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Hungarian Adaptation of Types of Positive Affect Scale: Differentiation Between Activating and Soothing Positive Affect

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ABSTRACT. Aims and Methods The current study aimed to investigate the factor structure, reliability, measurement invariance, and construct validity of the Hungarian version of the Types of Positive Affect Scale among a sample of university students (N = 1239). Confirmatory factor analyses (CFA), multi-group confirmatory factor analyses, internal consistency analyses, and correlational analyses were conducted. **Results** For the proposed two-factor model, CFA showed good fit with the data (CMIN = 438,16; DF = 51; CMIN/DF = 8,59; GFI = .94; CFI = .93; SRMR = .04; RMSEA = .07, 95%CI = [.07; .08]), all items were significant predictors of measured factors. The measurement invariance across gender and country, good internal consistency, and construct validity of the scale were also confirmed. **Conclusion** Findings support the reliability and validity of the Hungarian version of the Types of Positive Affect Scale and enable us to use the subscale scores to differentiate between soothing and activating positive affect.

Keywords soothing positive affect, activating positive affect, scale, validation, Hungarian

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Hungarian Adaptation of Types of Positive Affect Scale: Differentiation Between Activating and Soothing Positive Affect

Negative affect, containing emotional states like anger, anxiety, and disgust, serves as a key indicator of general distress in individuals (Watson & Pennebaker, 1989; Watson et al., 1988a). In contrast, positive affect, characterized by states such as excitement, joy, and happiness, is a key measure of one's subjective sense of well-being (Diener, 1984; Fredrickson, 2001; Fredrickson & Cohn, 2008; Seligman, 2011). Although Frijda (2009) has conceptualized affect as a component of emotional experiences (alongside autonomic arousal, action readiness, and appraisal), the presence of affect is not essential for the existence of emotion (Russell, 2003).

Affect, regardless of the specific type (e.g., sadness, anger, happiness, hope), is characterized by two fundamental dimensions: intensity, spanning from very low to very high activation, and valence, extending from very unpleasant to very pleasant. Negative affect (such as anxiety, fear, anger, and sadness) carries a negative valence, while positive affect (for example happiness, contentment, excitement, and feelings of safeness) has a positive valence, regardless of its activation level (Fredrickson & Cohn, 2008; Russell, 2003). Both negative and positive affect can be measured as traits (reflecting feelings over recent weeks, months, or in general) or as states (capturing current affect) (Watson & Clark, 1994; Watson & Pennebaker, 1989).

Based on Gilberts' theory (2009a, 2009, 2014) which is built on current neurophysiological data (Depue & Morrone-Strupinsky, 2005), there are three major emotion regulation systems: the system responsible for threat detection (i.e., threat–defense system), the system responsible for motivation (i.e., incentive and resource-seeking system), and the system responsible for reassurance (i.e., soothing, caring and contentment system). In view of this framework, there are two types of positive affect, showing both subjective and neurophysiological differences (Depue & Morrone-Strupinsky, 2005). One type of positive affect is related to the search for resources, motivation, and drive. On a subjective level, these are activating positive affects related to performance, acquiring important resources, and the dopaminergic system. Another type of positive affect is based on the soothing system, characterized by feelings of safeness, and contentment). Ideally, the soothing system is activated when there are no threats and when needs are met, but as previously mentioned, this does not occur automatically. The feeling of contentment and safety doesn't simply result from deactivating the motivational and danger-signaling systems, but from activating the soothing, reassurance system, associated with the opiate/oxytocin system (Depue & Morrone-Strupinsky, 2005). In her broaden-and-build theory of positive emotions,

Fredrickson (2001) argues that positive emotions broaden people's momentary thought and action repertoires, but Gilbert's (2009a, 2009b, 2014) theory sustains that activating positive affect actually narrows attention, and only soothing positive affect broadens it. Therefore, these two types of positive affect might have different effects on thought–action repertoires too.

The emotional states of negative and positive affect play a very important role in students' mental health, making it crucial to have reliable and valid scales for their assessment. Positive and negative affect are very relevant in the academic context, as they can predict academic success and academic stress (Saklofske et al., 2012), influence students' creativity (Charyton et al., 2009), impact the levels of test-specific worries, and test performance (Chin et al., 2017), cardiovascular recovery from academic stress (Papousek et al., 2009), and academic engagement (King et al., 2015).

However, the distinct types of positive affect (i.e., activating- vs. soothing positive affect) have different relevance for mental health. Soothing positive affect, for example, demonstrates a stronger relationship with mental health indicators (e.g., depression, anxiety, self-criticism, and secure attachment) than activating positive affect (Gilbert, 2009a, 2009b; Gilbert et al., 2008). These different types of positive affect may be characterized even by qualitatively distinct autonomic activation profiles. Research shows that high-frequency heart rate variability (HF-HRV), an indicator of greater autonomic flexibility, is only associated with soothing positive affect, not with activating positive affect (Duarte & Pinto-Gouveia, 2017; Petrocchi et al., 2017). Among these two types of positive affect, soothing positive affect also has stronger relationship with mindfulness (Martins et al., 2018) and self-compassion (Kirschner et al., 2019; Steindl et al., 2021). It also proves to be a better predictor of anxiety and stress (McManus et al., 2019). Moreover, self-compassion interventions have a greater impact on soothing positive affect than on activating positive affect (Kirschner et al., 2019; Matos et al., 2017).

The Positive and Negative Affect Scale PANAS (Watson et al., 1988b) is the most commonly used instrument for measuring positive and negative affect. Comprising 20 items, it includes ten designed to measure positive affect and another ten to assess negative affect. However, the PANAS does not differentiate between different types of positive affect, it exclusively measures activating positive affect, which reflects only the extent to which a person feels energetic and alert. According to the authors, soothing positive affect, such as calmness and contentment, are essentially the absence of negative affect: „Briefly, Positive Affect (PA) reflects the extent to which a person feels enthusiastic, active, and alert. High PA is a state of high energy, full concentration, and pleasurable engagement, whereas low PA is characterized by sadness and lethargy. In contrast,

Negative Affect (NA) is a general dimension of subjective distress and unpleasurable engagement that subsumes a variety of aversive mood states, including anger, contempt, disgust, guilt, fear, and nervousness, with low NA being a state of calmness and serenity" (Watson et al., 1988b, pp. 1063).

In contrast, Gilbert (2009a, 2009b, 2014) and colleagues (Gilbert et al., 2008) argue that soothing positive affect requires the activation of the soothing system, which does not occur automatically when the threat system (responsible for generating negative affect) is deactivated. Therefore, Gilbert and his colleagues (2008) have developed an instrument for measuring these different types of positive affect known as the Types of Positive Affect Scale (Gilbert et al., 2008). Contrary to their initial expectations of two factors, they identified three: positive activating affect, positive relaxing affect, and positive soothing affect (such as feelings of safeness and contentment). The activating positive affect is measured with eight items (e.g., "Active", "Dynamic", "Excited", etc.), the soothing positive affect is measured with four items (e.g., "Secure", "Safe", etc.), and the relaxed positive affect with six items (e.g., "Relaxed", "Calm"). Answers can be given on a five-point scale ranging from 1 (*not typical for me*) to 5 (*very typical for me*). Subscale scores are calculated by summing the item responses. The internal consistency of the original subscales was found to be acceptable to good, with a Cronbach's α of 0.83 for activating positive affect, 0.73 for soothing positive affect, and 0.83 for relaxing positive affect. The test-retest reliability over a three-week interval was good for both activating positive affect ($r = .84$) and soothing positive affect ($r = .77$), but relatively low for relaxed positive affect ($r = .34$) (Gilbert et al., 2008).

To date, no confirmatory factor analysis testing the factor structure of this scale and no adaptation of the scale to the Hungarian population has been performed. Therefore, the primary objective of our study aims to develop the Hungarian version of the Types of Positive Affects Scale (Gilbert et al., 2008), which can differentiate between activating and soothing positive affect. Additionally, we intend to evaluate the scale's factor structure using confirmatory factor analysis (CFA) within a large student sample. Given the low test-retest reliability of the relaxing positive affect subscale, we have decided to translate, adapt, and test only the remaining two subscales. Furthermore, we aim to examine the invariance of the two-factor model according to gender (males vs. females) and students' country of origin (Hungary vs. Romania). We will also evaluate the internal consistency of these subscales and examine their construct validity. Lastly, this study aims to test the relationships between different types of positive affect, negative affect, and self-compassion.

According to our first hypotheses, we expect both types of positive affect to correlate negatively with negative affect. However, we predict that the

relationship between soothing positive affect and negative affect will be stronger than the relationship between activating positive affect and negative affect. Our second hypothesis assumes that both types of positive affect have a positive relationship with self-compassion. Nevertheless, we also expect that soothing positive affect will demonstrate a more pronounced connection with self-compassion in comparison to activating positive affect.

METHOD

Instruments

Socio-Demographic and Personal Information
Participants completed a socio-demographic form, which included items regarding age, gender, country, and student status (i.e., student year, type of study, and major type).

Self-Compassion
Self-compassion was measured with the Self-Compassion Scale – Short Form (SCS-SF; Raes et al., 2011), a 12-item version of the original Self-Compassion Scale (SCS; Neff, 2003). The SCS-SF measures the trait self-compassion with six normal-coded and six reverse-coded items (e.g., "I try to see my failings as part of the human condition"; „When I fail at something important to me, I tend to feel alone in my failure"). Responses are recorded on a five-point scale, ranging from 1 (*almost never*) to 5 (*almost always*). To calculate overall scores, we averaged responses after reverse-coding the appropriate items. Higher scores on this scale indicate greater levels of trait self-compassion. The scale shows good psychometric characteristics, with the internal consistency for self-compassion as a complex indicator demonstrated by $\alpha = 0.87$ in the Dutch sample and $\alpha = 0.86$ in the English sample. In our study, the scale also displayed good internal consistency ($\alpha = .82$).

Activating and Soothing Positive Affect
Two subscales of the Types of Positive Affect Scale (Gilbert et al., 2008) were used to measure the activating and soothing positive affect. The scale normally consists of three subscales measuring three types of positive affect (activating-, relaxing-, and soothing positive affect). However, the test-retest reliability of the relaxing affect subscale over a three-week period was found to be very low ($r = .34$) by the authors. Activating positive affect is measured with eight items (e.g., "Active", "Dynamic", "Excited", etc.), and soothing positive affect

is measured with four items (e.g., "Secure", "Safe", etc.). Participants rate their answers on a five-point scale ranging from 1 (*not typical for me*) to 5 (*very typical for me*). The scores of the sub-scales were determined by summing up the responses to items. Gilbert et al. (2008) found good internal consistency for activating positive affect (α = 0.83) and an acceptable level for soothing positive affect (α = 0.73).

Negative Affect

To measure negative affect, we used the abbreviated version of the Emotional Distress Profile (Profilul Distresului Emoțional - PDE; Opriş & Macavei, 2005), a scale developed and validated in Romania. It demonstrates good psychometric properties and excellent internal consistency as a complex indicator of emotional distress, especially negative affect (α = .94). The original scale consists of 26 items that describe different negative affect, such as „depressed", „anxious", or „sad". In our study, we utilized 12 of these items, asking participants to rate on a five-point Likert scale the extent to which these emotions characterized their experiences over the past two weeks, with higher scores indicating higher negative affect. Following the translation process, these 12 items demonstrated high face validity, based on the ratings of two experts. In our sample, the abbreviated version of the scale also showed excellent internal consistency (α = .91).

Participants

Hungarian-speaking students from Eötvös Lóránd University (Hungary) and Babeș-Bolyai University (Romania) were recruited to participate. Out of the 1239 individuals who completed the study, we identified 18 participants with multivariate outlier data based on Mahalanobis distance analyses. However, the sensitivity analyses showed similar results for all analyses with or without the exclusion of outliers, therefore we opted to report our results including all data.

Therefore, the final sample consisted of 1239 students (N = 1239) with a mean age of 22.59 years (SD = 6.71). Most of them self-identified as females (n = 978; 78,9%). Of these participants, 470 were from Romania (37,9%), 749 were from Hungary (60,5%), and 20 were from other countries (1,6%). The majority lived in a city (n = 902; 72,8%) and studied Psychology (n = 480; 38,7%). The sample included first-year students (n = 514; 41,5%), second-year students (n = 452; 36,5%), third-year students (n = 233; 18,8%), and 38 students with extended periods (3.1%). The majority of the participants were full-time students (n = 1051; 84,8%) pursuing Bachelor-level degrees (n = 1066; 86%).

Translation of the scale

The translation process for the two subscales (soothing and activating positive affect) of the Types of Positive Affect Scale (Gilbert et al., 2008) was done according to existing guidelines (Sousa & Rojjanasrirat, 2011). Initially, the two subscales were translated from English to Hungarian by two certified translators. Another two certified translators then performed a reverse translation from Hungarian back to English. Following this, a committee consisting of the article authors and the translators evaluated the two sets of scales and items. Any discrepancies between the scales were resolved through discussion. The final scale was created by selecting 12 appropriate items, out of which four measure soothing positive affect and eight assess activating positive affect.

Procedures

Following their voluntary agreement to take part in the research and submission of online consent, participants filled out a structured survey via Google Forms. The study received approval from the local Ethics Committee from Eötvös Lóránd University (nr. 2022/615).

Data Analyses and Assessment of Model Fit

The SPSS 20 software was used for preliminary and correlational analyses. The model fit was examined using confirmatory factor analysis (CFA) in SPSS AMOS 20, with Maximum Likelihood (ML) estimation. Evaluation of the model fit relied on multiple indicators, including the chi-square statistic (CMIN) to the degrees of freedom (DF) ratio, the root mean square error of approximation (RMSEA) with a 90% confidence interval, the standardized root mean square residual (SRMR), the general fit index (GFI), and the comparative fit index (CFI). The measurement invariance of the scale was explored through multi-group confirmatory factor analyses.

For evaluating internal consistency, we utilized Cronbach's Alpha's (α) coefficient for the entire scale and the mean inter-item correlation (MIIC) for subscales. MIIC is particularly suitable for scales featuring less than 10 items (Mitchell & Jolley, 2012). Pearson's correlation analysis was used to assess the relationships among two types of positive affect (activating and soothing positive affect), negative affect, and self-compassion.

For the chi-square statistic to the degrees of freedom ratio, critical values ranging from 2 to 5 have been recommended as cutoffs (Hu & Bentler, 1999). Regarding RMSEA, values less than .08 are indicative of adequate fit, and values less than .05 signify good fit (Schermelleh-Engel et al., 2003). Moreover, for RMSEA, the associated 90% confidence interval upper limit needs to be no more than .10 (West et al., 2012).

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CFI values should not drop lower than .90, but values above .95 are considered a good fit (Hu & Bentler, 1999). Furthermore, a GFI of .95 demonstrates a good fit, while values over .90 suggest an acceptable fit. SRMR values less than .08 are deemed an acceptable fit, while a value less than .05 is a good fit (Schermelleh-Engel et al., 2003).

The assessment of measurement invariance relied on Chen's (2007) criteria, which suggest that for invariance to be supported, ΔCFI should be less than .01, and ΔRMSEA should be less than .015. We chose not to base our judgement on the chi-square test because it is significantly influenced by sample size. It is worth mentioning that in large samples, this test could be statistically significant, even if the absolute differences in parameter estimates are very small.

Cronbach Alpha values were interpreted according to George and Mallery's (2003) recommendations, where α > .9 indicates excellent internal consistency, α > .8 suggests good consistency, α > .7 indicates acceptable consistency, α > .6 suggests questionable consistency, α > .5 indicates poor consistency, and α values below .5 are considered unacceptable. MIIC values above .3 are deemed acceptable (Mitchell & Jolley, 2012).

Based on Simms (2008), items with loadings above .35 were included in the final scale. Correlation coefficients were interpreted according to Cohen (1988), with $r = .10$ indicating small effects, $r = .30$ indicating medium effects, and $r = .50$ representing large effects.

RESULTS

Preliminary Analyses

Calculated means, standard deviations, skewness, and kurtosis statistics for scale items are presented in Table 1 (N = 1239).

Table 1. Descriptive statistics of scale items (N = 1239)

Variable	M	SD	Skewness	SE	Kurtosis	SE
TPAS1	3.42	1.05	-.33	.07	-.51	.13
TPAS2	3.65	1.08	-.49	.07	-.51	.13
TPAS3	3.56	1.05	-.43	.07	-.44	.13
TPAS4	3.34	1.09	-.28	.07	-.60	.13
TPAS5	3.14	1.12	-.10	.07	-.78	.13
TPAS6	3.33	1.07	-.20	.07	-.59	.13
TPAS7	3.68	1.04	-.55	.07	-.29	.13
TPAS8	3.77	1.09	-.68	.07	-.22	.13
TPAS9	3.21	1.03	-.22	.07	-.47	.13
TPAS10	3.53	1.06	-.41	.07	-.49	.13
TPAS11	3.31	1.20	-.23	.07	-.90	.13
TPAS12	3.64	1.01	-.53	.07	-.18	.13

The sensitivity analyses showed similar results for all analyses with and without the exclusion of outliers (we identified 18 participants with multivariate outlier data), therefore we decided to report our results including all data. The data were normally distributed. First-order correlations between scale items are displayed in Table 2.

Table 2. Correlations between scale items (N = 1239)

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.
TPAS1											
TPAS2	.22**										
TPAS3	.34**	.52**									
TPAS4	.24**	.59**	.72**								
TPAS5	.18**	.45**	.45**	.50**							
TPAS6	.24**	.53**	.56**	.60**	.59**						
TPAS7	.43**	.16**	.30**	.24**	.20**	.27**					
TPAS8	.36**	.22**	.41**	.34**	.26**	.30**	.48**				
TPAS9	.38**	.30**	.43**	.38**	.29**	.34**	.38**	.38**			
TPAS10	.22**	.32**	.38**	.36**	.36**	.35**	.18**	.32**	.34**		
TPAS11	.18**	.33**	.42**	.42**	.31**	.43**	.16**	.25**	.26**	.46**	
TPAS12	.29**	.42**	.54**	.53**	.52**	.52**	.32**	.42**	.41**	.51**	.40**

Notes: ** Correlation is significant at the .01 level (2-tailed)

Confirmatory Factor Analyses

Analyzing the two-factor model, the results of CFA showed borderline fit (CMIN = 225,74; DF = 53; CMIN/DF = 11,80; GFI = .92; CFI = .90; SRMR = .054; RMSEA = .09, 90%CI = [.08; .10].

Table 3 The factor loading on the activating and soothing positive affect (N = 1239)

Factor Loaded	Item	Standardized regression weight for the initial model	Standardized regression weight for the final model
Activating PA	TPAS2a	.66**	.66**
Activating PA	TPAS3a	.79**	.74**
Activating PA	TPAS4a	.81**	.77**
Activating PA	TPAS5a	.65**	.68**
Activating PA	TPAS6a	.75**	.77**
Activating PA	TPAS10a	.53**	.53**
Activating PA	TPAS11a	.54**	.53**
Activating PA	TPAS12a	.71**	.72**
Soothing PA	TPAS1s	.58**	.58**
Soothing PA	TPAS7s	.64**	.65**
Soothing PA	TPAS8s	.66**	.66**
Soothing PA	TPAS9s	.64**	.64**

Notes: ** The factor loading is significant at the .01 level; PA – Positive Affect

Table 3 shows the loadings of items on both the activating and soothing positive affect factors with each loading found to be statistically significant. Importantly, all loadings exceeded the threshold of 0.35, which means there was no need to exclude any item from the analyses.

Following the procedure suggested by modification indices regarding the covariances between errors of the items (including covariances between errors of items TPAS3a and TPAS4a; and between TPAS10a and TPAS11a), we increased the fit of the model to an adequate level (CMIN = 438,16; DF = 51; CMIN/DF = 8,59; GFI = .94; CFI = .93; SRMR = .04; RMSEA = .07, 90%CI = [.07; .08]). Figure 1 and Table 3 present the standardized factor loadings, as well as the covariances between the two factors (activating positive affect and soothing positive affect) and between the errors.
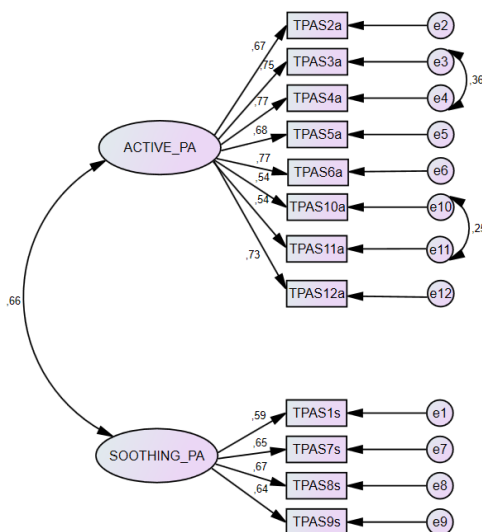
Fig. 1. The Final Model

Analyses of Internal Consistencies

Based on Cronbach's alpha indexes, we found good internal consistency for activating positive affect subscale (α = .87) and acceptable internal consistency for soothing positive affect subscale (α = .73). Additionally, the mean inter-item correlations (MIIC) reinforced these findings, indicating that both subscales showed good internal consistency (refer to Table 4 for details).

Table 4. Descriptive Statistics for Measured Factors (N = 1239)

	M	**SD**	**Cronbach α**	**MIIC**
Activating PA	27.54	6.38	.87	.47
Soothing PA	14.10	3.15	.73	.40

Assessing the Measurement Invariance of the Scale

We also tested the measurement invariance of the scale across gender (female and male) and country (Hungary and Romania). We assessed the configural invariance and found good model fits across all scenarios. Subsequently, when assessing metric and structural invariances, changes in fit and error indexes (CFI and RMSEA) further confirmed the scale's measurement invariance (ΔCFI < 0.01, ΔRMSEA < 0.015). Results are presented in Table 5.

Table 5. Model fit across samples

	CMIN	DF	CMIN/DF	CFI	GFI	RMSEA [90% CI]	SRMR
All sample (N = 1239)							
	438.16	51	8.59	.93	.94	.07 [.07; .08]	.04
Configural Invariance Across Country (Hungarian sample N = 749; Romanian sample N = 470)							
	525.26	102	5.15	.92	.93	.05 [.05; .06]	.05
Metric Invariance Across Country (Hungarian sample N = 749; Romanian sample N = 470)							
	529.96	112	4.73	.92	.92	.05 [.05; .06]	.04
Structural Invariance Across Country (Hungarian sample N = 749; Romanian sample N = 470)							
	538.96	115	4.68	.92	.92	.05 [.05; .06]	.06
Configural Invariance Across Gender (Female Sample N = 978; Male sample N = 255)							
	505.40	102	4.95	.93	.93	.05 [.05; .06]	.04
Metric Invariance Across Gender (Female Sample N = 978; Male sample N = 255)							
	516.03	112	4.60	.93	.93	.04 [.04; .05]	.05
Structural Invariance Across Gender (Female Sample N = 978; Male sample N = 255)							
	521.29	115	4.53	.93	.93	.04 [.04; .05]	.06

Construct Validity

To test our hypotheses, we conducted a Pearson correlation analysis. The results are presented in Table 6.

Table 6. Correlations Between the Main Measured Variables (N = 1239)

	1.	**2.**	**3.**	**4.**
1. Activating positive affect				
2. Soothing positive affect	.52**			
3. Negative affect	-.37**	-.44**		
4. Self-compassion	.33**	.43**	-.55**	

Notes: ** Correlation is significant at the .01 level (2-tailed)

According to our hypothesis, both soothing and activating positive affect showed negative correlations with emotional distress (r = -.44, p < .01, and r = -.37, p < .01, respectively). Additionally, as predicted, the relationship between soothing positive affect and negative affect was stronger than the relationship between activating positive affect and negative affect (r compare: z = 2.08, p = .03). Our second hypothesis was also confirmed, indicating that both soothing and activating positive affect demonstrated positive relationships with self-compassion (r = .43, p < .01 and r = .33, p < .01, respectively). Moreover, here as well, we found that soothing positive affect plays a bigger role compared to activating positive affect (r compare: z = 2.91, p < .01). Results of the correlation analysis are also presented in Table 6.

