus the reduction of negative emotions.

While according to earlier behavioural research (Epstein & Smith, 1956), aggression raises the degree of humour in materials, Anderson and Bushman (2002) argues, that hostility and aggression are a feature of Aggressive humour and as such provocative and violent scenes are the primary source of frustration. This can explain why people reported higher state anxiety levels after seeing the Dark humour video segment (Liu et al., 2019).

Being around humour can influence someone's affective state. In general, humour is considered to be pleasant, and when executed skillfully, it can be amusing and produce the emotional state known as mirth (Martin & Ford, 2018). Consequently, humour exposure can increase reported positive affect while decreasing negative affect (Cann et al., 2000). However, due to the upsetting content, a primary characteristic of Dark humour (e.g. Kim et al., 2023), which can evoke negative feelings in people (Dhaenens & Van Bauwel, 2011; Raymond, 2013) it is understandable why there was a significant difference between participants' reported state anxiety levels before watching any videos and after watching the Dark humour block.

Humour is a fundamental human quality that can be elicited by social situations, verbal content (jokes), and visual content (cartoons or movies). Cartoons are a popular form of humour that use images with incongruous aspects that must be resolved by the viewer to get the punch line (Samson et al., 2008). Animated TV series produced since the 1980s such as *The Simpsons* (Brooks et al., 1989-present), *South Park* (Parker et al., 1997-present), and *Family Guy* (MacFarlane et al., 1999-present), have generally been marketed at an adult audience (Smith, 2005), and have become known for using Dark humour, exaggeration, and stereotyping combined with the depiction of controversial political and social topics (Dhaenens & Van Bauwel, 2011; Raymond, 2013; Zsila et al., 2021). These topics can understandably be upsetting for some which can even further explain the results of the experiment that subjects reported state anxiety levels were higher after watching the Dark humour videos, and also validates the sitcoms we chose for the Dark humour video block.

4. Limitations

All in all, it can be stated that our research results mostly supported the findings of other researchers in the field. Nevertheless, it should be noted that the present study is not without limitations, which should be taken into account in the interpretation of the previously presented

results. A large portion of the data, for instance, was derived from self-reports; this might be problematic when evaluating characteristics like humour that are related to social desirability. Moreover, the survey was distributed among the psychology students at the University of Pécs, resulting in the majority of the participants being from that community, which also could have had an impact on the results.

5. Implications for further/future research

Studying sitcoms can be beneficial in several ways. First, understanding why people laugh at things can shed light on the sociological and psychological characteristics of both individuals and groups. For instance, comedy analysis can be helpful in elucidating certain elements of specific cultures or nations. Secondly, exchanging a typology of methods for characterising and comparing sitcoms would be advantageous for writers, producers, and broadcasting companies as well. For example, researching the types of humour that resonate with particular audiences could help with the targeting and creation of television shows (Juckel et al., 2016).

Regarding the future, it would be worthwhile to carry out further studies on the topic of humour on larger, more representative samples to get a deeper understanding of how the sense of humour is connected to personality and whether it can be improved or changed within the individual over time.

AI usage

Hereby, we would like to declare that no artificial intelligence of any kind was used in the research process, statistical analysis or the composition of the current study.

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