DISCUSSION

The purpose of this study was to evaluate the factorial structure, measurement invariance, internal consistency, and construct validity of the Types of Positive Affect Scale (TPAS; Gilbert et al., 2008) within a Hungarian student sample. To date, there are no adaptations of the TPAS for this population. Our primary objective was to develop a Hungarian scale that can differentiate between activating (related to seeking and doing) and soothing (associated with contentment and social safeness) positive affect. Given Gilbert and colleagues' (2008) previously reported low test-retest reliability for the third subscale of the original scale (relaxing positive affect), we decided to adapt only the two subscales of interest.

The proposed model, which included two covariances between errors of the items, demonstrated an adequate fit with the data. Furthermore, the measurement invariance of the scale was confirmed across genders (females and males) and countries (Hungary and Romania). We found acceptable levels of internal consistency for these two subscales, as indicated by both Cronbach's alpha and mean inter-item correlation indexes.

Both hypotheses were confirmed, showing that both types of positive affect present negative relationships with negative affect and positive relationships with self-compassion. Findings also revealed that, as expected, soothing positive affect exhibited stronger relationships with these variables compared to activating positive affect. This suggests that soothing positive affect plays a more important role in mental health than activating positive affect. Moreover, these results align with Gilberts' theory (2009a, 2009b, 2014) and with previous findings (Gilbert et al., 2008; Kirschner et al., 2019; Martins et al., 2018; Steindl et al., 2021), supporting the idea that the Hungarian version of the Types of Positive Affect

Scale serves as a reliable and valid tool for distinguishing and measuring soothing and activating positive affect separately.

Further empirical research is needed to assess the stability of the scale's factorial structure. This includes studies executed on different populations, involving not just students, but also community and clinical populations, along with participants from varying cultural backgrounds. Moreover, it is also important to investigate the invariance of the models across age groups, as well as to measure test-retest reliability.

Based on the present findings, it can be concluded that the Hungarian version of the Types of Positive Affect Scale (Appendix 1) is a valid and reliable tool for distinguishing between soothing and activating positive affect. Consequently, the use of this instrument is recommended for further studies instead of the PANAS (Watson et al., 1988b), especially in self-compassion research.

Based on our current results and previous findings (Duarte & Pinto-Gouveia, 2017; Gilbert et al., 2008; Kirschner et al., 2019; Martins et al., 2018; McManus et al., 2019; Petrocchi et al., 2017; Steindl et al., 2021) soothing positive affect appears to be more relevant for mental health. Consequently, cultivating self-compassion, and thereby fostering a compassionate mind, prove more beneficial for improving soothing positive affect than for enhancing activating positive affect (Kirschner et al., 2019; Matos et al., 2017). Therefore, investigations into the effectiveness of self-compassion interventions should incorporate not only measuring activating positive affect but also assessing soothing positive affect.

Statements and Declarations

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APPENDICES

Appendix 1 Hungarian Version of the Types of Positive Affect Scale – Differentiating Between Soothing and Activating Positive Affect

Instruction Az alábbiakban különböző pozitív érzelmeket leíró szavakat találsz. Kérlek jelöld az alábbi skála segítségével, hogy ezek az érzelmek általában mennyire jellemzőek a Saját tapasztalataidra nézve!

Nem jellemző rám		*Eléggé jellemző rám*		*Nagyon jellemző rám*
1	*2*	*3*	*4*	*5*

1 Védett
2 Aktív
3 Életteli
4 Energikus
5 Buzgó
6 Dinamikus
7 Biztonságos
8 Melegséggel teli
9 Elégedett
10 Izgatott
11 Kalandos
12 Lelkes

Soothing Positive Affect: 1, 7, 8, 9
Activating Positive Affect: 2, 3, 4, 5, 6, 10, 11, 12

The association between Time Perspective and Death Anxiety in Elderly: a systematic review of quantitative studies

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ABSTRACT. This systematic review aims to investigate the literature on the relationship between time perspective and death anxiety in the elderly population. Time perspective is a fundamental process by which the flow of personal experiences is categorized into temporal dimensions, while death anxiety refers to the fear associated with the inevitability of death. The review systematically assesses and critically discusses the literature on time perspective and death anxiety and highlights the implications for future research and practice. A comprehensive search of relevant databases (PubMed, Web of Science, Scopus, Science Direct) was conducted to identify quantitative studies published up to date in this review. The initial search yielded a considerable number of studies (N=401). After applying rigorous inclusion criteria, a final selection of studies (N=5) was examined in detail. Results of our systematic review show that time perspective is related to death anxiety in some circumstances, but extensive research is needed to explore this relationship. Future research efforts should focus on refining assessment methodologies from time perspective and investigating potential interventions that can alleviate death anxiety among the elderly population. Understanding the interplay between time perspective and death anxiety may hold valuable implications for mental health interventions and geriatric care, promoting enhanced well-being and psychological resilience in later life.

Keywords: time perspective, death-anxiety, elderly, old age

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Introduction

Although the relationship between time perspective and death anxiety among the elderly has been discussed for several decades (Dickstein et al., 1966; Bascue et al., 1977; Quinn and Reznikoff, 1985; Martz et al., 2003; Chen, 2011; Barber, 2018), there is still ambiguity on this topic, both in terms of the constructs and the relationship between them. Studying the relationship between time perspective and death anxiety is important because it may lead to the development of new strategies to cope with this type of anxiety and improve our understanding of how individuals cope with the inevitability of death enabling us to enhance mental health support and overall well-being (Chen, 2011; Fortner & Neimeyer, 1999).

Methodologically, the study of time perception in relation to age began around the 1970s with the introduction of the concept of time perception, investigated using the Lines test, developed to measure a person's perceived position across the lifespan (Cottle, 1976). Subsequently, other instruments measuring time perception were developed to assess past, present and future dimensions (Jones, 1988). At the same time, other studies were published aiming to measure new constructs related to time perception, such as subjective age or future time perspective (Brandtstädter & Rothermund, 2003; Lang & Carstensen, 2002; Montepare, 2009).

Although numerous assessment and measurement tools are currently available, results on age-related perception of time generally support the idea that as people advance in age, the perspective on future time becomes limited (Brandtstädter et al., 2010; Carstensen, 2006; Guy et al., 1994; James, 1950). As people age, they become less future-oriented and more present-oriented (Cameron et al., 1978; Ebner et al., 2006). Despite this consensus, however, there is debate about the adaptive nature of perceptions of time. They may be associated with high well-being or with other variables such as depression, anxiety or degree of religiosity (Fung & Isaacowitz, 2016). Moreover, these directions also raise a number of questions about the degree to which perceptions of time may undergo changes and the extent to which these changes have an effect in relation to other variables that may affect psychological functioning (Fung & Isaacowitz, 2016).

According to Chen's (2011) research, having a future temporal orientation does not seem to be linked to death anxiety. However, feeling negatively about the past or having a hedonistic perspective about the present appears to be positively associated with anxiety about what occurs after death. Another study aimed to test whether the relationships between age, gender and death anxiety are mediated by trait anxiety, future orientation, religiosity, spirituality and

religious doubt. While results showed that younger adults had a broader time perspective than middle-aged and older adults, time perspective was a non-significant predictor of anxiety (Henrie, 2010).

Another study sought to capture the link between participants' level of anxiety about death and their perceived sense of their own life and experience of time. The results showed a direct relationship between anxiety about death and respondents' responses to feeling harassed by the passage of time (Quinn & Reznikoff, 1985). At the same time, there was also an inverse relationship between the existence of a long-term personal direction and anxiety about death (Quin & Reznikoff, 1985). Furthermore, respondents with high levels of anxiety about death were less likely to plan and organize their time (Quin & Reznikoff, 1985). Also, participants who scored higher on death anxiety were more likely to describe themselves as changeable and unpredictable (Quin & Reznikoff, 1985).

In another study, Bascue and Lawrence (1977) observed a positive correlation between future time perspective and death anxiety among the elderly. One possible explanation for this lies in the tendency not to look to the future as a form of control of death anxiety. In another study, Rappaport et al., (1993) found that purpose in life and death anxiety correlated negatively, purpose in life was positively associated with projection into the future, while death anxiety correlated positively more with the present. As some studies show, it appears that the outlook on the future time changes with age, meaning that older people see the future as having fewer opportunities (Barber et al., 2018). This has an impact on their emotional state, affecting their well-being (Barber et al., 2018).

To our knowledge, no previous systematic review has attempted to capture the relationship between time perspective and death anxiety in older people. Given this gap in the literature, the need to systematize studies that consider the proposed variables becomes evident. With this in mind, the aim of this systematic review is to clarify the role of time perspective on death anxiety in the elderly. Also, the objective of this study is to assess and gather all relevant resources and empirical evidence regarding the relationship between time perspective and death anxiety among the elderly.

The importance and necessity of this systematic review of the literature on the relationship between time perspective constructs and death anxiety among older people lies in identifying and summarizing existing research and results in the field, which contributes to drawing conclusions about the current state of research on the topic. Moreover, this systematic review can be useful in identifying a number of gaps in the literature in the sense that it can suggest relevant research directions that contribute to the development of knowledge

in the area. On the other hand, the conclusions drawn through a systematic review can be used to develop methods of psychological intervention for coping whith death anxiety among the elderly. In this sense, part of this information can contribute to providing evidence-based recommendations for managing death anxiety and understanding the role that time perspective plays in relation to this variable.

Methodology and sampling

Inclusion criteria

We included those quantitative studies that examined time perspective on death anxiety in older adults using appropriate psychometric instruments. Older adults are commonly considered those over 60 years of age, but we are aware that this may be conceptualized differently in other cultures or countries. Other studies that included adults across the lifespan were only considered if there was differentiation between age groups and included the older adult population. All selected studies were published in English in peer-reviewed journals. Given that the literature on this topic is quite underdeveloped, there was no restriction on the time range of the publications included.

Exclusion criteria

Because the study focuses on quantitative research that measured death anxiety and time perspective, qualitative studies, review studies, editorials, conference papers, abstracts, book chapters, or unpublished theses, and studies that do not fit the characteristics of the study sample were excluded.

Literature search

To systematize the literature on time perspective and death anxiety in older adults, a search of the following databases was conducted: PubMed, Web of Science, Scopus, and Science Direct. The search was performed using the following keywords with Boolean operators, adapted according to the database searched: (time perspective OR time orientation OR time perception OR subjective time perception) AND (death anxiety OR fear of death OR fear of dying OR death attitude) AND (older adults OR elderly OR old age OR gerontology or old people).
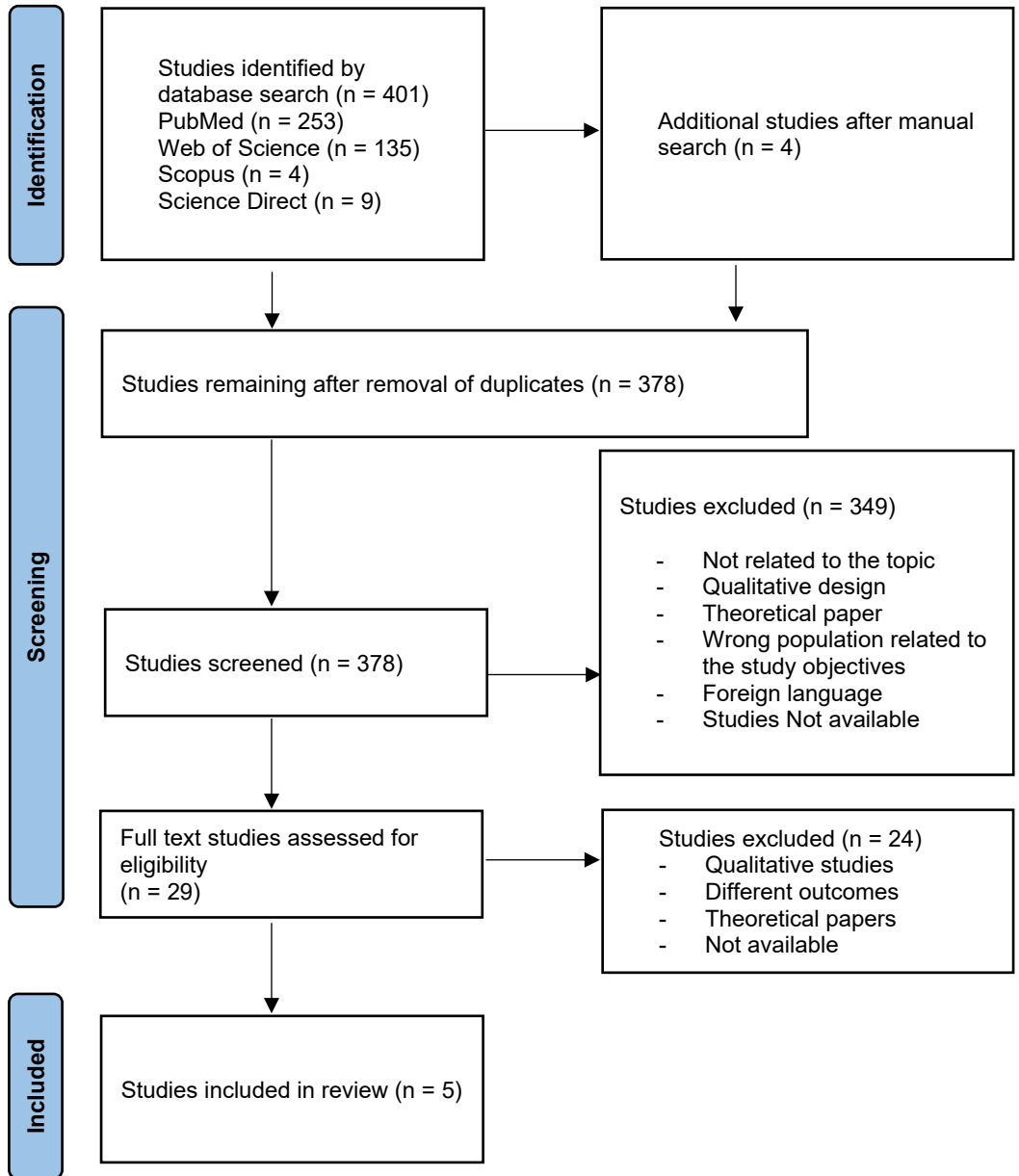
Figure 1. PRISMA diagram illustrating the study selection process

At the same time, we also carried out a manual search in the reference lists of relevant articles. At the same time, the search was limited to publications in English, and to exclude low-quality publications, we decided to include only articles published in peer-reviewed journals.

After identifying studies in the databases, we used Rayyan software to export articles from the databases and remove duplicates. To report this systematization of the literature, we used the Prisma 2020 checklist and Prisma 2020 flow diagram (Figure 1). The database searches resulted in 401 titles and 4 titles identified after manually searching the references of other relevant articles. After removing duplicates, we screened 378 studies based on abstracts and individual article assessment, resulting in the exclusion of 349 studies. Ultimately, only 5 studies met the established criteria for inclusion.

Relevant data and descriptive information were extracted from the studies and organized in a table containing the following categories (Table 1):
- study identification data: authors; article title.
- sample characteristics: sample size, age mean.
- research design
- main results.

A summary of the studies that were selected can be found in Table 1. Within the summary of each article, data on the authors of each article, article title, study objectives, instruments used, participants, type of design and main results were included.

Results

Time perception and death anxiety

In terms of research results, the study of Bascue & Lawrance's (1977) showed that there is a positive correlation between future orientation and death anxiety ($r = .23$, $p < .05$), which indicates that as death anxiety is higher, the future orientation score increases. At the same time, regarding the second research question the results showed that time anxiety ($r = .26$, $p < .05$), time submissiveness ($r = .26$, $p < .05$) and time possessiveness ($r = .28$, $p < .05$) correlated positively with death anxiety, unlike time flexibility which did not correlate with death anxiety (Bascue & Lawrance, 1977). Although the nature of the study did not allow for the determination of causality between variables, it did confirm the existence of associations between certain attitudes toward time and participants' anxiety about death (Bascue & Lawrance, 1977).

Table 1. Summary of studies addressing the relationship between time perspective and death anxiety in the elderly

Authors	Title	Objectives	Instruments	Participants	Research design	Main results
Bascue & Lawrence (1977)	A study of subjective time and death anxiety in the elderly	Investigating the relationship between subjective perceived time and death anxiety in the elderly. The study attempted to answer 2 questions: a) is death anxiety higher in older people who are oriented on future than in those who are oriented on past or present; b) does death anxiety vary according to participants' attitudes towards time?	DAS; JSRD; TRI; TAS;	N = 88 female participants, aged over 62 years (M = 77.15 years), living in apartment complexes exclusively for older people only	Quantitative, cross-sectional study	Research results show that older people tend to avoid focusing on the future as a way of controlling death anxiety. Positive correlation between *future orientation and death anxiety* ($r = .23*$) Positive correlations of the variables *time anxiety* ($r = .26*$), *time submissiveness* ($r = .26*$) and *time possessiveness* ($r = .28*$) with *death anxiety*.
Quinn & Reznikoff (1985)	The relationship between death anxiety and the subjective experience of time in the elderly	The study explored the relationship between level of anxiety about death, sense of purpose in life and personal experience in relation to time controlling for the effects of participants' general anxiety and social desirability	DAS The Time Metaphors Test The Ricks-Epley-Wessman Temporal Experience Questionnaire	N = 145 female participants, ages 60 to 85, members of senior clubs in suburban New Jersey	Quantitative, cross-sectional study	Participants with high scores on death anxiety expressed increased sensitivity to the passage of time. An inverse relationship was found between death anxiety and sense of continuity of one's life. Statistically significant correlations between *death anxiety and the passage of time* ($r = .20**$); between *death anxiety* and feeling harassed about the *passage of time* ($r =$

Rappaport et al. (1993)	Future time, death anxiety, and life purpose among older adults	The study aimed to explore the level of association between temporality, death anxiety and purpose in life	DAS; P-i-L; RTL	N = 58 participants (8 male and 50 female), aged 52 to 94 years (M = 73.4), residing in a senior community and living independently.	Quantitative, cross-sectional study	.34**); *death anxiety and immediate time pressure* (r = -.27**); *death anxiety and time utilization* (r = -.16*) *and between death anxiety and personal inconsistency* (r = .29**). Death anxiety correlated positively with the density of present events. There was no statistically significant correlation between death anxiety and temporal extension into the future (r = .06*). Significant correlation between death anxiety and temporal density in the present (r = .21*).
Moreno et al. (2009)	Death anxiety in institutionalized an non-institutionalized elderly people in Spain	The study explored the relationship between cognitive-affective reactions to death and perception of the passage of time and variables such as residence, age, gender, reflection on one's own life, health and psychological disorders, religious aspects and socio-demographic characteristics.	Qestionnaire developed by the authors measuring variables such as: reflection on one's own life, sense of fulfilment, loneliness and suffering, health issues, subjective perception of time, avoidance of thinking about death, religious issues, beliefs in the afterlife, socio-demographic factors, and the number of visits they received	N = 105 older adults institutionalized in public nursing homes, aged 66-97 years (M = 83.28); 122 older adults living at home, age range 65-93 years (M = 70.65)	Quantitative, cross-sectional study	The results show that the elderly who do not experience the passage of time have less death anxiety than those who experience the rapid passage of time $F(2,205) = 5.29*$. A high degree of anxiety was found in those who wanted to live as long as possible and in those who wanted to live as long as God wanted $F(5, 215) = 2.60*$.

Rupprecht et al. (2022)	COVID-19 and perceiving finitude: Associations with future time perspective, death anxiety, and ideal life expectancy	The extent to which perceptions of the pandemic (severity, susceptibility, social and financial constraints) affect how people perceive the finitude of their own lives. Different psychological constructs were included to assess perceptions of the finiteness of life (e.g, future time perspective with a number of subcomponents such as, future time opportunity, future time extension and future time constraint, death anxiety and life expectancy.	Future time perspective was assessed using the 10-item scale developed by Carstensen & Lang (1996). Death anxiety was assessed using a single item: "When I think of my own death, I become fearful". Ideal life expectancy was assessed with the question: "To what age would you like to live?". Perception of time was measured by a question, "How do you feel about the passing of time?" DAS	N = 1042 adults aged 18 to 95 years (M = 59.1, SD = 16.8) of which 68% were female participants.	Longitudinal study	In relation to the pandemic, the future time opportunity has decreased only among the elderly. A limited perspective on the future correlated with older age. Older age correlated with limited future time opportunity, weaker future time extension, stronger future time constraint and lower death anxiety.

Note. DAS: Death Anxiety Scale (Templer, 1970); JSRD: Josey Scale of Religious Development (Josey, 1950); TRI: The Time Reference Inventory (Ross, 1964); TAS (Bascue & Lawrence, 1977); P-i-L: The Purpose-in-Life Test (Crumbaugh & Maholick, 1964); RTL: The Rappaport Time Line (Rappaport et al., 1985).

$*p < .05; **p < .01$

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Quinn and Reznikoff's (1985) study showed significant correlations between death anxiety and the passage of time (r = .20, p < .01) as measured by the Time Metaphors Test Scores construct (Quinn and Reznikoff, 1985). Significant correlations were also obtained for the constructs assessed by the Ricks-Epley-Wessman Temporal Experience Questionnaire (Quinn and Reznikoff, 1985). Specifically, a positive association was found between a high level of anxiety and feeling "harassed" about the perception of the passage of time (r = .34, p < .01) as measured by Factor I: "Immediate Time Pressure". At the same time, an inverse correlation was also obtained between scores on death anxiety and factor II: "Long Term Personal Direction" (r = .-27, p < .01) which measures the feeling of continuity in personal life (Quinn and Reznikoff, 1985). Moreover, a negative correlation was obtained between death anxiety and factor III: "Time Utilization" (r = -.16, p < .05), which translates into a lower capacity for organization and planning for those with high levels of death anxiety (Quinn and Reznikoff, 1985). Finally, the study also confirmed the existence of an association between death anxiety and participants' perceptions of being unpredictable and changeable (r = .29, p < .01), variables categorized under Factor IV: "Personal Inconsistency" (Quinn and Reznikoff, 1985). However, it should be noted that the association between the variables is weak, the most consistent being anxiety about death in relation to feeling "harassed" by time.

Regarding the hypotheses proposed by Rappaport et al. (1993) concerning the link between temporal perspective and death anxiety, they considered the existence of a negative correlation between death anxiety and temporal extension in the past and future, and the existence of a positive correlation between death anxiety and temporal density in the present. Results showed that there was no statistically significant correlation between death anxiety and temporal extension in the future (r = .06, p > .05), but there was a significant correlation between death anxiety and temporal density in the present (r = .21, p < .05). However, the sample of this study is quite small, which requires caution in extrapolating results.

Moreno et alii (2008) study investigated death anxiety in institutionalized and non-institutionalised older people in relation to a range of cognitive-affective reactions and perceptions of the passage of time and other variables such as residence, age, gender, reflection on one's own life, health status, psychological problems, religious aspects and socio-demographic characteristics.

On the question "How do you feel about the passage of time?" and death anxiety, the results showed that older adults who do not observe the passage of time have lower levels of death anxiety than those who perceive time as passing quickly F(2,205) = 5.29, p < .05 (Moreno et al., 2008). In addition, there were other questions that on issues related to the perception of the passage of time and relating to time in general. For example, in relation to the question "How

long would you like to live for", the data showed that those with the lowest anxiety levels were those who did not want to live longer (Moreno et al., 2008). Those with the highest anxiety levels were those who wanted to live as long as possible and those who wanted to live as long as God wanted $F(5, 215) = 2.60$, $p < .05$ (Moreno et al., 2008).

Another variable related to the perception of time refers to reflection on one's own life, and being measured by the question "Have you really done what you wanted to do throughout your life?". Post-hoc analysis revealed that those who answered yes had lower levels of anxiety about death than those who answered "sometimes" $F(2, 205) = 4.72$, $p < .01$ (Moreno et al., 2008). Furthermore, those who said they did what they wanted to do also reported that they felt they had a happier life and did not feel sad (Moreno et al., 2008). In relation to the differences between institutionalized and non-institutionalised, the results showed significant differences in that institutionalized older people had lower levels of anxiety about death.

In the systematic review we decided to include the study by Rupprecht et al. (2022). The article does not explore only the elderly population, but includes a wide range in terms of the age of participants (18-95) years, and the segmentation by age range helps us to draw some conclusions about the variables that are the subject of this systematic review. At the same time, as mentioned by the authors, one of the aims of the study was to explore the relationships between a series of psychological constructs that concern the finitude of life such as: perspective on temporality, anxiety about death and life expectancy in the context of the Covid-19 pandemic. Results showed that older age was correlated with a lower perception of future time opportunities and also with a lower perception of future time extension and a higher perception of future time constraint, lower death anxiety and higher life expectancy. The results of the study and specific analyses by age group showed that at older ages, the study participants seemed to be able to accommodate the finitude of life.

Instruments used

In Bascue & Lawrence's (1977) study, time perspective/orientation was measured using The Time Reference Inventory (TRI). The instrument consists of thirty statements that respondents can assign to a time orientation: past, present, or future. In addition to this questionnaire, the TAS was also used, about which the authors did not provide details except that it assesses attitudes about time: time anxiety, which refers to the need to control time and dependence on objective measures of time; time submissiveness, which indicates conformity and time orientation; time possessiveness - indicating that people are bothered by the rapid passage of time and need to know what the future may bring; and time flexibility - which refers to the attitude that people would feel comfortable

and have less anxiety if they lost track of objective time (Bascue & Lawrance, 1977. As for death anxiety, it was assessed with the scale developed by Templer - Death Anxiety Scale (DAS), widely used to assess this variable (Bascue & Lawrance, 1977).

In Quinn and Reznikoff's (1985) study, death anxiety was measured with the Templer Death Anxiety Scale. The scale consists of 15 items to which participants are given the opportunity to answer true or false depending on their agreement with the item. Two scales were used to measure perception of time: The Time Metaphors Test and The Ricks-Epley-Wessman Temporal Experience Questionnaire. With regard to the first instrument, it uses a series of 14 metaphors through which participants reflect on the tendency to orient (directional movement) towards the future. Seven of these metaphors reflect the direction towards the future and the other seven the preference to remain static.

The Ricks-Epley-Wessman Temporal Experience Questionnaire is an 80-item Likert-type scale that measures personal experience in relation to time and includes a series of 20 items for the four factors it measures that were described above. However, in Quinn and Reznikoff's (1985) research they do not provide details of the psychometric properties of the instruments used, so we do not have a clear picture of how well these instruments measure the constructs assessed, which is likely to be reflected in the results obtained.

In this respect, as the authors mention in relation to the results obtained, although they are statistically significant there is a risk that due to the modest values they are subject to possible prediction errors (Quinn & Reznikoff, 1985). Taking into account the sample size (N=145), the results should be interpreted with caution because a limiting aspect is mentioned, which concerns the variance that was not explained by the relationship between the variables (Quinn, 1985). In other words, we must bear in mind that there are other factors that may influence the relationship between the variables studied, which may affect the significance and generalizability of the results.

In the study by Moreno et al. (2008) death anxiety was measured using the Templer Death Anxiety (DAS) instrument. As for perception of time, there was no instrument, but a series of questions targeting this variable such as: "How do you feel about the passage of time?", "For how long would you like to live?", "Have you really done what you wanted to do throughout your life?"

In Rupprecht et al.'s (2022) study, the time perspective on the future comprised three subcomponents - future time opportunity, future time extension, and future time constraint and was assessed using the 10-item scale developed by Carsten & Lang (Carstensen and Lang, 1996; Rupprecht et al., 2022). There was also an item measuring life expectancy, assessed by a single item "Until what age do you want to live:". Anxiety about death was assessed by a single item "When I think about my own death, I become fearful" to which respondents answered on a Likert-type scale (agree-disagree) with 7 response options. One

limitation of the study concerns the instruments used, such as the use of single-item measures for death anxiety, which, as noted by the authors, have not been validated in previous research (Rupprecht et al., 2022). Additionally, there were issues with the validity indicators for future time extension (Rupprecht et al., 2022).

Related to the study conducted by Rappaport et al. (1993), death anxiety was assessed using the Templer Death Anxiety Scale, and time perspective using The Rappaport Time Line (RTL) (Rappaport et al., 1985). As described by the authors, the RTL is a minimally structured pencil-and-paper instrument in which the participant constructs a spatial representation of his or her life that he or she categorizes according to the most significant life experiences associated with temporal categories: past, present, and future (Rappaport et al., 1993). On the strip of paper he or she receives, the participant determines the present by indicating a guide point called "now" and brackets delimiting this point. Thus, the past extends from the first experience that the participant notes on this line to the first bracket in the present area, and the future begins with the outer bracket in the present area extending to the last mark made by the participant (Rappaport et al., 1993, p. 373). According to the authors, RTL provides not only an estimate of the temporal extent in the past, (the number of years from the present to the first marked experience), and the future (the number of years starting from the present to the last marked experience), but also an estimate of the temporal density (he number of events noted by the person in each temporal category) (Rappaport et al. 1993, p. 373). This tool is an operationalization of the concept of temporal extent proposed by Kastenbaum (1961) which refers to the degree to which a person can project into the future or past, and temporal density to the degree to which a given time interval is filled with events, thoughts or plans. In terms of psychometric indicators of the instrument, Rappaport et al. (1993) report a fidelity coefficient of .92 for past temporal extension and .81 for temporal density.

Conclusions

A number of the studies analyzed have shown that future orientation is associated with anxiety about dying in adulthood (Bascue & Lawrance, 1977; Moreno et al., 2008) and awareness that time is passing or feeling "harassed about time" is associated with death anxiety (Quinn & Reznikoff, 1985). However, the results obtained by Rappaport et al. (1993) did not confirm a link between future reporting and death anxiety, but rather an association of death anxiety with the present. Similarly, the study by Rupprecht et al. (2022) in the context of the pandemic did not find associations between the future orientation and

increased death anxiety. Other studies have shown that with advancing age, older people seem to focus less on negative events in the past and approach the present in a less hedonistic manner (Laureiro-Martinez, 2017).

Concerning the instruments used, the use of self-report measures implies that participants may provide socially desirable responses but could also be affected by certain emotional biases since some of the constructs associated with time-honored perspective are not stable traits, but rather induced emotional states (Ortuño et al., 2017). At the level of these temporal variables, there is a need for uniformity of concepts as there is no absolute understanding of whether there is a single instrument to measure them (Laureiro-Martinez, 2017).

Another aspect that stands out at the conceptual level refers to the need to look for similarities and differences between temporal concepts, as there is some confusion in this direction and overlap between them (Ortuño et al., 2017). As Ortuño et al. (2017) also mention, in this direction most of the studies are cross-sectional, given the methodological, economic, and time constraints, and this means that there are very few longitudinal or even place-based studies in this age segment. Moreover, there is also a potential cultural variation that is reflected in the representations concerning time, which in most cases is not taken into account and can produce significant differences in the results (Ortuño et al., 2017).

Future research directions should consider the use of valid instruments that measure the concept of perspective over time. Although the concept is a difficult one to capture, several instruments are widely used and could also be relevant to the older population. Furthermore, it is important that future studies also identify differences in culture as this factor can also influence the relationship between these variables.

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Disney Movies Encanto and Frozen.
An REBT and Cinematherapy Perspective

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ABSTRACT. If you are a parent, then you must have seen those two cartoons (Encanto and Frozen) a dozen times. And if you are not a parent, then you certainly heard of them, because they are some of Disney's best and largest projects, and not just in terms of box office income, which was huge (close to 3 billion dollars, combined). Financial aspects aside, the two productions are amazing because of their powerful educational messages. In this article, we analyse the educational messages and behaviours anchored in the Rational Emotive Behaviour Theory, a form of psychotherapy that focuses on helping individuals identify and change irrational beliefs that lead to negative emotions and self-defeating behaviours. We also analyse the two movies from a cinematherapy perspective. We conclude and recommend that the two movies can and should be used by parents, educators, and counsellors all over the world to educate their children about some rational attitudes (unconditional self-acceptance, unconditional other-acceptance and life acceptance, self-awareness), as well as important values (family, friendship, honesty, courage) and also as therapeutic instruments from a cinematherapy perspective.

Keywords: Encanto, Frozen, Disney, cartoons, educational messages, rational emotive, cinematherapy

Introduction

Ten years ago, in 2013, the world was again positively surprised by a beautiful cinematic production from Disney, called Frozen. The story is about two sisters, both princesses, that have to overcome all sorts of challenges, but

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mostly get out of their own comfort zones. The story is inspired from "The Snow Queen", by Hans Christian Andersen and tells the story of Princess Anna, who sets out on an epic journey to find her older sister Elsa, whose powers have caused an eternal winter in the kingdom of Arendelle. Along the way, she meets an ice harvester named Kristoff and his reindeer Sven, as well as Olaf, a snowman brought to life by Elsa's magic. The film was a huge commercial success and won two Academy Awards, one for Best Animated Feature and another for Best Original Song for the hit song "Let It Go". It also became one of the highest-grossing animated films of all time, and spawned several merchandise products, as well as a hit soundtrack and a sequel, "Frozen 2," which was released in 2019. "Frozen 2" amazes the audience with an impressive production that shows a mature story, excellent graphics and proves that the time between the two appearances has been well spent. In 2021, Disney strikes again, with a movie called "Encanto", about a Colombian family that finds refuge in a remote mountain area and controls everything in their lives, through magic, except for the family connections and communication. The film is set in a magical Colombian village called Encanto, where a young girl named Mirabel has to save her family and their magical powers. Along the way, she discovers the power of unity and family, and learns that true strength comes from being true to oneself. The film features a star-studded voice cast and a soundtrack filled with catchy and upbeat songs that will have you tapping your feet along to the rhythm. "Encanto" has received positive reviews from audiences and critics alike, with many praising its heartwarming story, vibrant animation, and upbeat music.

Following the line of Disney stories, these two have beautifully written texts, with very healthy messages. In this article, we analyse the texts that appear in the soundtrack songs of the two movies (Frozen and Encanto), from the viewpoint of the Rational Emotive Behaviour Theory (REBT) developed by Albert Ellis in 1955, one of the most renowned and prolific psychologists and psychotherapists.

Rational Emotive Behavior Therapy (REBT) is a type of cognitive-behavioural therapy that was developed by psychologist Albert Ellis in the 1950s. REBT is based on the premise that our emotions and behaviours are largely influenced by our beliefs and attitudes (Ellis, 2005). According to REBT, when we experience psychological distress, it is often not because of the events that happen to us but because of the irrational beliefs and attitudes that we have about those events. The goal of REBT is to help individuals identify and challenge their irrational beliefs and replace them with more rational and healthy beliefs. This process involves a three-step process of disputing irrational beliefs, developing a more rational perspective, and then acting on that new perspective (Ellis, 2019). REBT also emphasises the importance of acceptance and unconditional self-

acceptance. This means accepting ourselves and others, even with our flaws and limitations, and recognizing that our worth as a person is not dependent on our achievements or failures (Ellis, 2002; 2010).

Analysing the texts in those movies, you will notice that they are "by the book", first irrational and then very rational and educational.

The two movies, Frozen and Encanto, can be used from a cinematherapy perspective. From a psychology perspective, cinematherapy is an innovative therapeutic approach that uses the power of film to promote emotional healing, personal growth, and psychological well-being. Rooted in the principles of narrative therapy and psychotherapy, cinematherapy harnesses the inherent psychological impact of cinematic storytelling to facilitate introspection, empathy, and insight. Unlike traditional therapeutic methods, cinematherapy encourages individuals to engage with carefully selected films as a means of exploring their own emotions, thoughts, and experiences. By immersing oneself in the narrative arcs, characters, and themes depicted on screen, individuals can establish a unique and deeply personal connection with the cinematic material. This connection serves as a catalyst for self-reflection, allowing viewers to project their own struggles, conflicts, and aspirations onto the characters and situations depicted in the film.

Cinematherapy operates on the premise that stories and characters presented in movies can act as mirrors, reflecting the viewer's inner world and providing a safe space for emotional exploration. Through identification with characters, viewers can gain a deeper understanding of their own psychological challenges, develop empathy towards others, and find comfort in realising that they are not alone in their struggles. By witnessing characters navigate their own psychological journeys and overcome obstacles, individuals can glean valuable insights, coping strategies, and perspectives that can be applied to their own lives. The therapeutic process of cinematherapy involves a collaboration between the viewer and a trained mental health professional, such as a psychotherapist or counsellor. Together, they select films that resonate with the viewer's specific therapeutic goals, personal history, and psychological needs. Through guided discussions, analysis, and reflection, the viewer is encouraged to explore the emotional impact of the film, identify parallels between the characters' experiences and their own, and extract meaningful lessons and insights. Cinematherapy can be used in various therapeutic contexts, including individual therapy, group therapy, and even self-help practices. It can be particularly effective in addressing a wide range of psychological issues such as depression, anxiety, trauma, grief, relationship difficulties, and personal growth challenges. By engaging with films in a purposeful, reflective manner, individuals can harness the transformative power of storytelling to gain a fresh perspective,

enhance self-awareness, and cultivate positive psychological change. It is important to note that cinematherapy is not a substitute for professional mental health treatment but rather a complementary approach that can augment and enrich the therapeutic process. It is always recommended that individuals seeking psychological support consult with qualified mental health professionals to ensure a comprehensive and personalised approach to their well-being. Cinematherapy can use a wide range of children's movies to facilitate therapeutic processes and promote emotional well-being, and Frozen and Encanto are two of the most iconic ones.

Frozen and Encanto align with the core principles of cinematherapy, harnessing the transformative power of film to promote emotional healing, personal growth, and psychological well-being, through the following aspects:

1. *Emotional Engagement:* Both films deeply engage viewers on an emotional level, captivating them with compelling storytelling, relatable characters, and evocative visuals. Frozen and Encanto draw viewers into the characters' emotional journeys, allowing them to connect with and experience a wide range of emotions. This emotional engagement is a fundamental aspect of cinematherapy, as it provides a safe and immersive space for viewers to explore their own emotions and experiences.

2. *Identification and Reflection:* Frozen and Encanto present characters who face relatable challenges, struggles, and self-discovery. Viewers can identify with the characters' experiences, dilemmas, and emotional arcs. By reflecting on the characters' journeys, viewers can gain insights into their own lives, beliefs, and emotions. This process of identification and reflection is a central aspect of cinematherapy, as it facilitates self-exploration, personal growth, and the development of empathy.

3. *Symbolism and Metaphor*: Both films employ symbolism and metaphor to convey deeper psychological and emotional themes. Frozen's icy powers serve as a metaphor for Elsa's emotional isolation and fear of self-expression, while Encanto's magical gifts represent the pressure to conform and the search for self-acceptance. These symbolic elements provide rich material for discussions and analysis in cinematherapy, as they invite viewers to explore the deeper meaning behind the story and relate it to their own lives.

4. *Catharsis and Emotional Release:* Both Frozen and Encanto elicit powerful emotional responses from viewers, allowing for catharsis and emotional release. The climactic moments, poignant musical numbers, and emotional resolutions provide opportunities for viewers to release pent-up emotions, experience a

sense of catharsis, and find emotional relief. This cathartic process is a crucial aspect of cinematherapy, as it enables emotional healing and promotes emotional well-being.

5. *Therapeutic Discussion and Insight:* Cinematherapy involves guided discussions and reflections on the film's content and themes. Frozen and Encanto provide ample material for therapeutic discussions, allowing viewers to analyse the characters' experiences, motivations, and growth. These discussions facilitate insight and self-awareness, as viewers gain new perspectives, challenge their beliefs, and apply the lessons learned from the film to their own lives.

6. *Personal Empowerment:* Both films empower viewers by showcasing characters who overcome obstacles, embrace their uniqueness, and find strength within themselves. Frozen and Encanto inspire viewers to believe in their own abilities, challenge societal expectations, and pursue personal growth. This empowerment aspect of the films aligns with cinematherapy's goal of fostering personal agency, resilience, and positive change.

In summary, Frozen and Encanto embody the core principles of cinematherapy by engaging viewers emotionally, facilitating identification and reflection, using symbolism and metaphor, providing catharsis and emotional release, fostering therapeutic discussions and insight, and promoting personal empowerment. These films exemplify the transformative potential of cinematherapy, offering valuable tools for emotional healing, personal growth, and psychological well-being.

Frozen

The two main characters in both Frozen 1 and 2 are Elsa and Anna, two sisters that became orphans, as their parents drowned somewhere in a southern sea. Forced to grow alone, they also grow apart, as Elsa, the elder sister, feels guilty about injuring her younger sister, back when they were kids. Because of this, Elsa decides to hide from the world and conceal her powers. On her 18th birthday, reluctantly, she has to open the doors to the realm called Arendelle, as it is her coronation day. The first song that reveals this scene is called "For the First Time in Forever" (Anderson-Lopez & Lopez, 2013), and it is a parallel in the thoughts and actions of the two sisters. Anna is joyful and cannot wait for the coronation day to arrive, while Elsa is reluctant and fearful. This song beautifully shows how the same event can be interpreted differently, by two different characters (Anna and Elsa), which is somewhat the base of REBT. REBT is a form of cognitive behavioural therapy (CBT) that aims to help individuals identify and challenge the irrational beliefs that lead to dysfunctional and

maladaptive negative emotions and behaviours (Matweychuk, DiGiuseppe & Gulyayeva, 2019). REBT (Ellis, 2005) states that an individual's belief system is the one that causes emotional and behavioural consequences. In the previous example, the two sisters experience the same event differently because they have different beliefs. Anna is hardly waiting to experience the opening of the doors of the realm that has been closed for the entire world. She then gives the explanation for this behaviour and excitement, saying that for the first time ever she will be able to dance all night and enjoy the music. The focus is on the idea of not being alone anymore, for the first time in forever, because her sister, Elsa, has left her alone when she hid herself in one of the rooms of the castle. Anna even tries to understand her emotions and, although she cannot exactly pinpoint them, she places them somewhere between elated and gassy.

Elsa, on the other hand, is anxious about the entire event and wishes everything could go away, because she has to be very careful not to show her powers to the world. Her words have double meanings, stating that she wishes she should not have to let them inside the realm and the castle, and also in her world. She then continues by reminding her that she has to be someone else, to conceal her powers and emotions, so that the others will not see just how powerful she can be. Although we do not know yet at this stage, the story will later tell us that Elsa can actually control her powers, if she allows herself that and if she knows herself better. This will later be revealed when she arrives on a far, remote mountain, similar to other stories, where the character gets out of her comfort zone and grows in knowledge and power.

Elsa experiences emotional reasoning, when she believes that, if she feels guilty (for accidentally injuring her younger sister Ana, when they were kids), she must be guilty. This is a concept often found in REBT (Dryden, 2012), that shows an error in judgement. Elsa uses emotions instead of reasons, which leads her to believe she is guilty, because she feels guilty. Only later in the movie, towards the end of it, she realises and accepts that there were accidents (both injuring her sister and freezing the realm of Arendelle), which then leads to a change in her, from the feeling of guilt to regret. Guilt is seen as a negative dysfunctional emotion in REBT, while regret is still negative, yet functional. Functional means that it helps you achieve your goals, while dysfunctional prevents you from reaching your goals. In Elsa's case, her guilt stopped her from living a normal life, where she would accept her for who she was. She also experiences an internal demand that she must be perfect. In REBT it is called a must or a should (Hutchinson & Chapman, 2005), and it can be directed to self, others or the world. In Elsa's situation, she directs her musts and shoulds towards herself, demanding from her nothing less than perfection.

The four lines in the 12th paragraph of the song are epic in their power to show just how different the same words can mean such different things. Elsa

says that "it's only for today", meaning that she only has to be careful one day, and then everything can get back to normal (her normal), while Anna says the exact same words ("it's only for today"), with a totally different meaning, being sort of upset that the entire event will only last a day, while she would wish it would never end. The same approach is with the last two lines from the four, when Elsa says that "it's agony to wait", meaning it is agony for her to wait until it happens and then agony while it happens, as she needs to be very careful not to reveal anything about herself and her powers. Anna repeats the same words as her sister, "it's agony to wait", meaning that she can't wait for the event to happen and unfold in front of her. Elsa's emotions are those of anxiety and dread, while Anna is feeling a joyful expectation and elation.

Probably one of the most famous songs in Frozen 1 is "Let it Go" (Anderson-Lopez & Lopez, 2013), which depicts the scene where Elsa has run away from her kingdom, following an incident where she got angry and could not control her powers anymore. Because of that, she accidentally froze the entire kingdom (this being her power - the ability to control water, in all forms and shapes), so she runs away, to protect herself and her sister. She arrives on a remote and lonely mountain, where she decides to remain forever, thus isolating herself from the rest of the world and passively accepting that she can never change. This is not a healthy approach, in the view of REBT, because it only solves the problem in the short term. In the long run, however, her problems are still there, besides the fact that she lost her sister and her kingdom. The scene is beautifully described in the first lines of the song and it takes you there, even if you do not see the images. From the first lines we discover that the scene looks like an isolated kingdom, where the wind howls, and she feels like a storm would spiral and spin inside of her, which she tried to keep it in but failed. She then repeats herself the same message as in the previous song, like a mantra, but without success, telling herself to conceal her feelings, so that the others will not see how she feels. From the last line of this verse, we find out that she feels guilty for not having succeeded to hide her feelings, so the isolation makes even more sense.

She then decides to leave everything and everyone behind, to let it go, which is the central theme of the song and also the title. Because she cannot control her powers and emotions anymore, she decides to leave in rage. She also mentions that she does not care anymore about what others might say, and this is the turning point where other people's opinions become less important to her, although she does not know it yet. She ends the idea with a decision that brings her peace of mind, namely that she will remain in her kingdom of ice, where cold does not bother her. The concept of storm has double meaning too, one being a real storm as a natural phenomenon, the other being what people think of her.

The turning point in her thoughts, where her rigid thinking starts to become more flexible, is when she decides to distance herself from everything and make big problems seem smaller, and also lower her fears. In REBT, this is called perspective taking (Vernon, 2019) and it involves distancing yourself from a problem long or far enough to actually see how insignificant it can be, because you make a problem big or small. This way, you begin to realise that you are in control of what you think, feel and behave (Vernon, 2006b).

When she finally realises that she is in control, she promises to test her powers and see what she can do, without the limitations she imposed herself so far. This way she becomes free.

Then the allegory continues and she repeats the same words as the title, "*let it go*", yet this time with a different approach, the one of freedom and acknowledgement of power. After this realisation of power and control, she makes a statement to settle there, leave the past in the past and accept her powers and limitations.

The transformation is complete in the last verse, where she claims that the perfect girl she used to be is gone, and that she is now the queen of ice.

After that, Anna enters the scene and travels to the remote mountain, to find her sister and ask her to come back to Arendelle and return the kingdom to its former state. Along the way, she receives help from Kristoff, an ice expert that will later become her friend, from Sven (Kristoff's reindeer) and from Olaf, a magical creature in the form of a snowman, created by Elsa when they were kids, and when she accidentally injured her sister, while playing. The scenes are funny and also educative, as they show a lot of moral values such as self control, friendship, social care and responsibility (Widyahening, Nugraheni & Rahayu, 2023). Anna's concern and love for her sister is also something to be valued in this movie, as she travels far away and faces dangers and challenges to help her sibling. After a longer debate, Anna convinces Elsa to return to her kingdom, take control of her powers and assume leadership of the realm. In the final scene, we see again the dedication of the two sisters for the wellbeing of the other. While Anna is on a frozen lake, shimmering from the cold and almost killed by a villain that wants to take over the kingdom, Elsa intervenes and protects her sister, at the cost of her own life. Elsa uses her powers to freeze herself entirely and destroy the sword the villain has raised upon her. The sword shatters when touching Elsa and thus both sisters are protected. Anna recovers from the cold and sees her sister frozen, but manages to bring her back to life with her tears.

As expected, the movie has a happy ending, with Elsa and Anna back together in Arendelle, which is now ruled by Elsa, who has accepted her powers. The conclusions of the first part of Frozen are summarised in the following ideas:

1)   With power comes responsibility, which needs to be assumed. Elsa's power has always been present in her, but she needed to understand and control it. Only then she managed to make amazing things possible.

2)   Running away from problems only postpones them, and they will come back harder, when you least expect it.

3)   When you stop caring obsessively about what others might think of you, you begin to have control over your thoughts, emotions and behaviours.

4)   Sometimes it helps to use the technique called perspective-taking and distance yourself from the problem. This way, you have a better chance to see the solution.

5)   True friends will go to the end of the world for you, to help you. It also helps to let them be of assistance and not shut them away.

Frozen 2 (Anderson-Lopez & Lopez, 2019) goes to a whole new level with the educational messages and moral values. We discover the two sisters a few years later, still best friends, sharing happy moments in Arendelle. One of the first scenes depicts the main characters (Elsa, Anna, Kristoff, Olaf) playing charades in one of the castle's rooms, and Kristoff building up courage to propose Anna into marriage. While playing, Elsa hears something indistinctively and then again while sleeping. She follows that voice into something that will become yet another adventure for her and everyone else. It is very interesting how the creators of the movie and songs go about the messages in one of the first songs, called "Into the Unknown", showing Elsa's struggle to resist temptation and avoid hearing something that will become a new challenge. We know from Elsa's own words that she can hear the voice, but she makes a conscious decision not to follow it, at first. She wants to move on with her life, ignore the whispers and let them go away, which is something all of us want to do with problems and troubles.

She then continues by trying to convince herself that what she hears is nothing but a ringing in her ear, which she will ignore, because she took the decision to settle in her castle, once and for all. The antithesis between the words "*if I heard you*" and "*which I don't*" shows her struggle to resist the calling, which will make her follow the voice into the unknown. She tries to convince herself that she has everything she needs and everyone she loves just around her. Although these lyrics seem convincing and portray a character that feels satisfied with what she has, we are next revealed that, in fact, she is still seeking something new, because she feels that she is not where she is meant to be. She feels and knows that she is different and still has not yet found her place among others, and we discover that her powers keep growing and that she longs to go again into the unknown. This is something inheritably expected for humans, the

need to discover themselves and new places and people. From an REBT point of view, this is a healthy expression of Elsa's desire for self-discovery and growth, as opposed to the feelings of fear and self-doubt. Step by step, we discover Elsa as she challenges her irrational beliefs and fears that she cannot pursue her true identity because of the unknown. Facing this uncertainty and her fears, Elsa shows a willingness to take calculated risks and live a fulfilling life, full of sense and meaning, which is an essential part of REBT.

The next song in the movie is "Some Things Never Change", which is about some of the things that matter in life, such as family, friendship and trust. The main idea in this song and these lyrics is that what matters is the fact that they are all together, so family and friendship matter. The things mentioned by Anna, such as the way they all get along just fine, or how she's holding on tight to everyone, are the certain certainties that give them peace of mind, and with this, the movie characters invite children and adults alike to enjoy every moment, to see them as precious and, instead of trying to freeze them, to try to seize the day.

The next song ("When I am Older") with lots of rational ideas is the one sung by Olaf, the snowman, which sings about the things that will make sense later, when you are older, and the lyrics express feelings of comfort and security in the face of uncertainty and change. The invitation is to be patient enough and wait for when you will be older, and many things that might have been scary or strange, will make sense later in life. Olaf also translates the process of growing up as adaptation (Earvolino-Ramirez, 2007) and understanding the world and how you fit in it. From an REBT point of view, these lyrics promote an adaptive belief system that helps to counteract feelings of anxiety and fear about change. Focusing on the things in life that do not change, people can feel more secure and confident, even in the face of uncertainty.

The last meaningful song in Frozen 2 is "Show Yourself", depicting Elsa in a strange new world, where she is searching for the truth about her past and her identity. This is the place where she discovers her true self and learns to truly accept who she is and how powerful she can be(come). The lyrics highlight the theme of self-discovery and the importance of facing fears and insecurities, to find true happiness and fulfilment. From an REBT perspective, the song invites you to challenge and overcome your self-imposed limitations, and strive for self-realisation.

Overall, the lyrics in Frozen songs are full of rational messages, or they become rational as the movie progresses, thus educating children and viewers into having a rational approach to life. They cover topics like self-discovery and self-acceptance, facing fears and disputing irrational thoughts, to achieve fulfilment and happiness.

Encanto

The second movie in this analysis is Encanto (Miranda, 2021), also a Disney production from 2021, about a Colombian family that has to flee from dangerous bandits and hide in the mountains. The head of the family is killed and his wife is left alone with three small babies. When all hope seems lost, she receives a present in the form of an Encanto or a charm that allows her to protect her family and everyone else around. She gathers her strengths and builds a community, helped by the magical powers she receives. Then, all of her children and grandchildren receive magical powers, as depicted in the first song, The Family Madrigal. The main character of the movie is Mirabel, and everything revolves around her, despite what she said in the first song, that her grandmother runs the show. Mirabel's grandmother, or Abuela, is the one that was given the miracle, when her husband was killed by bandits. Then, the song takes us through the powers of each character. Pepa (Mirabel's aunt) controls the weather. From an REBT perspective, Pepa is the perfect example of what happens when we do not control our thoughts - when we get angry or upset, we release rain or a hurricane around us. Of course, this is presented in a stylised form, and teaches us that, if we control our thoughts, we can also control the way we feel and behave (Banks, 2011). Then comes Mirabel's uncle, Bruno, which for some reason is not talked about until later in the movie. Mirabel's mother has the ability to cure people with her food, a reference to her powers as well as the idea of comfort food cooked with passion and love. From these lines, we get a first glimpse of the pressure Mirabel feels in such a powerful and magical family. At the end of the song, we discover that, unlike the rest of her family (direct descendants of her grandmother), she did not receive a power gift, on the day she was supposed to. Only at the end of the movie do we realise what her gift really is.

What is important and impressive from an REBT point of view is that Mirabel claims she never feels left outside or frustrated for not having a super power like her family. Instead, she feels perfectly normal and truly happy to be part of the amazing Madrigal family, which shows self and other-acceptance, two major REBT concepts. Later on, we will discover that things are not exactly as presented in the beginning. Then the song continues with the description of Mirabel's sisters and cousin. Her cousin Dolores has the amazing ability to hear everything, even a pin dropping, her cousin Camilo can shape shift, her cousin Antonio is about to receive a new gift that day, her older sisters, Isabela and Luisa, one is super strong and the other is very graceful and perfect. Recent studies (Convoy, 2022) focus on the intergenerational trauma when analysing Encanto. Although this is present in the movie, we are more focused on the communication problems that exist between different generations (especially

between the grandmother and her children and grandchildren). We will discuss these issues later on in the article, and we state that these communication issues reside in the exaggerated expectations Abuela has concerning her family. Everyone has to be perfect in everything they do, and this is, according to REBT, an irrational belief and attitude, that leads to many subsequent problems. Although well intended, Abuela allows for no margin of error in everyone around her. Although this has not always been the case, she has decided to toughen up after her husband was killed and she was left alone with three small babies. In REBT, this demandingness for perfection is considered to be irrational and dysfunctional (Ellis, 2002), because perfection can never be achieved.

Striving for perfection is a source of frustration and regret, and this becomes obvious in everyone's behaviour. Abuela clearly states these ideas within the song and while her intentions are good and honourable, she misses the whole point of the miracle she's been given and forgets who it is for actually. She is helpful for the miracle she was given and for that she swears to always keep the community close. It is her firm belief that, through work and dedication, they will earn the miracle and be worthy of it. Of course, these behaviours are commendable, provided she would not put so much pressure on everyone to be and behave perfectly. In doing so, she puts people in second place.

Mirabel then sings again about her two sisters (Isabela and Luisa), one beautiful and graceful, the other one very strong. Isabela is the graceful, beautiful sister from whom everybody expects nothing less than perfection. She can control flowers around her and make them grow whenever she wants. She is expected to marry Mariano, a handsome young man from the village, in an arranged marriage, despite the fact that she does not want that. On the other hand, Luisa is so strong that she can move mountains and churches and everyone asks her everything related to carrying super heavy stuff. In a nutshell, this is the Madrigal family, a complex and intricate Colombian family living in a beautiful and magical place called Encanto. Or, as Mirabel calls them, a flawless constellation, where everyone can shine.

Perhaps one of the most obvious songs from an REBT perspective is "Surface Pressure", whose main character is Luisa, Mirabel's older sister. This song shows the two sisters (Luisa and Mirabel) singing about the pressure Luisa has to bear. The images and the words are extremely well chosen and show the pressure she endures daily, which drives her close to burn out. From these first lines, we discover that she is the strong one in the family and that she is not nervous, although at the same time she states this, her eye is twitching, which can sometimes be a sign of nervousness and fatigue. She then continues with the idea that she is super tough, and that she glows because she knows what her worth is. From an REBT perspective, this seems very rational, because when you discover your strengths you can feel confident. Unfortunately, she believes

that she can only be worthy as long as she is powerful enough to help everyone else and "move mountains and churches". Because of the daily pressure (that she and everyone else exerts), her strength starts to crack. This is the tipping point that shows us that anything or anyone can break at a certain point, when enough pressure is applied. In Luisa's situation, the unrealistic demands from her grandmother become a rule for everyone, including herself. Luisa continues her description as being super strong, comparing herself to diamonds and platinum (although platinum is half the hardness of diamond). From her own words we find out that she never asks how hard it is what she has to do, she simply does it, because her surface is indestructible. The word that really helps us understand just how thin the thin red line is, is ***surface***, which simply covers anything that might be problematic. On the surface, she seems fine, but she is actually not, as we uncover from her words. Luisa compares her feelings with what a tightrope walker might feel in a circus, and then quickly jumps to another statement that cancels her feeling, asking and arguing with herself if Hercules ever refused to fight the Cerberus (creatures from the Greek ancient mythology, where Hercules is a demigod fighting evil, and Cerberus is the hound of Hades, the god of the Underworld). In REBT terms, what Luisa says reveals the entire problem, when she questions her worth if she cannot help others. With this, Luisa acknowledges that her worth, her value, is given by the fact that she can be of service. And, under the surface, when she starts to believe that she can no longer be helpful to others, the cracks begin to show into her self-trust and confidence. REBT clearly states that a person's value is given not by what he/she does, yet simply by the fact that he/she exists (Ellis, 1996).

Luisa gives one of the most descriptive explanations on pressure that we or others put on ourselves, in the same song "Pressure", when she describes how it all accumulates, day by day, bit by bit. This explains that pressure does not appear all of a sudden, instead it gathers slowly, through small flaws and cracks. She then continues to lower her self-worth by asking herself what her value is and who she is, if she cannot deal with heavy stuff, with problems and pressure.

Then she reveals where she hides all this pressure, namely under the surface, as if she was wearing a mask. She is apprehensive that something might hurt the family, so the pressure increases furthermore, and she feels even more responsible for taking care of everyone. This is counterproductive, because REBT clearly states that each of us is responsible for the way one thinks, feels or behaves (Dryden, 2003). Luisa tries to somehow preserve a balance in her life, by lining up the domino pieces and trying to stop the many tasks in her life from tumbling. She somehow fails in doing that, because of the pressure and perfectionism she experiences.

Next, Luisa suggests a possible solution to all this pressure that adds up. She realises that all the pressure she experiences is because of the expectations she and others have about her, and she wonders whether shaking those expectations would not give her joy, which is in tune with REBT (Ellis, 2021).

Because of this pressure, no mistakes are allowed (Dryden & Newnan, 2013). In fact, she truly believes that if she makes no mistakes, no pressure will appear. Again, she compares herself to her behaviours and powers, which is seen in REBT as a mistake (Anderson, 2002). The conclusion of this song is that we put pressure on ourselves by listening to others and by allowing them to control our thoughts and lives. In Luisa's case, she allows her grandmother to control her, because she wants to be perfect and loved by her. This adds a daily pressure that eventually cracks the surface and explodes.

In the next song called "What else can I do?", we discover Mirabel's other sister, Isabela, who is considered to be perfection itself. Her gift and power consist in the ability to control and create flowers, which is eventually a gift for others to enjoy. This has also made her perfect in the eyes of everyone and has increased the expectations about her. In this song, she sings about the joy of discovering the new things she can do. We see again the need for perfection in her words, saying about the new flowers she created that they are not perfect nor symmetrical, yet they belong to her. She rejoices because she finally has something of her own, that she can keep and enjoy, even though it is now symmetrical or perfect. In REBT, perfection is considered to be an irrational attitude (Ellis, 2002), because it only leads to frustration and suffering, as it cannot be achieved.

The song continues to describe what Isabel does daily, which might seem very appealing and attractive, but in reality it is fake to her. She creates miles of roses, to keep everyone satisfied and she practises a fake smile and pose, to look perfect. She is also demanded perfection, just like her sister Luisa, but on a different approach, one of grace and beauty. Her self questioning continues on the same idea of what she could do and be if she should not be perfect and she would be allowed to be herself. There is proof that Isabela knows about the demands for perfection that her grandmother and everyone else has concerning her, and she is contemplating change. From an REBT perspective, becoming aware of a problem and contemplating change is a healthy approach, because it can lead to a more adaptive thinking style (Ellis, 2010).

The closing lines of the song go further and mention another concept, the one of being present and being in tune with yourself. The theme of perfectionism combines here with the idea of self acceptance as an imperfect person. This is also in tune with REBT, which states that accepting one self is very important, because it leads to a more fulfilling life (Davies, 2006).

The song entitled "We don't talk about Bruno" is about Mirabel's uncle, Bruno, that nobody talks about. When Mirabel asks why that happened, everyone

replies that they simply don't talk about him, because it was dangerous for them to do that. The song details what happened to many people, when dealing with Bruno, who is seen as someone that brings negative things and bad luck. This is contrary to REBT, which states that we are in control of what happens to us, and not others or some external element (Vernon & Bernard, 2006). The first to talk about Bruno is his sister, Pepa, who can control the weather, but cannot control herself and her powers. She blames Bruno for ruining her wedding day, when he appeared with a mischievous grin. This led to her feelings of insecurity, and negative thoughts flooded her brain. It is clear from her Pepa's lines that she has a huge need for control, allowing nothing to escape her control, not even the clouds in the sky. Instead, she should take responsibility for her thoughts and actions, as REBT suggests (Ellis & Dryden, 2007). The same things are exemplified by other members of the community, which lay blame on Bruno's prophecies, instead of looking at the reality. Bruno is being accused that his prophecies have brought the death of a fish (which has a very short life span, anyway), or that other villagers would lose hair or grow a gut (which, again, are natural phenomena that happen in certain cases and at a certain age). These people too show an irrational attitude towards the understanding of reality, but in the end change it, when they accept Bruno as part of their community and come to help the Madrigal family build their house again. Bruno's story is a great example of how people use their own fears as an excuse to stop doing the things they love and blame it on others or external factors.

After we are presented with all the members of the Madrigal family, we once again get confirmation that most of the things in the family lie on the surface. And that there are major issues with everyone's feelings. Mirabel confirms this in the song "Waiting for a miracle", where she admits that, although she is happy for her family members and the miracles they can perform, she is still not fine. This is the first admission of regret from Mirabel and the fact that she is not fine with her not shining, while everyone else does. In REBT and psychological terms, this is the equivalent of denial (Spörrle & Welpe, 2006) and after Mirabel acknowledges that, she can begin to change. Next, Mirabel enlists all the things that her family can do and she cannot: she cannot move the mountains, nor make the flowers bloom (like her two sisters can), she cannot control the weather (like her aunt Pepa). It is only later that Mirabel discovers that her power is the ability to hold the family together and to heal them, and that she does not need a miracle. In REBT terms, waiting for a miracle is unproductive and wrong, as it has nothing to do with you, rather it makes you a passive recipient of anything that might happen. Instead, knowing what you can and cannot do and accepting this reality, gives you more power and control over your thoughts, feelings and behaviours (Ellis, 2019). Until the end of this song, we see that Mirabel has yet

to discover how to control her thoughts and set her expectations, because she is waiting for a miracle to happen, instead of doing something possible herself.

In the last song of the movie, Mirabel and her family accept the fact that the value of a person is that person, when Abuela says that the miracle is Mirabel herself, and not what that person can do, when she admits that the miracle is not some gift or magic. This comes in line with REBT, which states that a person is valuable for the simple fact that he/she exists, and not for what that person does (Bernard, 2020).

The end of the movie Encanto shows a family whose' members have agreed to discuss the problems they had and start dealing with them. Mirabel's grandmother accepts that no one is perfect, nor should it be, and that everyone's value comes from the simple fact they exist.

Applied cinematherapy

Incorporating life lessons from movies like Frozen and Encanto into psychotherapy and cinematherapy can be a creative and effective way to engage clients in the therapeutic process. Here are a few examples of how these movies' lessons can be applied in therapy:

1. Self-Acceptance and Identity Exploration:
Both Frozen and Encanto touch upon themes of self-acceptance and identity exploration. In psychotherapy, clients often struggle with understanding and accepting themselves. Therapists can use these movies to spark discussions on self-discovery, embracing one's uniqueness, and challenging societal expectations. For example, therapists can explore with clients how characters like Elsa (Frozen) or Mirabel (Encanto) navigate their personal journeys of self-discovery and help clients relate these experiences to their own lives.

2. Emotional Expression and Regulation:
The characters in these movies experience a range of emotions, which can provide opportunities to explore emotional expression and regulation in therapy. For instance, therapists can use scenes from Frozen to discuss the importance of allowing oneself to feel and express emotions, such as Elsa's journey of embracing her powers and learning to control them. Similarly, therapists can use scenes from Encanto to explore how different characters cope with their feelings and the impact it has on their lives.

3. Family Dynamics and Relationships:
Both movies delve into complex family dynamics and relationships, which can be valuable material for therapy sessions. Therapists can use these

movies to explore topics such as communication, conflict resolution, and setting boundaries within families. Clients can be encouraged to reflect on their own family dynamics and identify healthier ways of relating, drawing inspiration from the characters' journeys in the films.

4. Resilience and Empowerment:

The characters in Frozen and Encanto demonstrate resilience and empowerment in the face of adversity, providing inspiration for therapy. Therapists can use these movies to discuss concepts such as personal growth, overcoming challenges, and building resilience. Clients can explore how characters like Anna (Frozen) or Mirabel (Encanto) find their inner strength and apply it to their own struggles, fostering a sense of empowerment and motivation within therapy.

5. Letting Go and Embracing Change:

The movies emphasise the importance of letting go of the past and embracing change, which can be relevant to therapeutic work. Therapists can use scenes from these movies to explore themes of personal growth, forgiveness, and adaptation. Clients can reflect on how characters like Elsa (Frozen) or the Madrigal family (Encanto) navigate significant life changes and relate these experiences to their own process of letting go and embracing new beginnings.

6. Self-Compassion and Healing:

Both movies touch upon the themes of self-compassion and healing. In therapy, clients often struggle with self-criticism, guilt, or past hurts. Therapists can use scenes from these movies to explore the importance of self-forgiveness, self-care, and the healing process. Clients can identify with characters like Elsa (Frozen) or Mirabel (Encanto) as they navigate their own journeys of self-compassion and learn to let go of past wounds.

7. Empathy and Understanding:

Frozen and Encanto emphasise the power of empathy and understanding in building connections and resolving conflicts. Therapists can use these movies to explore the concepts of empathy, active listening, and perspective-taking. Clients can reflect on how characters like Anna (Frozen) or the Madrigal family (Encanto) demonstrate empathy towards others and how they can apply these skills in their own relationships.

8. Embracing Imperfection and Growth:

Both movies highlight the importance of embracing imperfections and embracing growth. In therapy, clients often struggle with perfectionism or fear of failure. Therapists can use scenes from these movies to discuss the benefits

of embracing imperfections, taking risks, and learning from mistakes. Clients can relate to characters like Elsa (Frozen) or Mirabel (Encanto) as they navigate their own paths of growth and self-acceptance.

9. Mindfulness and Present Moment Awareness:
Frozen and Encanto provide opportunities to explore the concept of mindfulness and present moment awareness. Therapists can use scenes from these movies to discuss the importance of being present, managing anxiety, and finding inner peace. Clients can reflect on how characters like Elsa (Frozen) or the Madrigal family (Encanto) practice mindfulness in challenging situations and explore how they can incorporate these practices into their own lives.

10. Finding Strength in Vulnerability:
Both movies emphasise the idea that vulnerability can be a source of strength. Therapists can use these movies to discuss the benefits of opening up, seeking support, and embracing vulnerability in therapy and in life. Clients can learn from characters like Anna (Frozen) or Mirabel (Encanto) as they demonstrate courage in being vulnerable and expressing their authentic selves.

Therapists should always consider their clients' unique needs, preferences, and therapeutic goals when incorporating movies into therapy. Using movies as therapeutic tools can enhance engagement, promote insights, and facilitate discussions on various life lessons and themes that are relevant to clients' experiences.

Final conclusions

Both movies depicted here, Frozen and Encanto, are great examples of rational expressions proposed in the Rational Emotive Behavior Theory. The songs and messages in those movies first start with the characters being insecure about themselves and their emotions, and then slowly changing their irrational attitudes and thoughts into more rational ones.

In Frozen, the main characters, Elsa and Anna, show opposing attitudes towards risk and novelty. Elsa plays safely, because she is fearful of not hurting those around her with her powers. Because of this, she hides from the world and feels guilty about what happened to her sister Anna, when they were kids. She later feels guilty again about what has happened to her parents, who went far away to search for a solution to her magical powers. She acts very scared and insecure. On the other hand, Anna is very eager to meet new people, to open the gates of the realm and even get married. She is open to adventures and fears almost nothing. Towards the end of the movie, Elsa changes her attitude and

acts more rational, in the terms described by REBT. Throughout the entire process, Elsa is helped by her sister Anna, who plays the role of the therapist. Anna guides Elsa from an attitude of fear and guilt, to one of preoccupation and regret. Those emotions (preoccupation and regret) are not positive ones, nor should they be. REBT recommends that not all emotions have to be positive, nor that all negative emotions have to change into positive ones directly. Instead, negative emotions that are dysfunctional, such as fear and guilt, should change into negative functional ones, like preoccupation and regret (Neenan & Dryden, 2015). And later on, should it be the case, change into positive ones.

In Encanto, the characters are faced with a lot of hard choices and conflicting emotions. In the beginning, most of them are in the irrational category and throughout the movie, they become more flexible and change to rational. The main character, Mirabel, lives in denial and, although feels miserable, tries to convince herself and everyone else that she is fine. Only when she finally accepts that she is not fine, things begin to change for the better. Another strong character in this movie, Mirabel's grandmother, also lives in denial and pretends that everything and everyone is just perfect. In fact, she demands perfection from everyone, especially from her three daughters that have received magical powers. She uses those powers to her own will. In the end, she understands that the real magic consists of the people around her, and not their powers. This is entirely consistent with REBT, which states that the true value of a person lies in the simple fact they exist, and not in what they do (Davies, 2006). Mirabel's uncle, Bruno, is considered lost for the family, as everyone believes that he has gone. Yet, he lives close to the family, in some hidden walls and chambers of the house. He did this because he still loves his family and wants to be close to them. At the same time, he feels guilty about the things that have happened to his family members (e.g. the ruined wedding of his sister Pepa, the small changes that happened to other members of the community and, most important, about what might happen to his niece, Mirabel, if he should stay close to the family).

This is very in tune with REBT, which states that we are in control of our lives and what we do, and not some superior power (Vernon & Bernard, 2006). Bruno's mother, instead, chooses to see the negative part in Bruno's visions and sees Mirabel as the source of their problems, combined with the fact that she did not receive any powers. We clearly see here one of the main ideas in REBT, namely the fact that we can perceive the same event very differently, according to our own thoughts and fears (Dryden, 2012). The two sisters of Mirabel are also affected by the demands for perfection shown by their grandmother. Luisa is considered to be the powerful one, physically speaking, and everyone expects from her to do all the heavy stuff they cannot. Isabela is Mirabel's second sister, and she is expected to show grace and beauty at all times, so she too feels too much pressure from all these demands and "bursts" in an explosion of wild and

imperfect flowers, which make her feel very proud of herself. These demands of perfection are unrealistic, because humans are not perfect (Ellis, 2002) and asking this from them only leads to frustration and misery. All the tension and frustration is finally dissipated when the two main characters, Mirabel and her grandmother, face each other and discuss their thoughts and attitudes. This too is in line with REBT's unconditional acceptance and self-acceptance (Bernard, 2020), and Mirabel's grandmother learns to accept herself as being not perfect and too tough on her family, along with the fact that her family is also not perfect.

Both Frozen and Encanto offer benefits for children and adults alike. For children, these films provide age-appropriate platforms to explore complex emotions, learn coping strategies, and develop empathy. They promote resilience by depicting characters who face adversity and find inner strength to overcome challenges. Through cinematherapy, children can gain a deeper understanding of their own emotions, learn to express themselves, and develop problem-solving skills by drawing inspiration from the characters' journeys.

For adults, these films can serve as powerful reminders of the importance of self-acceptance, challenging limiting beliefs, and fostering emotional resilience. They offer opportunities for adults to reflect on their own life experiences, identify patterns of irrational thinking, and reframe their perspectives. Cinematherapy with Frozen and Encanto can facilitate introspection, emotional healing, and personal growth by providing relatable narratives that resonate with adult viewers.

Furthermore, both films promote intergenerational discussions, fostering connections between children and adults. They create shared experiences that allow families and therapy groups to explore emotional themes together, enhancing communication, empathy, and mutual understanding.

Frozen and Encanto, when viewed through the lens of cinematherapy and analysed from a REBT perspective, offer substantial benefits for children and adults. These films provide opportunities for emotional exploration, self-reflection, and personal growth. Through relatable characters and compelling narratives, they address themes such as self-acceptance, resilience, and the power of rational thinking. Using these films within a therapeutic context can foster emotional understanding, facilitate cognitive restructuring, and promote positive change. Frozen and Encanto exemplify the transformative potential of cinematherapy, enabling viewers to embark on their own journey of self-discovery, emotional healing, and psychological well-being.

From a psychology perspective, Frozen and Encanto can be used as appropriate tools in psychotherapy and cinematherapy, for the many benefits they present:

1. *Emotional Regulation:* Both movies present a range of emotions experienced by the characters, including joy, sadness, fear, and anger. By witnessing and connecting with these emotions on screen, viewers can enhance their emotional vocabulary, develop emotional intelligence, and learn strategies for regulating their own emotions. This can be particularly valuable for children who are still learning to identify and manage their feelings.

2. *Empathy and Perspective-Taking*: The narratives in Frozen and Encanto invite viewers to be empathic with the characters' struggles and challenges. By immersing themselves in the characters' perspectives, viewers can develop empathy, compassion, and a broader understanding of diverse experiences. This fosters interpersonal skills, promotes tolerance, and encourages a more empathetic approach to relationships and interactions.

3. *Positive Role Models:* Both films feature strong, resilient, and relatable protagonists who face adversity and grow throughout their journeys. Elsa from Frozen and Mirabel from Encanto exemplify traits such as courage, determination, and perseverance. These characters can serve as positive role models, inspiring viewers to cultivate similar qualities in their own lives and face challenges with resilience and determination.

4. *Identity Development:* Frozen and Encanto explore the themes of self-identity, belonging, and embracing one's uniqueness. These films can be particularly beneficial for children and adolescents who are navigating their own identity development. By witnessing characters who grapple with similar issues, viewers can gain insights into their own sense of self, cultural identity, and acceptance of personal attributes that make them who they are.

5. *Social and Cultural Understanding:* Both films incorporate cultural elements and explore themes related to family, community, and social dynamics. They provide opportunities for viewers to learn about different cultures, customs, and values. This exposure fosters cultural understanding, respect for diversity, and a broader worldview.

6. *Catharsis and Emotional Release:* Engaging with emotionally charged moments in these films can provide a cathartic experience for viewers. Emotional catharsis allows individuals to release pent-up emotions, find emotional release, and experience a sense of relief. This can be particularly beneficial for individuals who struggle with emotional expression or have difficulty processing their own feelings.

7. *Hope and Inspiration:* Both movies offer messages of hope, resilience, and personal growth. They depict characters who overcome challenges, embrace their strengths, and find their own paths to happiness and fulfilment. This can inspire viewers to adopt a more optimistic outlook, believe in their own potential, and approach life's difficulties with a sense of hope and determination.

By leveraging these psychological benefits, Frozen and Encanto can be powerful tools for personal reflection, emotional exploration, and psychological well-being. Whether viewed in therapeutic settings or as part of everyday entertainment, these films contribute to the positive development and growth of individuals from a psychological perspective.

To conclude, both movies (Frozen and Encanto) are built with a lot of care for how the characters are created, how they think, feel and behave, and how they grow. At first, they exhibit some irrational beliefs and attitudes, which change over the course of the movie, and in the end they change from irrational to rational, leading to characters that feel more fulfilled and behave more functional and adaptive. For these reasons and the fact that both movies are built according to the REBT principles, we highly recommend them to children of (almost) all ages and adults alike, because they have educational messages that can help the viewers better understand their own problems and learn how to overcome them. Also, we recommend them to be used in psychotherapy and cinematherapy as well, along other movies built around the concept of emotions, such as Inside Out, Finding Nemo or The Lion King, which will be a topic for future analyses.

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The Relationship between Social Support and Depression in the LGBT+ population: A Meta-analysis

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ABSTRACT. Introduction: Previous research investigating the relationship between social support and depression in the LGBT+ community yielded mixed results. Considering that the LGBT+ population has a high prevalence of mental disorders and is frequently victim of discrimination, it would be essential to know if social support is related to the depressive symptoms its representatives face. The main purpose of this meta-analysis was to clarify whether there is a correlation between social support and depression in the LGBT+ population and to identify moderators of this relationship. **Methods**: EBSCO, PubMed, and PsychNET databases were searched. Studies that reported statistical indicators for the relationship between social support and depression in an LGBT+ sample were included in this meta-analysis. **Results**: 48 studies were eligible for the meta-analysis. Our results show that there is a significant negative moderate relationship between social support and depression in the LGBT+ community. The heterogeneity of the results in the literature is partially explained by the way social support was defined and measured, by gender, sexual orientation, and ethnicity. Limitations and implications of the current study are discussed. **Discussion:** Practical implications of these results include promoting social support, and acceptance at individual and social levels, with more emphasis on policies and practices that foster well-being and a positive climate, that encourage information sharing, and offering support related to LGBT+ issues. It is also important to create safe spaces for sexual minority youth. Considering the LGBT+ adults, all these aspects can be implemented as well in work contexts, to promote safe spaces and accepting attitudes in the workspace.

Keywords: LGBT+, depression, depressive symptoms, social support, meta-analysis.

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Introduction

The analysis of several meta-analyses indicated that the prevalence of mental disorders in the LGBT+ population is higher than in the heterosexual population (Meyer, 2003; Semlyen et al., 2016). A meta-analysis of 12 health surveys in UK population showed that lesbian, gay, bisexual, and adults identified as having other sexual orientation were two times more likely to report symptoms of mental disorders, with higher rates among younger and older LGB population. Even higher rates were noticed for bisexuals, and adults identified as having other sexual orientation (Semlyen et al., 2016). Another meta-analysis showed that, in LGB population, anxiety, alcohol, and substance misuse are at least 1.5 times more common, the 12 months prevalence of depression being at least two times higher, the risk for suicide attempts in the past year is also double, reaching a lifetime risk four times higher than the risk in heterosexual population (King et al., 2008). Another meta-analysis showed that the LGB community experience higher rates of depression and anxiety, the bisexual population having similar or even higher rates (Ross et al., 2018). Data describing sexual minority youth are not very different. The prevalence of depressive symptoms and depressive disorder among sexual minority youth are almost 3 times higher compared to their heterosexual peers, with female sexual minority youth being at particular risk (Lucassen et al., 2017).

Several studies highlight that the risk and prevalence for mental disorders are even higher in transgender and gender nonconforming (TGNC) population, compared to their cisgender peers (i.e., a person whose gender identity matches the one assigned at birth). Transgender youth specifically are two to three times more likely to experience depression, anxiety, suicidal ideation, suicide attempt, non-suicidal self-injury, and mental health treatment, both inpatient and outpatient (Reisner et al., 2015), while transgender adults have a higher risk for depression and attempted suicide (37.7%) compared to non-transgender LGB adults (15.9%) (Su et al., 2016).

The acronym LGBT+ is used to refer to lesbian, gay, bisexual, and transgender individuals, and to any sexual minority person whose sexual orientation or gender identity is not described by those mentioned or does not identify as any of them. In this article, we will use LGBT+, unless we refer to specific subpopulations (e.g., LGB for lesbian, gay, and bisexual people).

A framework for understanding the higher prevalence of mental disorders among the LGB population, when compared to heterosexual individuals, is represented by The Minority Stress Theory (Meyer, 2003), which states that, besides typical life stressors (e.g., loss, illness, injury), people can also experience LGB-specific stressors as a result of their minority status. They can be categorized

into four domains: a) prejudice events, b) expectations of prejudice events, c) concealment of sexual orientation, and d) internalization of negative social attitudes and beliefs. These LGB-specific stressors are described on a continuum, ranging from distal (e.g. discrimination, violence, interpersonal homophobia) to proximal (e.g., fear of rejection, internalized homophobia) processes. All of these types of stressors can have a negative impact on mental health outcomes, but the model also postulated that there are factors that can reduce the negative effects of minority stress on mental health outcomes, such as coping strategies and social support. More recent studies offer further support for Meyer's model (Hall, 2018; Mongelli et al., 2019). The model has also been expanded for transgender and gender-nonconforming people to incorporate their unique experiences as well (Hendricks & Testa, 2012).

The LGBT-specific stressors that might have a negative impact on mental health outcomes mentioned in the Minority Stress Theory (Hendricks & Testa, 2012; Meyer, 2003) have been thoroughly studied and it has been shown that LGBT+ people are very often victims of discrimination. More specifically, LGB adolescents are more frequently victims of bullying and victimization by peers than heterosexual adolescents (Choukas-Bradley & Thoma, in press; Mustanski et al., 2011), with up to 94% reporting violence based on their sexual orientation (Mustanski et al., 2011) - the highest rates being reported by transgender youth (McGuire et al., 2010; Su et al., 2016; Veale et al., 2017).

In recent years, there have been major changes around the world regarding the rights of LGBT people (e.g., the issue of same-sex marriage, Poushter & Kent (2020), and the public support for LGBT issues has "dramatically increased" (Russell & Fish, 2016).

According to a report published in 2020, using data from a survey conducted across 34 countries, views about homosexuality have been changing since 2002. For example, in 2019 in the United States 72% of the participants reported that homosexuality should be accepted, while in 2007, only 49% reported the same. Nonetheless, public opinion remains sharply divided by country, region, and economic development. More specifically, levels of acceptance tend to be higher in American and Western European countries and lower in Eastern Europe, the Middle East, Russia, and part of Africa (Poushter & Kent, 2020).

Furthermore, LGBT youth tend to come out at younger ages, yet they still have a high risk for mental health problems. Based on their review, Russell and Fish (2016) suggested several risk factors that could explain this phenomenon: lack of support at the social and cultural levels that limit their rights, living in communities unsupportive of LGBT rights, rejection from family and friends after coming out, bullying based on sexual orientation or gender identity, and unhealthy coping strategies. Moreover, McDermott et al. (2021)

stated that to support LGBT+ mental health, specifically among youth, it is important "to understand that they live in a heteronormative world that despite improvements continues to either explicitly denigrate LGBTQ+ identities or marginalize and silence those lives" (p. 7).

It is well established in the literature that social support and social relationships are extremely important in promoting well-being in the general population. Even more important than the availability of social support is the person's perception regarding it (Cohen, 2004).

According to Ryan et al. (2010) during adolescence, which is a unique developmental period, parents are still important for the basic needs and psychological well-being of the adolescent, even though relationships with peers and their feedback become increasingly more important. Moreover, according to McDonald (2018) "[...] social support becomes fundamental to the development of the adolescent's sense of self and particularly relevant to LGBTQ adolescents who typically face higher amounts of stress and violence throughout their youth" (p. 1), In this review, the authors examined studies evaluating social support and its effect on mental health in LGBTQ adolescents, and they concluded that low social support or the lack of social support was associated with poor mental health, alcohol or drug use, risky sexual behaviors, shame, and low self-esteem, while high social support was associated with positive self-esteem. In their review, Russell and Fish (2016) suggested that parental and peer support, social support from LGBT friends, and coming out can act as protective factors. Some of the benefits that might be associated with these protective factors could be as follows: better mental health, self-acceptance, well-being, reduced effects of victimization.

A study that compared LGBQ adolescents to their heterosexual peers, reported more depressive symptoms, more externalizing behavior, higher rates of bullying and sexual harassment, a more hostile peer environment of victimization, and less social support from family and friends for the former group. Based on their results, the authors suggested that the depressive and externalizing symptoms can be explained by the victimization experiences and the lack of social support (Williams et al., 2005).

It is important to note that the types and levels of social support in the LGBT+ community are not equally distributed. Many LGBT adolescents report that sexuality-specific social support is lower than other forms of social support, and family members offer the lowest levels of this type of support for sexuality stress (Doty et al., 2010). Moreover, adolescents questioning their sexual orientation report adjustment difficulties, victimization experiences, and perceived social support similar to their LGB peers (Williams et al., 2005). For transgender youth, family social support was associated with lower levels of depressive symptoms,

lower perceived burden of being transgender, and higher life satisfaction (Simons et al., 2013). In qualitative studies, transgender and gender-variant youth reported that social support from peers and friends contributes to a positive sense of self (Pusch, 2005; Singh, 2013), and to maintaining mental health (Pusch, 2005), while social support from family improved the way they defined themselves as a marginalized gender (Singh, 2013).

However, research regarding the relationship between social support and depression in the LGBT+ population yielded mixed results. Some studies identified small, but positive correlations between social support and depression (Kaufman et al., 2017; Martin-Storey & Crosnoe, 2012), and the magnitude of the negative correlations found varied considerably: some studies identified almost null negative correlations (e.g. Bauermeister et al., 2010; Flanders et al., 2019; Kertzner et al., 2009; Woodford et al., 2015), small negative correlations (e.g. Rosario et al., 2011; Verrelli et al., 2019; Vincke & van Heeringen, 2002), medium negative correlations (e.g. Berghe et al., 2010; Cain et al., 2017; Lehavot & Simoni, 2011), and high negative correlations (e.g. Busby et al., 2020; Fingerhut, 2018; Puckett et al., 2015).

There is also a great diversity regarding the variables included in the studies. Some studies use samples of adolescents (e.g., Dickenson & Huebner, 2016), others of adults (e.g., Fingerhut, 2018), and others of elders (Ramirez-Valles et al., 2014). In some of the studies, there is a great percentage of university graduates (e.g., 97% in Fingerhut, 2018), while in others the percentage is lower (e.g., 24.3% in Wang et al., 2020). Moreover, some researchers choose to use full scales to evaluate depression and social support (e.g., Feinstein et al., 2014; Sheets & Mohr, 2009), while others select certain items and use them (e.g. Kaufman et al., 2017; Masini & Barrett, 2008).

To our knowledge, there is no meta-analysis to study the relationship between social support and depression in the LGBT+ population. In this context, the primary goal of the current meta-analysis is to clarify whether there is a correlation between social support and depression in the LGBT+ population. The second objective is to determine if the methodological characteristics of the original studies and sample characteristics account for the variability of the results observed across studies. Given the diversity of the primary studies, the following moderators will be tested using an exploratory approach: (i) the percentage of lesbian, gay, bisexual, and transgender participants; (ii) the percentage of women; (iii) the percentage of participants with higher education; (iv) the percentage of participants involved in a romantic relationship; (v) the mean age of the participants; (vi) the percentage of White participants; (vii) the region where the study was developed.

METHODS

Search Procedure and Study Selection

We conducted a meta-analysis that follows the guidelines provided by the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) (Moher et al., 2009).

The following databases were searched by two reviewers: EBSCO, PubMed, and PsychNET. The search terms used included the following: "LGBT+" (and other variations, such as LGBTQ+, LGBTQIA+, etc.) or "lesbian" or "gay" or "bisexual" or "transgender" or "homosexual" or "queer" or "sexual orientation" or "gender identity" or "sexual minority" AND "depression" or "depressive disorder" or "depressive symptoms" or "major depressive disorder" AND "social support" or "social networks" or "social relationships".

Publications were included if they:

- provided statistical indicators for the association between social support and depression,
- were studies conducted with LGBT+ participants,
- were published after the year 2000, to ensure temporal relevance, considering that the public and scientific support and awareness for the LGBT issues has changed considerably (Russell & Fish, 2016).
- were published in English.
  Publications were excluded if they:
- were not published in a peer-reviewed journal. We decided not to include unpublished studies because having gone through the process of peer-review is proof of the quality of the studies included. To compensate for this decision, we performed two methods of publication bias analysis, which will be detailed in the Methods section.
- included heterosexual people in the sample and did not provide statistical indicators specifically for the LGBT+ subsample, only for the sample as a whole.
- mentioned social support in the title and/or abstract but did not measure actual social support.
- assessed depressive symptoms, but did not provide statistical indicators for the association between social support and depression, only for mental health and social support.

Data Set and Coding Procedure

Social Support

Social support is a concept with many definitions and little consensus around them (Pearson, 1986). A frequently cited definition was proposed by Cobb (1976), who defined social support as the perception that one is part of a network with mutual obligations, and that one is respected, loved, and cared for.

In this article, social support refers specifically to perceived social support as a result of the fact that none of the studies included in this meta-analysis objectively assessed social support, all of them asking participants about their perceptions of social support. Perceived social support refers to different types of social support, including support from family, friends, significant-other, LGBT+ community, as well as instrumental support, informational support, and emotional support.

We divided the studies into categories, based on the way they defined and measured social support: firstly, we labeled with "Core definition" studies that used instruments specifically developed to assess social support (e.g., Multidimensional Scale of Perceived Social Support, Child and Adolescent Social Support Scale; such studies are Puckett et al., 2015; Watson et al., 2019), and secondly, we labeled with "Peripheral definitions" studies that used instruments that were not specifically developed to measure social support, but the authors chose to include those constructs into their definition of social support (e.g., Connectedness to the LGBTQ Community Scale, used by Flanders et al., 2019). We made this distinction because it would be expected that there would be a difference in the results of the studies that use instruments designed specifically to assess social support, compared to the results of the studies that used instruments that were not specifically developed to measure social support, but the authors chose to include those constructs into their definition of social support.

We also distinguished between studies that used full scales to measure social support (e.g., Fingerhut, 2018; Puckett et al., 2015) and studies that used selections of items to measure social support (e.g., Gibbs & Rice, 2016; Masini & Barrett, 2008). It would be expected that complete instruments, designed specifically to assess social support, would yield different results than using a single item or a selection of items, being able to assess multiple facets, and to draw a better understanding of the construct, considering that those instruments have been tested for validity and reliability.

Depression

According to the DSM-V (APA, 2013), major depressive disorder is characterized by well-defined changes in a person's affect, cognition, and neuro-vegetative functions, with every episode lasting at least two weeks. The most

important feature of this disorder is that the affected person loses interest or pleasure in the majority of the activities.

In this meta-analysis, we included studies that operationalized depression as the presence of various symptoms, and not necessarily having a diagnostic of major depressive disorder. This lead to dividing the studies into two categories: firstly, studies that used full scales, full instruments designed to evaluate the presence and intensity of depressive symptoms (e.g., Beck Depression Inventory, and the Depression Subscale from the Center for Epidemiological Studies; such studies are Bauermeister et al., 2010; Cain et al., 2017), and secondly, studies that used items taken from or adapted from other instruments (such studies are Kaufman et al., 2017; Ramirez-Valles et al., 2014). It would be expected that complete instruments, designed specifically to assess depressive symptoms, would yield different results than using a single item or a selection of items, being able to assess multiple facets, and to draw a better understanding of the construct, considering that those instruments have been tested for validity and reliability.

Sexual Orientation and Gender Identity

Sexual orientation and gender identity measures were comprised by both self-report measures (i.e., the participants declared their sexual orientation and gender identity), and objective measures (i.e., for sexual identity the participants were asked to declare the genders they were attracted to or the gender of the people they were/used to be in a relationship with; for gender identity, the participants were asked to declare the gender assigned at birth and the gender they identify as).

In this meta-analysis, we used as moderators only three sexual orientations (LGB specifically), and one gender identity (Transgender) due to the lack of studies that include more sexual orientations and gender identities. The percentage of lesbian and gay participants was treated as one variable because the primary studies often do the same (e.g., Busby et al., 2020; Martin-Storey & Crosnoe, 2012; Puckett et al., 2015; Woodford et al., 2015).

We wanted to test the effect of each sexual orientation on the relationship between social support and depression because it is established in the literature that, between lesbian, gay, and bisexual people, those who identify as bisexual are the most vulnerable (Marshal et al., 2011; Semlyen et al., 2016). Moreover, we decided to test the effect of the transgender identity on the association between social support and depression because transgender people have a higher prevalence for mental health problems compared to their cisgender peers (Eisenberg et al., 2017; Reisner et al., 2015; Su et al., 2016).

Other Moderators

We chose the percentage of women participating in the studies as a moderator for the relationship between social support and depression because previous results showed that social support has a higher protective value against depression for women from the general population (Kendler et al., 2005), but there seems to be no data regarding the same association for the women in the LGBT+ community.

Higher education was operationalized as the percentage of participants that graduated college or university. Across the primary studies, the percentages of participants with higher education vary considerably: from 0% (in Dickenson & Huebner, 2015; Martin-Storey & Crosnoe, 2012; Mereish et al., 2020; Moran et al., 2018) to 97% (in Fingerhut, 2018). Moreover, to our knowledge, no research tested the effects of having higher education on the association between social support and depression in the LGBT+ community. Nonetheless, some studies tested the association between social support and educational attainment and the association between depression and educational attainment. More specifically, among older gay men, depressive symptoms are more frequent among those with less than a college education compared to those with college degrees of higher education, $t(162) = 2.24$, $p < .05$, (Ramirez-Valles et al., 2014). Furthermore, among sexual minority women, higher levels of education were associated with lower depression ($r = -.20$, $p < .001$), and higher social support ($r = .16$, $p < .001$) (Lehavot & Simoni, 2011).

We decided to test the effect of relationship status on the association between social support and depression because the results regarding the benefits for the LGBT+ community of being involved in a relationship are mixed. Previous research suggested that being involved in a relationship might have the same benefits for the LGBT+ community as it has for heterosexual people (Whitton et al., 2018), and that mental health is improved in participants who were in a relationship compared to those who were not (Ayala & Coleman, 2000; Kornblith et al., 2016; Oetjen & Rothblum, 2000; Parsons et al., 2013). Some studies suggest that sexual minority youth might benefit more from being in a relationship compared to heterosexual youth (Katz-Wise & Hyde, 2012; Ryan et al., 2009), but there is also research that did not find an association between relationship involvement and mental health in the LGBT+ community (Feinstein et al., 2014). The relationship status was not assessed in 36 studies. In all of the studies that reported relationship status, participants were asked if, at the time of the study, they were involved in a relationship (regardless of the partner's gender): some of the studies asked only if they had a partner (e.g., Ayala & Coleman, 2000; Cain et al., 2017), others asked them whether they were married, divorced or widowed (Hu et al., 2020), while others asked them if they were in a committed relationship, including both partnership and marriage (Li et al., 2020).

The mean age of the participants was chosen as another moderator, considering the diversity of the average age of the participants in the primary studies. Moreover, based on our research of the literature, no study tested if age is a moderator for the relationship between social support and depression in the LGBT+ population. We only found that previous research showed that the protective effects of social support received specifically from family decrease with age (Mustanski et al., 2011; Wise et al., 2017).

The percentage of White participants was also included as another moderator for the relationship between social support and depression because, to our knowledge, no study tested this relationship. This would be a moderator of interest because, according to the Minority Stress Theory (Meyer, 2003), the risk for experiencing minority-related stressors is higher for those belonging to two or more minority groups, which in turn is associated with higher mental health problems.

We also decided to test if the region where the primary studies were developed was a moderator for the relationship between social support and depression, considering the cultural differences that might influence this relationship. We classified the studies into three categories, based on where they were conducted: (1) Asia; (2) U.S.A., Canada & Australia; (3) Western Europe.

To ensure coding consistency and construct validity, the coding scheme was jointly developed by the authors in line with the conceptual and operational definitions provided in the theoretical framework of the study. Further on, the coding procedure was performed by both authors. All instances of disagreement were resolved through consensus.

Data Analysis

Analyses were conducted by using Comprehensive MetaAnalysis software, version 2.2.050 (Biostat Inc., Englewood, NJ, USA). As an indicator of the effect sizes, Pearson's correlation coefficient was used. Given the heterogeneity of the studies, all analyses were based on a random-effects model.

Publication Bias Analysis

Publication bias analysis was performed using two methods. First, we used the Classic Fails-safe N of Rosenthal (Rosenthal, 1979) to evaluate the number of studies with null effects that are required to turn the effect size to zero. Second, we calculated the Begg and Mazumdar's rank correlation test (Begg & Mazumdar, 1994). This test computes the rank order correlation (Kendall's tau b) between the effect size and the standard error (which is driven primarily by

the sample size) to identify if large studies tend to be included in the analysis regardless of their effect size, whereas small studies are more likely to be included when they show a relatively large effect size.

RESULTS

Study selection

Following the procedure described in the Methods section, 1639 studies were identified through database searching, and 46 studies through additional sources (i.e. articles cited in other publications). After removing the duplicates, 735 studies were left to be screened by 2 reviewers, of which 576 were excluded based on the exclusion criteria. 159 full-text articles were assessed for eligibility by two reviewers, and 111 were removed. In the end, 48 were eligible and included in the current meta-analysis. No duplicated datasets were included. This process is illustrated in Figure 1.
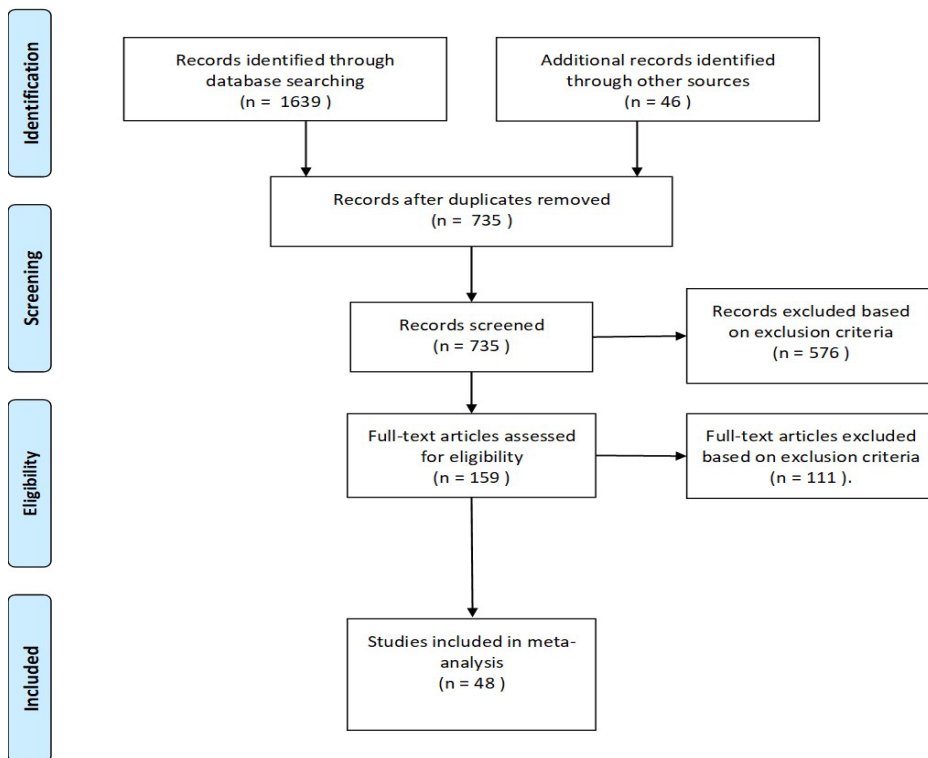

Figure1. The PRISMA flow chart diagram describing the selection of studies

The 48 eligible studies were conducted in many different countries, they had varying sample sizes, and they varied regarding the characteristics of each sample. In-depth study characteristics are presented in Table 1.

Table 1. The studies included in the meta-analysis and their main features

Study	Study Design	Country	Sample Size	% of LG	% of B	% of T	Mean Age
Ayala & Coleman, 2000	Cross-sectional	Canada	112	100	0	0	NS
Bauermeister et al., 2010	Longitudinal	U.S.A	190	NS	NS	0	17
Berghe et al., 2010	Cross-sectional	Belgium	820	93	7	0	21.5
Busby et al., 2020	Cross-sectional	U.S.A	868	28.3	45	10	NS
Cain et al., 2017	Cross-sectional	U.S.A	1071	95	5	0	40.24
Chakrapani et al., 2017	Cross-sectional	India	600	9	6	100	29.7
Dickenson & Huebner, 2015	Cross-sectional	U.S.A	519	64.35	28.51	0	16.5
Ding et al., 2019	Cross-sectional	China	715	72.9	NS	NS	27.09
Feinstein et al., 2014	Cross-sectional	U.S.A	414	100	0	NS	31.3
Fingerhut, 2018	Cross-sectional	U.S.A	89	100	0	0	36.7
Flanders et al., 2019	Cross-sectional	U.S.A & Canada	136	0	100	14.7	21.5
Fredriksen-Goldsen et al., 2012	Cross-sectional	U.S.A	2349	94.64	5.36	0	67
Gibbs & Rice, 2015	Cross-sectional	U.S.A	195	86	9.8	0	22
Hu et al., 2020	Cross-sectional	China	302	85.76	14.24	NS	24
Johnson et al., 2001	Longitudinal	U.S.A	103	100	0	0	38
Kaufman et al., 2017	Cross-sectional	Netherlands	267	49	22.1	NS	17.61
Kertzner et al., 2009	Cross-sectional	U.S.A	396	83.8	16.2	0	38.5
Latkin et al., 2017	Cross-sectional	U.S.A	1402	NS	NS	0	NS
Lehavot & Simoni, 2011	Cross-sectional	U.S.A	1381	50	29	0	33.54
Li et al., 2020	Cross-sectional	China	385	100	0	NS	24
Logie et al., 2017	Cross-sectional	Canada	391	33.8	16.6	2.8	30.9
Martin-Storey & Crosnoe, 2012	Cross-sectional	U.S.A	40	25	75	NS	NS
Masini & Barrett, 2008	Cross-sectional	U.S.A	220	95	5	0	57
McConnel et al., 2015	Cross-sectional	U.S.A	232	61.9	28.57	9.52	18.75
McDowell et al., 2019	Cross-sectional	U.S.A	150	NS	NS	100	27.5
Mereish et al., 2020	Cross-sectional	U.S.A	94	29.8	35.1	11.7	16.1
Moran et al., 2018	Cross-sectional	U.S.A	347	51	28	15	21.3
Mulya & Hutahaean, 2020	Cross-sectional	Indonesia	295	100	0	0	NS
Mustanski & Liu, 2013	Cross-sectional	U.S.A	237	61.6	28.7	8.9	18.76
Parra et al., 2017	Cross-sectional	Canada	62	79	21	0	21.34
Pflum et al., 2015	Cross-sectional	U.S.A & Canada	427	NS	NS	100	33.05
Puckett et al., 2015	Cross-sectional	U.S.A	241	71.8	2.1	2.5	35.96
Ramirez-Valles et al., 2014	Cross-sectional	U.S.A	182	NS	NS	NS	66
Rosario et al., 2005	Longitudinal	U.S.A	156	66	31	0	18.3
Rosario et al., 2011	Longitudinal	U.S.A	156	66	31	0	18.3
Ryan et al., 2010	Cross-sectional	U.S.A	245	70	13	9	NS
Sheets & Mohr, 2009	Cross-sectional	U.S.A	210	0	100	NS	20.96
Simons et al., 2013	Cross-sectional	U.S.A	66	NS	NS	100	19.06
Tabler et al., 2019	Cross-sectional	U.S.A	157	NS	NS	0	36
Veale et al., 2017	Cross-sectional	Canada	600	NS	NS	56	22
Verrelli et al., 2019	Cross-sectional	Australia	1305	71.6	28.3	0	33.73
Vincke & van Heeringen, 2002	Longitudinal	Belgium	197	85	0	0	19.9
Wang et al., 2020	Cross-sectional	Taiwan	581	55.4	44.6	0	NS
Wang et al., 2018	Cross-sectional	Taiwan	500	74.2	25.8	0	22.9
Watson et al., 2019	Cross-sectional	U.S.A	835	54	46	0	18.77
Wise et al., 2017	Cross-sectional	U.S.A	64	NS	NS	NS	19.88
Woodford et al., 2015	Cross-sectional	U.S.A	326	11.3	16.3	2.5	23.48
Yan et al., 2019	Cross-sectional	China	347	NS	NS	NS	33.9

Heterogeneity analysis

The heterogeneity analysis performed for the distribution of the effect sizes in our meta-analysis indicated a significant heterogeneity, $Q(47)= 409.02$, $p < .001$. Taking into account also the diversity related to research designs (e.g. participants, instruments, design), we decided to perform all the data analysis using a random-effects model.

Overall analysis

The forest plot presented in Figure 2 shows that there is a significant negative moderate relationship between social support and depression, $r= -.255$, $CI95\%=[-.295; -.215]$, $p < .001$.
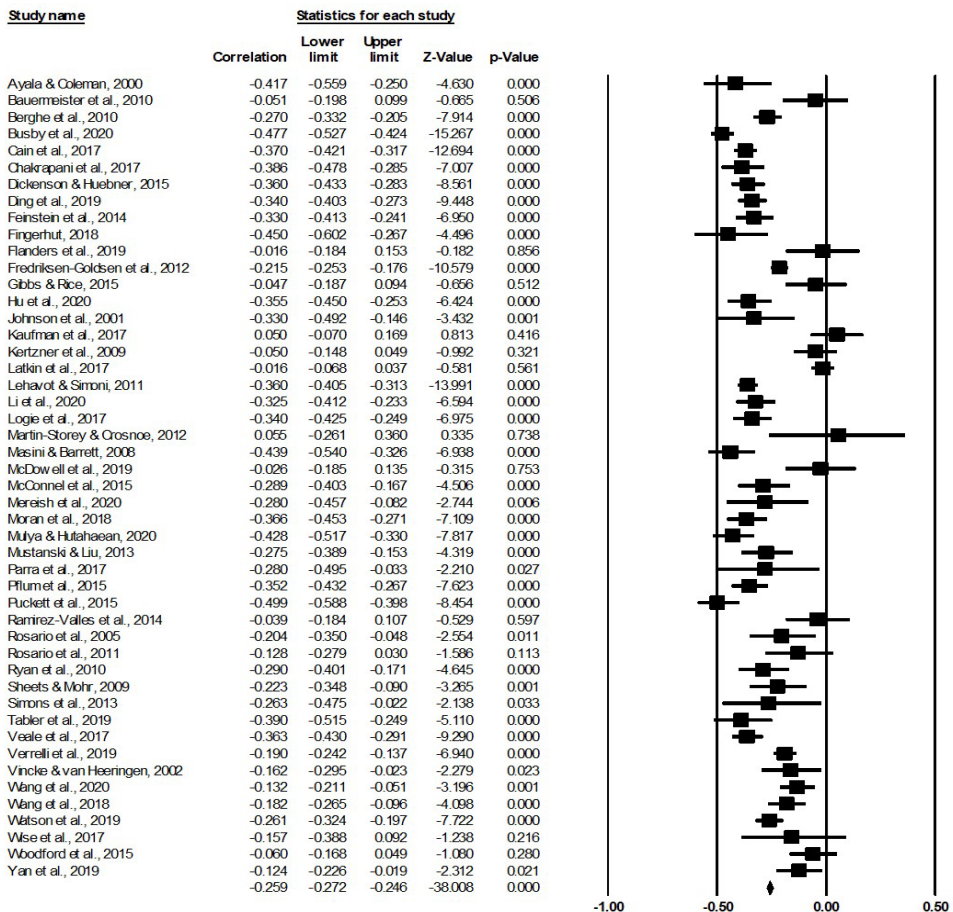
Study name	Correlation	Lower limit	Upper limit	Z-Value	p-Value
Ayala & Coleman, 2000	-0.417	-0.559	-0.250	-4.630	0.000
Bauermeister et al., 2010	-0.051	-0.198	0.099	-0.665	0.506
Berghe et al., 2010	-0.270	-0.332	-0.205	-7.914	0.000
Busby et al., 2020	-0.477	-0.527	-0.424	-15.267	0.000
Cain et al., 2017	-0.370	-0.421	-0.317	-12.694	0.000
Chakrapani et al., 2017	-0.386	-0.478	-0.285	-7.007	0.000
Dickenson & Huebner, 2015	-0.360	-0.433	-0.283	-8.561	0.000
Ding et al., 2019	-0.340	-0.403	-0.273	-9.448	0.000
Feinstein et al., 2014	-0.330	-0.413	-0.241	-6.950	0.000
Fingerhut, 2018	-0.450	-0.602	-0.267	-4.496	0.000
Flanders et al., 2019	-0.016	-0.184	0.153	-0.182	0.856
Fredriksen-Goldsen et al., 2012	-0.215	-0.253	-0.176	-10.579	0.000
Gibbs & Rice, 2015	-0.047	-0.187	0.094	-0.656	0.512
Hu et al., 2020	-0.355	-0.450	-0.253	-6.424	0.000
Johnson et al., 2001	-0.330	-0.492	-0.146	-3.432	0.001
Kaufman et al., 2017	0.050	-0.070	0.169	0.813	0.416
Kertzner et al., 2009	-0.050	-0.148	0.049	-0.992	0.321
Latkin et al., 2017	-0.016	-0.068	0.037	-0.581	0.561
Lehavot & Simoni, 2011	-0.360	-0.405	-0.313	-13.991	0.000
Li et al., 2020	-0.325	-0.412	-0.233	-6.594	0.000
Logie et al., 2017	-0.340	-0.425	-0.249	-6.975	0.000
Martin-Storey & Crosnoe, 2012	0.055	-0.261	0.360	0.335	0.738
Masini & Barrett, 2008	-0.439	-0.540	-0.326	-6.938	0.000
McDowell et al., 2019	-0.026	-0.185	0.135	-0.315	0.753
McConnel et al., 2015	-0.289	-0.403	-0.167	-4.506	0.000
Mereish et al., 2020	-0.280	-0.457	-0.082	-2.744	0.006
Moran et al., 2018	-0.366	-0.453	-0.271	-7.109	0.000
Mulya & Hutahaean, 2020	-0.428	-0.517	-0.330	-7.817	0.000
Mustanski & Liu, 2013	-0.275	-0.389	-0.153	-4.319	0.000
Parra et al., 2017	-0.280	-0.495	-0.033	-2.210	0.027
Pflum et al., 2015	-0.352	-0.432	-0.267	-7.623	0.000
Puckett et al., 2015	-0.499	-0.588	-0.398	-8.454	0.000
Ramirez-Valles et al., 2014	-0.039	-0.184	0.107	-0.529	0.597
Rosario et al., 2005	-0.204	-0.350	-0.048	-2.554	0.011
Rosario et al., 2011	-0.128	-0.279	0.030	-1.586	0.113
Ryan et al., 2010	-0.290	-0.401	-0.171	-4.645	0.000
Sheets & Mohr, 2009	-0.223	-0.348	-0.090	-3.265	0.001
Simons et al., 2013	-0.263	-0.475	-0.022	-2.138	0.033
Tabler et al., 2019	-0.390	-0.515	-0.249	-5.110	0.000
Veale et al., 2017	-0.363	-0.430	-0.291	-9.290	0.000
Verrelli et al., 2019	-0.190	-0.242	-0.137	-6.940	0.000
Vincke & van Heeringen, 2002	-0.162	-0.295	-0.023	-2.279	0.023
Wang et al., 2020	-0.132	-0.211	-0.051	-3.196	0.001
Wang et al., 2018	-0.182	-0.265	-0.096	-4.098	0.000
Watson et al., 2019	-0.261	-0.324	-0.197	-7.722	0.000
Wise et al., 2017	-0.157	-0.388	0.092	-1.238	0.216
Woodford et al., 2015	-0.060	-0.168	0.049	-1.080	0.280
Yan et al., 2019	-0.124	-0.226	-0.019	-2.312	0.021
	-0.259	-0.272	-0.246	-38.008	0.000

Figure 2. The Forest plot for the overall effect size

Publication bias analysis

As we have already detailed in the Method section, publication bias analysis was performed using two methods, the Classic Fails-safe N of Rosenthal, and the Begg and Mazumdar's rank correlation test.

The Classic Fails-safe N of Rosenthal. Our meta-analysis incorporates data from 48 studies, which yield a Z-value of -34.19 and a corresponding 2-tailed p-value of .001.

The fail-safe N is 4563. This means that we would need to locate and include 4563 "null" studies for the combined 2-tailed p-value to exceed .050. In other words, there would need to be 95.06 missing studies for every observed study for the effect to be nullified.

The Begg and Mazumdar's rank correlation. This test was concerned with the potential relationship between the size of the studies and the effect size obtained by each one. The results revealed a non-significant Kendall's tau b of .12, with a two-tailed p-value of .197 (based on continuity-corrected normal approximation), suggesting there is no tendency for studies that are more precise (and implicitly larger) to generate larger effect sizes.

Moderators analysis

Moderators related to research design

Definition of social support

Table 2. The effect size as a function of defining social support

Definition	No. of studies	r	Limits of confidence interval (95%)		Z	p
			Lower	Upper		
Peripheral	12	-.130	-.240	-.017	-2.24	.025
Core	41	-.277	-.319	-.234	-12.02	.000

As it can be observed in Table 2, studies with a peripheral definition of social support obtained a small but significant negative effect (r = -.130, p =.025) while studies with core definitions of social support obtained a medium significant negative effect (r = -.277, p < .001). By statistical comparison, studies with core definitions obtained significantly higher effect sizes, Q(1)= 6.01, p = .014. In other words, when social support is more precisely defined, its relationship with depression is more evident.

Completeness of social support scale

Table 3. The effect size as a function of completeness of social support scale

Completeness	No. of studies	r	Limits of confidence interval (95%)		Z	p
			Lower	Upper		
Full scale	30	-.319	-.362	-.275	-13.35	.000
Selection of items	18	-.169	-.233	-.104	-5.03	.000

As table 3 shows, studies that used full psychometric scales to measure social support recorded a significant negative medium effect size (r = -.319, p< .001), while studies that measured the same concept using selections of items obtained a significant negative low effect size (r = -.169, p < .001). The difference between the two categories was statistically significant, Q(1)= 14.48, p < .001. In other words, studies that measure social support with more stable, well-rounded instruments, have greater chances to reveal the relationship between social support and depression.

Completeness of depression scale

Table 4. The effect size as a function of completeness of depression scale

Completeness	No. of studies	r	Limits of confidence interval (95%)		Z	p
			Lower	Upper		
Full scale	37	-.277	-.322	-.232	-11.44	.000
Selection of items	12	-.191	-.272	-.106	-4.37	.000

As table 4 shows, studies that used full psychometric scales to measure depression (or full clinical interview) recorded a significant negative medium effect size (r=-.281, p<.001), while studies that measured the same concept using selections of items obtained a significant negative low effect size (r = -.191, p < .001). The difference between the two categories was not significant at p < .05 but significant at p < .10, Q(1)= 3.27, p = .070. In other words, studies that measured depression with more stable, well-rounded instruments (or full clinical interviews), tend to have greater chances to reveal the relationship between social support and depression.

Moderators related to samples

Percentage of women
The percentage of women in each sample proved to be a significant negative predictor of the effect sizes, Z= -2.69 p < .001. Taking into account the negative correlation between social support and depression, this result means that as the percentage of women increases, the negative correlation between these two concepts increases. In other words, it could be said that, for women, social support has a higher protective value against depression.

Percentage of transgender participants
The percentage of transgender participants in each sample proved to be a significant negative predictor of the effect sizes, Z = -6.73, p < .001. Taking into account the negative relationship between social support and depression, this result means that as the percentage of transgender participants increases, the negative correlation between these two concepts increases.

Sexual orientation (% of lesbian and gay participants)
The meta-regression performed for the percentage of lesbian, and gay participants as a predictor for the effect sizes revealed a non-significant predictive value, Z = -.80, p = .420. In other words, the percentage of lesbian and gay participants did not affect the relationship between social support and depression.

Sexual orientation (% of bisexual participants)
The percentage of bisexual participants had a significant positive predictive value upon the effect sizes, Z = 3.74, p < .001. Taking into account that the correlation between social support and depression is negative, this means that higher percentages of bisexual people are associated with lower protective values of social support against depression.

The average age of participants
The meta-regression analysis with age as a predictor and the effect size as criterion variable proved that age had no significant predictive value, Z = .13, p = .894. In other words, age is not associated with the protective role of social support.

Percentage of higher educated participants
The percentage of participants with higher education had no significant predictive value for the effect sizes, Z =-.67, p = .502, which means that higher education does not affect the relationship between social support and depression.

Percentage of White participants

The percentage of White participants had a significant negative predictive value upon the effect sizes, Z = -9.56, p < .001. In other words, as the percentage of White participants in the samples increases, the magnitude of the negative correlation between social support and depression increases.

Percentage of participants involved in a relationship

The percentage of participants involved in a relationship had no significant predictive value for the effect sizes, Z = 1.10, p = .271, which means that being involved in a relationship does not affect the correlation between social support and depression.

Region

Table 5. The effect size as a function of the region

Region	No. of studies	r	Limits of confidence interval (95%)		Z	p
			Lower	Upper		
Asia	8	-.285	-.364	-.202	-6.51	.000
U.S.A.& Canada & Australia	37	-.258	-.305	-.209	-10.04	.000
Western Europe	3	-.133	-.326	.070	-1.28	.199

The meta-regression performed for the region where the studies were conducted showed no significant difference between regions Q(2)= 1.98, p = .371. This means that the country where the study was conducted does not influence the relationship between social support and depression.

DISCUSSION

The current meta-analysis found a significant negative moderate relationship between social support and depression in the LGBT+ community.

By analyzing some of the characteristics of the studies included in our meta-analysis, we found that when authors defined more precisely the construct of social support, its relationship with depression was more evident. Moreover, measuring social support and depression with more stable, well-rounded instruments, is associated with a greater chance to reveal the relationship between social support and depression.

Based on our results social support could be seen as having a higher protective value against depression for women, which is consistent with previous results on a sample from the general population (Kendler et al., 2005). A possible explanation might be that women perceive social networks as being more important and valuable to them than men do, the latter using other strategies for coping with discrimination.

We also found that social support could be seen as having a higher protective value against depression for transgender people. This is an interesting finding considering that transgender people represent an especially vulnerable subgroup of the LGBT+ community, reporting the highest rates of victimization (McGuire et al., 2010; Su et al., 2016; Veale et al., 2017), and the highest rates of mental health problems (Reisner et al., 2015; Su et al., 2016). In previous studies, compared to LGB youth, transgender youth reported having lower social support from parents (Ryan et al., 2010), and it was suggested that many of them may be facing a lack of belonging across a variety of life domains (Trujillo et al., 2017). Our results might be explained by the source of social support transgender people receive. To be precise, they might not be accepted by family or friends, but they might receive unconditional acceptance from a significant other (Trujillo et al., 2017).

Our results also showed that social support could be seen as having a lower protective value against depression for bisexual people. A possible explanation might be because bisexual people face double discrimination, firstly from heterosexuals, and secondly from lesbian and gay individuals (Brewster & Moradi, 2010; Roberts et al., 2015). Because of this lack of acceptance, and the invalidation of their identity, bisexual people might conceal their sexual orientation (Balsam & Mohr, 2007; Legate et al., 2012), which affects the sense of connection to the LGBT community (Balsam & Mohr, 2007; Chan et al., 2020; Hayfield et al., 2014; Kertzner et al., 2009), and the social support they can receive (Hayfield et al., 2014).

Moreover, we found that age does not affect the relationship between social support and depression. Previous research showed that the protective effects of social support received specifically from family decrease with age (Mustanski et al., 2011; Wise et al., 2017), and it was suggested that this might be a normal change because people start to rely more on friends while they transition into adulthood (Wise et al., 2017). However, according to the current results, age does not influence the relationship between social support and depression.

Furthermore, based on our results, social support could be seen as having a higher protective value against depression for White participants. This might be explained by the Minority Stress Theory (Meyer, 2003), which states that the risk for experiencing minority-related stressors is higher for people belonging to two minority groups (e.g., sexual minorities and people of color - POC). Previous studies support this statement (Balsam & Mohr, 2007; Bostwick et al., 2014; English et al., 2018; Ghabrial, 2017; Grollman, 2014; Sutter & Perrin, 2016). In a study, 60% of the sexual minority men of color reported any form of discrimination in the past year (compared to 23.8% of white sexual minority men), and 41.9% of the sexual minority women of color, compared to 20.7% of white counterparts (Bostwick et al., 2014). A study also showed that LGB-POC youth have lower chances of disclosing their sexual minority status (Mustanski et al., 2011).

Finally, being involved in a relationship does not affect the correlation between social support and depression. Previous research that focused on the benefits of romantic relationships in the LGBT+ community provided mixed results. Some studies showed that the benefits observed in heterosexual couples were likely to be the same for LGB adults as well, with a study using eight waves of data finding that, when they were involved in a relationship, participants reported less psychological distress, compared to the times when they were not (Whitton et al., 2018). Other studies showed that lesbian women in a committed relationship reported fewer depressive symptoms than their single counterparts (Ayala & Coleman, 2000; Kornblith et al., 2016; Oetjen & Rothblum, 2000), findings that are similar in the case of gay and bisexual men as well (Parsons et al., 2013). However, there is also research that did not find evidence for the protective role of relationship involvement on mental health disorders (Feinstein et al., 2016). Research on sexual minority youth suggested that they might benefit more from romantic relationships than their heterosexual counterparts because those relationships might provide the social support they are lacking in other relationships, like the ones with family and peers (Katz-Wise & Hyde, 2012; Ryan et al., 2009).

Implications

Based on the current results, we can highlight the importance of social support among the LGBT+ population suffering from depressive symptoms or major depressive disorder. Thereby, practical implications of these results include promoting social support, and acceptance at individual and social levels. For example, in schools, there should be more accent on policies and practices that foster well-being and a positive climate, that encourage information sharing and offering support related to LGBT+ issues. In addition, it is really important to create safe spaces for sexual minority youth. Considering the LGBT+ adults, all these aspects can be implemented as well in work contexts, to promote safe spaces and accepting attitudes in the workspace.

Limitations

Our results are limited by the lack of diversity regarding the sexual orientations, gender identities, and ethnicities of the samples from the original studies, by the way sexual orientation and gender identity were measured in those studies, and also by the lack of longitudinal perspectives in the empirical literature.

At the same time, these limitations highlight what future studies can improve. Specifically, they should include more diverse samples, and they should assess longitudinally the relationships between protective factors and mental health issues. Moreover, future research should study the intersectionality between multiple identities, its association with mental health outcomes, and

its impact on the relationship between protective factors and mental health problems. Most importantly, researchers should focus more on developing interventions to promote protective factors and to reduce the negative impact of minority stressors among the LGBT+ population.

Conclusions

Although the public support for LGBT issues has increased considerably (Russell & Fish, 2016), there are still a lot of worrying aspects that need to be addressed. Our meta-analysis found a significant negative moderate relationship between social support and depression in the LGBT+ community, with women, transgender people, and White participants benefiting more from social support, while among bisexual people and POC, these effects tend to be lower.

The current results have implications, highlighting the importance of social support in the LGBT+ community. Further research should focus on multiple subgroups of the community and identify their unique needs, on multiple types of social support, and on creating interventions to foster healthy and supportive relationships among the people who need them most.

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Refining our understanding of the influence of culture on human development: A situated cognition approach

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ABSTRACT. In the present paper, we discuss the theoretical and methodological benefits of refining the current models which are focused on the influence of culture on human development based on theoretical models and empirical findings which stem from the situated cognition approach on culture. Firstly, to illustrate the current approach on culture and human development, we review the Ecocultural Model of Development, which focuses on the manner in which caregivers' cultural models are associated with their parental beliefs (i.e., socialization goals and parental ethnotheories), their parental practices and ultimately with the child's development. Secondly, we explore two models based on a situated cognition approach: the Cultural Task analysis model and the Culture as Situated Cognition approach. Based on the assumptions of these models and findings from our own lab, we discuss how we can theoretically refine current models which focus on the influence of culture on human development, and what methodological approaches these refinements can lead us to. In the paper we also outline several avenues for future research that stem from the reconceptualization of the influence of culture on human development, from a situated cognition perspective.

Keywords: culture; human development; situated cognition; parental beliefs; cultural models

ZUSAMMENNFASSUNG. In dem vorliegenden Aufsatz werden wir die theoretischen und methodologischen Vorteile der Verfeinerung der gegenwärtigen Modelle erörtern, die sich auf den Einfluss von Kultur auf die menschliche Entwicklung konzentrieren, basierend auf Erkenntnissen, die aus dem Ansatz der situierten Kognition zur Kultur stammen. Zunächst werden wir zur Veranschaulichung

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des aktuellen Ansatzes zur Kultur und menschlichen Entwicklung das Ökokulturelle Entwicklungsmodell erörtern, das sich darauf konzentriert, wie kulturelle Modelle der Betreuungspersonen mit ihren elterlichen Überzeugungen, einschließlich Sozialisationsziele und elterliche Ethnotheorien, ihren elterlichen Praktiken und letztendlich mit der kindlichen Entwicklung verknüpft sind. Zweitens werden wir zwei Modelle erörtern, die auf einem Ansatz zur situierten Kognition beruhen: das Modell der kulturellen Aufgabenanalyse und den Ansatz 'Kultur als situierte Kognition'. Basierend auf den Annahmen dieser Modelle und den Ergebnissen aus unserem eigenen Forschungslabor werden wir erörtern, wie wir theoretisch bestehende Modelle verbessern können, die sich auf den Einfluss von Kultur auf die menschliche Entwicklung konzentrieren, und welche methodischen Ansätze uns diese Verfeinerungen ermöglichen können. In der Arbeit hervorheben wir außerdem mehrere Ansätze für zukünftige Forschung, die sich aus der Neukonzeption des Einflusses von Kultur auf die menschliche Entwicklung aus einer Perspektive der situierten Kognition ergeben.

Schlüsselwörter: Kultur; menschliche Entwicklung; situierte Kognition; elterliche Überzeugungen; kulturelle Modelle

Introduction

Human development does not follow a universal trajectory but is influenced by the cultural context in which it takes place (Arnett, Chapin, & Brownlow, 2018; Broesch et al., 2023; Harkness & Super, 2020). Out of the many factors that might be associated with these cross-cultural variations, the parental beliefs of caregivers have been identified as an important factor (Greenfield, 2018; Kagitcibasi, 2017; Keller & Kartner, 2013; Lin et al., 2023; Super & Harkness, 1986). Parental beliefs are associated with the parental practices caregivers utilize, the manner in which they shape the context of the child and, ultimately, with the way the child develops (Keller & Kartner, 2013; Super & Harkness, 2002; Nsamenang, 2015; Weisner, 2002, Worthman, 2016).

Most of the curent theoretical models that focus on parental beliefs as an important factor associated with cross-cultural variations in development also postulate that these beliefs are influenced by the cultural models (i.e., explicit beliefs like values or self-construals that are shared by the members of a community) that characterize caregivers from a certain community (ex., Greenfield, 2018; Keller, 2022; Mone & Benga, 2022). In the following, we will present one of the theoretical frameworks which has guided our own research and which postulates that caregivers' parental beliefs are influenced by their cultural models, namely the Ecocultural Model of Development (Keller &

Kartner, 2013). Subsequently, based on extant theoretical models, current findings, and our own research, we will discuss how these models could be improved by also taking into consideration situational influences and variability in parental cultural models and beliefs, as well as the implicit components of caregivers' cultural models. Moreover, we will discuss methodological approaches for manipulating situational factors that might influence parental cultural models and for assessing implicit components of parental cultural models, respectively, along with potential theoretical and practical benefits associated.

The Ecocultural Model of Development

The Ecocultural Model of Development states that the ecosocial context of individuals (i.e., resources and constraints of the environment in which a community lives and the socioeconomic structure of a population;Keller & Kartner, 2013) influences the child's development directly, as well as indirectly, through its influence on caregivers' cultural models, socialization goals (i.e., objectives that parents set for their children's development; Suizzo, 2007), parental ethnotheories (i.e., beliefs shared by members of a community about children and their development, parenting practices and family functioning, Harkness et al., 2010), and parenting practices. Such indirect influence is achieved through the constraints and opportunities existent in the environment in which the child develops (e.g., the tasks and situations that are available in a community). It is important to emphasize the Ecocultural Model of Development does not assume that the child is a passive recipient of the environmental influences, but that he/she also influences how parents interact with him/her. Moreover, this theoretical framework suggests that children's development further influences how culture evolves (Keller, 2022).

The framework postulates that different cultural models are adaptive in different ecosocial contexts and thus, more prevalent (Keller & Kartner, 2013). In this specific case, as an index of caregivers' cultural model, we focus on caregivers' self-construal. Caregivers' self-construal is a component of their cultural model that is relevant for predicting parental socialization goals, parenting ethnotheories and parenting practices (Corapci et al., 2018; Kagitcibasi, 2017; Kocayörük et al., 2023; Li et al., 2018; Raval et al., 2018; Zhu, 2019). Kagitcibasi (2017) states that there are two dimensions, agency and interpersonal distance, which combine to form four types of self-construals. Agency refers to the degree to which an individual defines himself as functioning autonomously and can vary between autonomy (i.e., defining oneself as functioning on the basis of one's will, purposes and motivations) and heteronomy (i.e., defining oneself as functioning on the basis of external influences, acting as a function of social norms and pressure; Kagitcibasi, 2013). Interpersonal distance refers to the degree to which an

individual sees himself/herself as being distant from others and it can vary between separateness (i.e., a self that is distinct and separate from others) and relatedness (i.e., a self that is connected to others and defined as a function of the relational network in which it is included, Kagitcibasi, 2017). Out of the combination of these two dimensions, we obtain four cultural models: the cultural model of independence (a combination of autonomy and separateness), the cultural model of interdependence (a combination of heteronomy and relatedness), the cultural model of autonomous-relatedness (a combination of autonomy and relatedness), and the cultural model of heteronomous-separateness (a combination of heteronomy and separateness).

As we mentioned before, these cultural models tend to appear more frequently in certain ecosocial contexts. For example, in urban communities from Western societies characterized by market economy, where there is a high level of income and education, where nuclear families are more common and where parents tend to have children at older ages, the independent cultural model is more frequent (Keller & Kartner, 2013). In rural communities characterized by subsistence economy, where there is a low level of income and education, where extended families are more common and where parents tend to have children at younger ages, the interdependent cultural models tends to appear more frequently (Keller & Kartner, 2013). In former Collectivistic societies, exposed to quick social and economic transitions and development, an autonomous-relatedness cultural model tends to appear more frequently (Kagitcibasi, 2017; Mone & Benga, 2018). In regard to the last cultural model, that of heteronomous-separateness, it has been presumed to be more frequent in totalitarian regimes, but its specific manifestation and associated ecosocial context has not been explored theoretically or empirically.

Caregivers' cultural models are assumed to be associated with their socialization goals. For example, mothers with independent cultural models (e.g., mothers from urban communities in Germany, the U.S.A. and Greece) more frequently value socialization goals that focus on autonomy (e.g., self-reliance, self-fulfillment, having a sense of purpose) and separateness (e.g., uniqueness, independence; Keller et al., 2006; Keller, 2018). Parents with interdependent cultural models (e.g., mothers from rural communities in Cameroon or India) tend to more frequently focus on socialization goals that pertain to heteronomy (e.g., obedience, filial piety) and relatedness (e.g., loyalty, harmonious interaction, Keller et al., 2006; Keller, 2018). Parents with autonomous-relatedness cultural models (e.g., mothers from urban communities in Turkey, Romania, Costa Rica) value socialization goals pertaining to both autonomy and relatedness (Keller et al., 2006; Keller, 2018; Mone, Benga, & Susa, 2014).

Caregivers' socialization goals also influence and shape their parental ethnotheories, especially their beliefs regarding optimal parenting practices

(Kankaanpaa et al., 2020; Mone & Benga, 2022; Putnam et al., 2018). More specifically, extant studies suggest that parents tend to value or to consider optimal those parenting practices that are conducive to their socialization goals. For example, caregivers of infants with an interdependent cultural model, which focus on socialization goals pertaining to heteronomy or relatedness, tend to consider as being optimal those parenting practices that can facilitate the attainment of such socialization goals (e.g., body contact, body stimulation, Keller et al, 2006).

The Ecocultural Model of Development also assumes that caregivers' parental ethnotheories are associated with the parental practices they employ, which then influence how the child develops (Keller & Kartner, 2013; Majdandzic et al., 2019).

Limitations of current models

Although the Ecocultural Model of Development is of great value for understanding and guiding research focused on the influence of culture on parental beliefs, there are several limitations which derive from this as well as other similar theoretical frameworks, that explain the influence of culture on parental beliefs through its influence on caregivers' cultural models, defined as a set of stable, shared explicit beliefs.

As a first limitation, it has proved difficult to predict parental beliefs and practices based on parents' cultural models, indexed via their explicitly endorsed values or self-construal (Mone, Ionescu, & Benga, 2014). Leung and Morris (2015) also emphasize that the value approach to culture has been limited in explaining differences between cultures in diverse domains, not just that of parental beliefs and behaviours. This might have been influenced by the fact that most of the conceptualizations and measurement strategies used by extant studies have ignored that the influence of self-construals or internally held values on parents' behaviour might be moderated by situational constraints. This state of affairs might have led to an underestimation of the relationship between these explicit beliefs and parental practices. To further this point, Yamagishi, Hashimoto, and Schug (2008) present a series of studies which suggest that individuals from different cultures have different available strategies to act in different situations, and that the way they behave in a specific situation can be a response to how they construe the situation and how they expect others to react to their behaviour. These studies suggest that individuals' behaviour in certain situations is not a result of their internal preferences/values or cultural models, but of the situational constraints they perceive. This has also been shown to apply to maternal behaviour. As such, mothers of preschoolers who generally would value the promotion of autonomy tend to act in a more controlling fashion when

they are in a situation in which they consider that others assess their performance as caregivers based on the behaviour of their child (Grolnick et al., 2007).

The difficulty in predicting parental beliefs and practices based on caregivers' cultural models might also stem from an exclusive focus on the explicit components of mothers' cultural models. Kitayama et al. (2009) provide results which suggest that the implicit components of individuals' cultural model can better predict their cultural belonging. Moreover, as we will show below, taking into consideration the implicit components of mothers' cultural models, not just the explicit components, can lead to results which point to discrepancies between the two components, also suggesting they might be differentially impacted by the socio-economic context in which the caregivers function (Mone & Benga, 2022).

Secondly, the assumption that such cultural models are shared between members of a community seems to be problematic, because studies have shown, for example regarding cultural values, that there are greater differences within versus between countries (Fischer & Schwarts, 2011). This implies that focusing on cultural models as an explanation for cross-cultural differences in parental beliefs would not be fruitful. However, taking into account situational influences on cultural models can help us move past this apparent difficulty. More specifically, taking into account situational influences on caregivers' cultural models helps us accommodate findings of intercultural differences, but also findings which emphasize intracultural variability (Leung & Morris, 2014). More specifically, models like the Culture as Situated Cognition framework (Oyserman, 2016) postulate that different situations within a culture can prime different types of cultural models or schemas. However, there are differences between cultures regarding the types of situations we are most frequently exposed to and, thus, the cultural model that is chronically activated (Oyserman, 2020). As such, the fact that some studies evidenced intracultural variability in cultural models should not deter us from taking this variable into consideration when trying to predict cross-cultural variations in parental beliefs. However, we should gain a better understanding of the situational mechanisms that influence what type of cultural model is active and the degree to which our cultural model translates into behavior.

Thirdly, and related to the aforementioned limitations, the assumption that parental cultural models are trait-like characteristics is not supported by recent research (Leung & Morris, 2014), which suggests that the cultural models or values guiding individual's behaviour can vary situationally (Osland & Bird, 2002; Lin, Zhang, & Oyserman, 2021). In accordance with this, the Situated Cognition approach (Oyserman, 2017) and the studies which tested its core assumptions, have provided evidence suggesting these cultural models are not

trait-like characteristics of individuals from different cultures. In contrast, it appears that individuals from different cultures have available different cultural models, which can be activated by the characteristics of the situation in which they function.

To address the limitations described above, in the following, we will present two theoretical frameworks which take a situated cognition approach to analysing cultural models. Based on these, we will discuss how we can improve extant theoretical frameworks which focus on the relationship between culture and parental cultural models and beliefs. Moreover, we will present results from existing literature and from our own research suggesting specific conceptual and methodologic ways in which situational factors can be taken into account when analysing the influence of parental cultural models on parental beliefs.

Cultural Task Analysis

The first theoretical framework we introduce is The Cultural Task Analysis model (Kitayama & Imada, 2010). This theoretical framework focuses on the manner in which cultural imperatives or mandates influence the psychological tendencies that develop amongst the members of a culture via the cultural tasks in which they habitually engage.

In this theoretical framework, cultural mandates are viewed as those ideals, goals or purposes that are prioritised and shared in a cultural group. In Individualistic cultures, for example, one would consider autonomy or independence a cultural mandate. In Collectivist cultures, heteronomy or interdependence would be considered a cultural mandate (Kitayama & Imada, 2010; Kitayama et al., 2022).

Cultural tasks refer to culturally sanctioned procedures through which the members of a group can achieve the cultural mandates. For example, in Individualistic cultures, where independence is a cultural mandate, individuals can achieve this mandate through several cultural tasks: expressing unique traits of oneself, self-promotion or pursuing personal endorsed objectives (Kim & Markus, 1999; Oishi & Diener, 2001). In Collectivistic cultures, in which interdependence is a cultural mandate, individuals can reach this mandate through engaging in several cultural tasks: harmoniously interacting with others, self-effacing, and pursuing group sanctioned goals (Kitayama et al., 2009). It is important to mention that this theoretical framework can also account for intracultural variability between individuals. More specifically, although some cultural mandates might be relevant for all individuals from a group, the same cultural mandate can be attained through engaging in diverse cultural tasks or situations. For example, one individual might strive to attain the cultural mandate of independence through engaging in the pursuit of personal goals,

while another individual might focus on self-promotion. This is relevant because, by engaging habitually in different cultural tasks, different automatic psychological tendencies are formed.

The fact that different individuals can attain the cultural mandate through various ways, as a function of the specific situations in which they engage, is also supported by more recent studies. For example, Na et al. (2019) conducted two studies, in which they assessed cultural models and cognitive styles using several measures, with participants from America (N=233) and Japan (N=433; Study 1) and America and Canada (N =485; Study 2), respectively. They found that Americans and Japanese differed on the measured they employed, with Japanese individuals being characterized more by an interdependent cultural model than American participants. Moreover, Japanese individuals tended to process information holistically, focusing on the relationship between stimulus and context, while Americans tended to process information analytically, focusing on a stimulus separately from the context in which it was embedded. However, they found that, across samples, there was a small correlation between measures that purportedly measured the same constructs (i.e., cultural model or cognitive style). Nonetheless, there was intraindividual stability across time regarding a persons' standing on the diverse measures of the cultural models and the cognitive styles. Authors interpreted these results as reflecting the existence of specific behavioral profiles, with different individuals from the same culture manifesting cultural models and cognitive processing styles in different ways and situations.

The final component on which the Cultural Task Analysis framework focuses on, namely the psychological tendencies of individuals, refers to the predispositions that individuals have regarding behaviour, emotions, and cognitive processing (Kitayama & Imada, 2010). The main assumption of Cultural Task Analysis framework is that, by frequently engaging in certain cultural tasks, specific psychological tendencies are formed. When initially engaging in a cultural task, one has to invest effort. However, after repeated and systematic engagement in that cultural task, the procedure required to complete it becomes automatized and completing the task no longer requires effort (Kitayama et al., 2009). As such, habitual engagement in a cultural task leads to the formation of a series of automatic psychological tendencies that were of use in completing that cultural task. For example, frequently engaging in cultural tasks that are focused on achieving the cultural mandate of independence (ex., self-promotion or following a personal goal) requires that one uses specific cognitive processes. More specifically, one has to direct his/her attention to stimuli which are relevant for personal goals, to make decontextualized decisions or to separates oneself from the social context in which one functions. As such, engaging in

these cultural tasks leads to the development of specific automatic psychological tendencies like attributing others' behaviour to internal characteristics (Kitayama et al., 2009) or focusing attention on an object, separate from the context in which it appears (Masuda & Nisbett, 2001). Other automatic psychological tendencies which might form are the experience of disengaging emotions, like pride (Kitayama et al., 2006) or the perception of the self as consistent, regardless of context (Suh, 2002). By frequently engaging in cultural tasks focused on attaining the cultural mandate of interdependence (ex., harmoniously interacting with others or following groups goals), one develops implicit psychological tendencies that are implicated in the successful completion of these tasks. More precisely, we are referring to tendencies such as: focusing on the relationship between stimuli and the context in which they appear; experiencing socially engaging emotions (e.g. sadness, shame); attributing others' behaviour to context (Kitayama et al., 2009).

These implicit tendencies can be conceptualized as being the implicit component of caregivers' cultural model and they have been shown to predict cultural belonging better than explicit indices (Kitayama et al., 2009; Mone & Benga, 2022).

In the following, we will present a study that was conducted in our laboratory, and we will use it as a starting point for illustrating the heuristic and pragmatic benefits that might derive from modifying our current theoretical frameworks which focus on the influence of culture on development, to also take into consideration these implicit indices of mothers' cultural models.

In the aformentioned study (N=141, Mone & Benga, 2022) we recruited mothers from different ecosocial contexts from Romania. We investigated if mothers's explicit (i.e., values related to autonomy and heteronomy) and implicit (i.e., attributional style) components of agency mediated the relationship between their educational level and socialization goals. Firstly, our results suggested that only the implicit component of agency, a dimension of mothers' cultural model, was related with their socialization goals. More specifically, the more they internally attributed others' behaviour (i.e., an implicit index of the autonomy component of caregivers' cultural model), the less they valued socialization goals related to obedience and tradition. This finding supports previous results (Kitayama et al., 2009), which suggested that implicit components of cultural models can be more helpful than explicit components in differentiating between individuals with different cultural models/individuals from different cultures.

Secondly, our results showed that only the implicit component of agency mediated the relationship between mothers' educational level and their socialization goals. More specifically the results showed that the higher the mothers' educational level, the more they attributed others' behaviour internally and the less they

valued heteronomous socialization goals. The fact that only the implicit component of the cultural model mediated the relationship between educational level and socialization goals was interpreted in light of the fact that Romania is a culture which was exposed to significant social and economic transitions (Mone & Benga, 2018). To better understand why this is relevant, we emphasize the evidence suggesting that in case of such cultures, cultural practices change faster than cultural values. This is important because, as we previously stated, these implicit components of individuals' cultural models are influenced by the habitual engagement in cultural tasks, during which individuals engage in culturally sanctioned practices (Kitayama et al., 2023). As such, if in the case of a society in transition, cultural practices change faster than cultural values, it is to be expected that there will be a faster shift in the case of the implicit components of mothers' cultural models and that this shift will be more aligned with the current socioeconomic context in which the mothers function.

This is a hypothesis that must be explored in future studies, focused on longitudinally testing the effect of these transitions on mothers' cultural models, with an emphasis on both the explicit and implicit components. However, it is important to point out that other studies have obtained results which are congruent with this hypothesis. For example, Thein-Lemelson (2015) showed that, in the case of parents from Burma/Myanmar, a country exposed to important social and economic transitions, there was a discrepancy between parents' explicit socialization goals and their behaviours. For example, some parents explicitly stated that they value obedience in their children. However, they enrolled their children in private schools and promoted the autonomous behaviour of children at home.

Our results suggest that taking into consideration both the explicit and the implicit indices of mothers' cultural models would help us to better understand the way culture influences parental beliefs, practices and, ultimately, human development. In our study, if we hadn't included the implicit component of mothers' cultural models, we might have concluded that their cultural model is not associated with their parental beliefs. However, possibly because of the social and economic shifts Romania has been exposed to, a discrepancy between the explicit and implicit components of caregivers' cultural models emerged and, at least in in this case, the implicit component was the one related to mothers' socialization goals. It is important for future research to test how the explicit and implicit components interact in predicting parental beliefs as well as how different ecosocial contexts are associated with specific explicit and implicit components.

Taking into consideration both the implicit and explicit components also offers us a theoretical and methodological tool to develop a more nuanced understanding of the impact of cultural transitions on mothers' cultural models,

parental beliefs and parental practices, by conceptualizing and quantifying the differential effects of transitions on explicit and implicit components of parents' cultural model.

In addition, including the implicit components of mothers' cultural models in our theoretical framework expands the heuristic value of current theoretical approaches. First, it offers an opportunity to explain discrepant results observed in the literature, such as those of Thein-Lemelson (2015). Thus, to better understand the sources of these discrepancies, we might investigate if there are incongruities between the explicit component of caregivers' cultural model, the activities in which individuals engage and the implicit tendencies they promote. In addition, we could investigate how the explicit and implicit components interact in predicting parental beliefs and practices. In this context, it would also be interesting and important to investigate when, and if, frequent engagement in cultural tasks that are different from our explicitly stated values leads to an eventual alignment of the explicit and implicit components of our cultural model.

Focusing on both the implicit and explicit components of caregivers' cultural models also helps to clarify some of the assumptions of the current theoretical frameworks which focus on the influence of culture on human development. For example, Greenfield (2018) states that individuals are differentially impacted by cultural change. Taking into consideration both the implicit and explicit components of caregivers' cultural model would give us a more nuanced understanding of the impact of the differential impact of cultural change, by allowing us to explore the impact of cultural change on both components, and to gauge the consequences that this impact has on parental beliefs, practices, and human development.

Culture as Situated Cognition

The second theoretical framework that we would like to present is the Culture as Situated Cognition model (Wang, Atari, & Oyserman, 2021; Yan & Oyserman, 2018). This framework stipulates that culture arises from the situations with which individuals are habitually confronted in their environment. These situations provide the specific opportunities and constraints which shape the way individuals from a culture behave, think and feel (Arieli & Sagiv, 2018).

This theoretical framework assumes that, in each culture, there are both situations in which there is a need for group cohesion and coordination and situations in which individual welfare and autonomy has to be preserved and achieved (Wang et al., 2021). As such, in each culture there are both situations in which one needs to belong, interact harmoniously with others and adjust as a function of group directives, and situations in which one needs to focus on and act as a function of individual preferences, needs and goals. As a direct result of

this, in every culture there are situations which lead to the formation of an interdependent cultural model and situations which lead to the formation of an independent cultural model (Oyserman, 2017). In support of these claims, there are studies which suggest that interdependent and independent cultural models can be primed in both Individualistic and Collectivistic cultures (e.g., Arieli & Sagiv, 2018; Oyserman & Lee, 2008). Hence, both these types of cultural models, and the constituent dimensions (autonomy and separateness in the case of the independent model and heteronomy and relatedness in the case of the interdependent model), are available in every cultural community and can be primed situationally. What differs between communities is the frequency with which individuals encounter situations which prime a certain cultural model, or in other words, the cultural model that is chronically activated (Oyserman, 2017). Based on these assumptions of the Culture as Situated Cognition, an important avenue for future research is to employ priming tasks in order to empirically test the influence of caregivers' cultural models on their parental beliefs and practices. This would allow us to empirically test the causal relationship between cultural model, parental beliefs and practices that is stipulated by the Ecocultural Model of Human Development (Keller & Kartner, 2013).

Another important assumption of the Culture as Situated Cognition framework (Oyserman, 2017) is that it is important to take into consideration that, although different cultural models are available in every culture, it is important to emphasize that the structure and content of these models (e.g., how autonomy or relatedness is conceptualized in different cultures) might differ between cultures and the everyday cues that prime them might also vary (Ma-Kellams, 2021; Oyserman, 2017). As such, we must investigate the structure of caregivers' cultural models and investigate the situational cues that are associated with the activation of different mindsets.

There are also studies which suggest that characteristics of the situation can not only prime different cultural mindsets but also influence the degree to which these cultural mindsets are translated into action. For example, Grolnick (2002) emphasizes that mothers tend to use more controlling practices, rather than autonomy supporting ones, when under stress or time pressure, even if they have an independent cultural model. In addition, as we mentioned before, when mothers' self-worth is contingent on social evaluation (e.g., in situations in which they believe that the performance of their children would reflect on their performance as parents; Grolnick et al., 2007) they also tend to be more controlling, even if in general they value autonomous socialization goals.

Based on the theoretical framework and findings discussed above, we think it is important to refine the way we conceptualize cultural models to take into consideration that they are not stable traits, but that individuals from different cultures have available different cultural models that can be situationally

primed. Another important implication of the Culture as Situated Cognition approach is that we must understand how caregivers' cultural mindsets are structured (e.g., what is their specific conceptualization of autonomy or heteronomy, or of relatedness and separateness). In addition, based on the previous discussion, we also have to take into consideration that characteristics of the situation not only influence what that type of cultural model is activated but also the degree to which the cultural model translates into action.

Main conclusion regarding the influence of situations on cultural models and parental beliefs

In the following, we present four main ways regarding how we could modify extant conceptualizations of cultural models based on the theoretical frameworks and findings discussed before.

First, it is important to take into consideration the fact that cultural models are not trait-like stable characteristics, but that mothers from each culture have available different cultural models, that can be situationally primed. Modifying our conceptualization of cultural models in this manner offers us the possibility to bring culture in the laboratory and to test the effect of mothers' activated cultural models on diverse outcomes. Our task is to identify what is the structure of mothers' cultural models (e.g., how independence is conceptualised) and what types of situations can prime different cultural models. To achieve the latter, we must also identify how mothers construe different situations, that is, which situations they most frequently manifest autonomy, heteronomy, relatedness or separateness.

Secondly, we must take into consideration that situational characteristics not only prime different cultural models, but they might also influence the degree to which a cultural model translates into action. As we mentioned before, time pressure, stress and situations in which mothers' self-worth is contingent on social evaluation lead to a higher degree of focusing on controlling parenting practices (Grolnick, 2002; Grolnick et al., 2007). In addition, the norms that we perceive as governing different situations also influence the manner in which cultural models translate into action. To better understand the influence of perceived norms, we can also draw upon the institutional approach to cultural differences (Yamaghishi, Hashimoto, & Schug, 2008). This theoretical framework states that cultural differences in behaviour are frequently not the result of differences in individually endorsed values like independence or obedience, but the result of perceived norms or beliefs regarding other individuals' response to our behaviour (Yamaghishi & Hashimoto, 2016). As such, for example, in a Collectivistic culture, a mother might socialize her child not to offend others or not to express disengaging emotions; yet, this would be not because of a personal preference for relational

harmony (although one might have such a preference), but because the mother perceives that others having certain norms that go against these behaviours. As such, the mothers' socialization strategy would be geared towards avoiding a penalty from others, being ostracized, and having ones' access to resources being cut off. This framework might also explain the results of Thein-Lemelson (2015), which suggested that in Burma/Myanmar, there is a discrepancy between parents' explicit values or socialization goals and their behaviours. More precisely, although parents personally value obedience and interdependence, they might socialize children towards autonomy, because they perceive that this is the norm in their cultural group which was exposed to social and economic transitions.

Thirdly, we must take into consideration that cultural models have both implicit and explicit components (Mone & Benga, 2022). As we have shown before, it is important to take into consideration both components, because this gives us a more nuanced understanding of the relationship between ecosocial context, caregivers' cultural models and parental beliefs. Regarding the implicit components, an important future research avenue would be to investigate what cultural mandates caregivers think are important, what types of situations they engage in and what type of implicit psychological tendencies these situations promote. We might also focus on identifying the situations in which they encourage their children to engage in, as a function of their own cultural mandates, and how they scaffold specific procedures for behaving in those situations.

Fourthly, to better understand how cultural models are formed and how parents socialize children, we must investigate how parents promote engagement in different types of situations, how they structure the situations to which they expose their children to, how they scaffold the manner in which children construe different situations and how they socialize the procedures needed to solve different cultural tasks. We must also investigate if there are different pathways for the socialization of explicit and implicit cultural models.

To conclude, we consider that modifying current theoretical frameworks that focus on the influence of culture on parental beliefs, to include the influence of situational factors on cultural models and the implicit components of these cultural models, can help improve their heuristic value, generate new possibilities and offer potential solutions for existent conundrums.

Funding details

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Students' cognitive load in online education, under the lens of learning theories

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ABSTRACT. There is a link between learning theories and online education in the sense that the use of certain e-Tools available in educational platforms could be biased by the epistemological beliefs of the teachers. The complexity of the educational message, in relation to the biased e-Tools selection for the learning task, together with the information processing that derives from the learning activity contributes to the intrinsic cognitive load. In order to optimize this cognitive load that can reach a high and an undesirable level for learning, this article aims to bridge online learning with the main theories of learning and cognitive load theory. The triangulation of these data, based on several sources from the specialized literature, provides an extended picture of the dominant cognitive processes determined by the tools used in the online learning space. This article could represent a source for the theoretical foundation of an online learning instructional design and for placing the online education closer to methodology, rather than technology.

Keywords: online learning, instructional design, cognitive load, information processing, learning theories

ZUSAMMENFASUNG. Es besteht eine Verbindung zwischen Lerntheorien und Online-Bildung in dem Sinne, dass die Verwendung bestimmter auf Bildungsplattformen verfügbarer E-Tools durch die erkenntnistheoretischen Überzeugungen der Lehrer verzerrt sein könnte. Die Komplexität der sich daraus ergebenden pädagogischen Botschaft in Bezug auf die voreingenommene E-Tools-Auswahl trägt zusammen mit der Informationsverarbeitung, die sich aus der Lernaktivität ergibt und in direktem Zusammenhang mit den Lernzielen steht, zur intrinsischen kognitiven Belastung bei. Um diese kognitive Belastung zu

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optimieren, die ein hohes und für das Lernen unerwünschtes Niveau erreichen kann, zielt der Beitrag darauf ab, Online-Lernen mit Theorien zum Lernen und zur kognitiven Belastung zu verbinden. Die Triangulation dieser Daten, die aus verschiedenen Quellen der Fachliteratur entnommen wurden, liefert ein erweitertes Bild der vorherrschenden, nicht erschöpfenden kognitiven Prozesse, die durch die im Online-Lernraum verwendeten Tools bestimmt werden. Die neue Ausrichtung des Beitrags kann eine Inspirationsquelle für die Gestaltung von Lehrverfahren für das Online-Lernen sein, wobei die Online-Ausbildung eher mit der Methodik als mit der Technologie in Verbindung gebracht wird.

Schlüsselworte: Online-Lernen, Unterrichtsdesign, kognitive Belastung, Informationsverarbeitung, Lerntheorien

Introduction

Nowadays, the education process replaces its 2D educational resources with the 3D ones. For example, a geography lesson uses or will use virtual reality to present mountains, computer-based media being more meaningful than illustrating a landscape of the same mountains, which represents an operational connection of the taught content with the practical aspects that can derive from it. Not only in this case, but in any domain, the use of digital technologies promises to be a contributor to the construction of knowledge but does not provide assurances that this will be fulfilled. It is not enough for a school to be equipped with digital technologies and to emphasize technical aspects, so that teaching increases in quality and learning becomes faster and more efficient (Glava, 2009; Koper 2014).

However, when such achievements are realized, the teaching-learning process has been improved, and the introduction of digital technologies in the didactic activity comes with this premise. The facilitation of communication through the development of the Internet and the possibilities of sharing information, has led to more frequent and varied possibilities of interaction than in any other period of humanity (Woo & Reeves, 2007). Online education finds itself in this framework where it is said that the interactions are not necessarily better, but they are more frequent, but in order to be as good or better, something more is needed.

Conducting education online is not enough to benefit from the opportunities offered by the use of technologies, which is why the usual teaching practices need to be upgraded. There is a consensus among researchers, professionals, teachers that the approach of introducing technologies in the teaching act, for

example to support creativity, both in thinking and in practice, is not an approach that is limited to technical aspects. The development of digital technologies is an opportunity for the development of innovative pedagogical practices, which are adopted in the didactic activity, in a student-centred teaching approach and which is reflected in the development of transversal skills (Kempylis & Berki, 2014). In essence, a logistics of material resources adapted to online education is not enough, but this education must be delivered in the parameters that nurture the highest thinking skills so that the didactic activity leads to effective learning, but which also takes into account of the cognitive load that the workload entails, given the fact that in modern life it is talked about "burnout", and in study, about "academic fatigue".

In this sense, the present article gives a three-dimensional perspective for the didactic process, on three dimensions applied in pedagogy: online education – cognitive load – learning theories. The conjunction of learning theories with online education through the lens of thinking skills involved in this intersection is a revised version of the two-dimensional conjunction made in 2021 (Andronache & Bănuț, 2021), which tries to provide teachers with leverage to increase the quality of education delivered digitally. In the first form, the use of digital technologies in didactic methodology had two dimensions (online education and learning theories), to which the third dimension is added in this article, the cognitive load derived from the work load, because a wider and more detailed range of learning determinants supports instructional design work and its implementation in the classroom. "We need to invent Digital Native methodologies for all subjects, at all levels" (Prensky, 2001), and the bridging of learning theories with online school supports this statement, considering certain limits of students, technology and methodology. In this sense, the purpose of this paper is to relate the tools and the possibilities that the Learning Management System (LMS) offers, with the type of cognitive effort that the use of those tools implies, along with the instructional implications that derive from this, through the perspective of the most frequently employed theories of learning.

The online educational process, between methodology and technology

Learning theories determine epistemological beliefs, and teachers embrace some of them. Depending on the epistemological beliefs someone enters the classroom with, learning and learning experiences will be influenced. This way, the adoption of a learning theory modifies, to some extent, educational opportunities and experiences, and influences in this regard are both the way the courses are organized, whether they are face-to-face or online, as well as the cognitive load that must be to be taken up by the student in the resulting

learning framework. The present paper brings these three dimensions into harmony, to evaluate possible effects of online learning on cognitive processes.

The specialized literature highlights various explanations regarding the realization of the learning process, explanations which are synthesized in various theories of learning. Because learning is an extremely complex process and can be studied from various points of view: pedagogical, psychological, neurological, sociological, philosophical, or even by reference to technology, since it is stated that educational materials incorporating new media are superior to traditional presentations (Wong et al., 2007), it is obvious that the explanatory theories of this process can also be multiple.

Analysing the specialized, psychological, and pedagogical literature, we can find that the most consistent theories from a scientific point of view and that offer the strongest explanatory models on learning are the behaviourist theory, the cognitivist theory, the constructivist theory and the social-constructivist theory. Although these theories of learning offer diverse and complex explanatory perspectives, behaviourism, without mentioning its exponents, even if recognizing its significant contributions in psychology, has been criticized for various limits, the most important of them being that it sees learning only through the lens of observable and measurable behaviours, hence most studies had animals as subjects (Mayer, 2019), without focusing on explaining the intrinsic experiences of the individual. For these reasons, in the present paper, increased attention will be paid only to cognitivism, constructivism and social constructivism, aiming to highlight how they can lead to a certain cognitive load in a framework for conducting online courses. The resulting interrelationships could be capitalized in the online education process, by adapting online training practices to solutions advanced by learning theories, to develop instructional procedures that do not put pressure on limited human working memory capacities, in terms of information processing (Sweller, 2011).

Online learning

Because the paper represents an approach from the perspective of instructional design specific to online learning, the role of digital technologies in this process will be discussed, especially since the number of university-level online courses is on a strong upward trend, and universities are registering requests in offering new such courses where students learn online (Dao, 2020).

Online learning is defined as instruction delivered and facilitated through digital devices (Mayer, 2019) and which determines multimedia learning environments using computer, mobile, virtual reality (Mutlu-Bayraktar et al., 2019), along with internet connection (Mbati, 2012), thus we can say about online

learning that it is learning that takes place in a technology-rich environment. Considering that today's children, teenagers and young adults have grown up with digital technologies, there is a common characteristic in their development for which online education is now considered a necessity (Mbati, 2012). As this form of education is expected to continue to grow, the theoretical and practical aspects of online teaching will continue to be important for the future, not just for now (Mayer, 2019).

Through an analogy between online learning and the one carried out in a traditional classroom, in the school space, which is based on arguments derived from research carried out in the field, it is stated that online learning provides more support for conceptual learning and less for procedural learning (Parker & Gemino, 2001, as cited by Swan, 2005). In this regard, the following section is dedicated to some aspects that have the potential to facilitate learning carried out in the online environment, to achieve the same learning objectives that could be established for educational processes carried out traditionally.

The theoretical relationship between learning objectives and cognitive load, on the way of multimedia learning

Cognitive Load Theory (CLT) is a framework in educational psychology and instructional design that explores how the cognitive load imposed on a learner's working memory affects their ability to learn and retain new information. The theory was first developed by John Sweller in the late 1980s and since then it has been widely studied and applied in various educational contexts.

In an online learning environment, the technologies and the teacher have a common role, as a facilitator of learning (Huang, 2002), but both elements of the didactic process can bring an unwanted cognitive load in the learning process, described by Cognitive Load Theory (Sweller, 2011; Sweller, 2020). The teaching practices that can lead to such an effect must be known so that, indeed, both digital technologies and the instructor have a role of facilitator in learning.

The cognitive load is the amount of information that the educational message contains, and that the working memory must process before sending it to long-term memory storage (Sweller, 2011; Sweller, 2020). The theory addresses the instructional process by the fact that it aims for facilitating the absorption of information from the environment, under the conditions of a working memory limited in capacity and duration (Mayer, 2019; Mutlu-Bayraktar et al., 2019; Sweller, 2020). The efficiency of learning being conditioned by these limits, the instructional design involves filtering the information to be transmitted, by identifying and eliminating those that are not necessary, so that the acquisition of new knowledge is facilitated by a reduction of the working memory load (Sweller, 2020). So, the main idea behind Cognitive Load Theory is that working

memory, the cognitive system responsible for temporarily holding and processing information, has limited capacity. When learners are exposed to instructional materials or tasks that exceed their working memory capacity, it can lead to cognitive overload and hinder effective learning. To optimize learning outcomes, instructional designers and educators aim to manage and minimize cognitive load. The Cognitive Load Theory emphasizes the importance of building mental schemes or mental structures that help learners organize and process information efficiently. As learners become more familiar with a subject, they can automate certain cognitive processes, reducing the cognitive load associated with basic tasks and freeing up cognitive resources for more complex learning (Mayer, & Moreno, 2003; Kirschner, Sweller, & Clark, 2006).

In the teaching-learning process, a series of information interferes, resulting in an interactivity of the elements that is reflected in the total cognitive load perceived in learning and which is presented to be of three types: extraneous cognitive load, intrinsic cognitive load, and germane cognitive load (Sweller, 2020). The biggest load comes from extraneous cognitive load (Sweller, 2020), determined by the teaching practice and the way the course topic is presented, with reference to the information the student has to process and which does not support the learning objectives (Dao, 2020; Lewis, 2016; Mayer, 2019; Sweller, 2020), the mentioned authors and the specialized literature discussing this aspect quite a lot, trying to identify effects of excessive presentations. The intention of this paper is to discuss another side of the cognitive load originating from the didactic process, less debated, namely intrinsic cognitive load. This type of cognitive load is determined by the complexity reached by the didactic materials, and which involuntarily increases the informational volume that subsumes the learning objectives. This is the inherent complexity of the material being learned and depends on the nature of the content (Dao, 2020; Mayer, 2019; Sweller, 2020).

Learning is a complex process that involves various types of information processing: psychomotor (written), visual (reading), auditory (spoken), and this information is not only taken through various sensory channels, but also processed differently (Lehmann & Seufert, 2018). The emergence and development of digital technologies greatly animated the transmission of this information, providing the context for the development of the cognitive theory of multimedia learning (Mayer, 2019), which aims for improving teaching and learning in information environments that stimulate at least two of the mentioned sensory channels (Mutlu-Bayraktar et al., 2019). The online education can be enrolled into this framework.

In the context of multimedia learning and the presence of graphic and text elements, it is argued that learning is achieved better if the narrative presentation of the text elements is used, at the expense of its visual exposure, because otherwise both elements should be exposed to the same sensory

memory, the eyes (Mayer, 2019). When this interference is avoided at the level of sensory channels, from the perspective of cognitive load theory, it translates into a modality effect, with effects on working memory, the information fitting better within its limits (Sweller, 2020). Therefore, in online education, the way the content is presented is very important. To minimize extraneous cognitive load, instructional materials should be organized, clearly, and easy to navigate. Information should be chunked into manageable segments, and multimedia elements (videos, images etc.) should be used judiciously to enhance understanding without overloading students. (Kalyuga, Ayres, Chandler, & Sweller, 2003; Sweller, Kirschner, & Clark, 2007)

In direct relation to the specificities of working memory, it is stated that auditory processing leads to better understanding, and visual processing (reading) to greater attention to details (Lehmann & Seufert, 2018), which favours the analysis and evaluation of the materials presented, and these are learning objectives within the revised version of Bloom's Taxonomy (Krathwohl, 2002). In this revised version, on the dimension of cognitive processes, six categories are described, in the following hierarchy: remember, understand, apply, analyse, evaluate, and create. The belief behind these categories is that they differ in complexity, with the hierarchy starting from the least complex, remembering and understanding requiring less cognitive activity, and gradually moving towards more and more complex levels (Krathwohl, 2002; Jensen et al., 2019).

Therefore, cognitive involvement in tasks aimed at different educational objectives also means different cognitive activity and even if the presentation of multimedia materials approaches the sphere of extraneous cognitive load, when the information depends on the complexity of the materials created and is closely related with the educational objectives, its volume fits better into the intrinsic cognitive load category (Mayer, 2019; Sweller, 2020). Online learning abounds in multimedia materials that transform cognitive load into a permanent variable, which is why the need for a new taxonomy created at the border between Bloom's Taxonomy cognitive skills and cognitive load has been suggested (Philips et al., 2019). There have even been attempts to intrinsically reduce cognitive load through reporting and using the levels of Bloom's taxonomy (Dao, 2020) in which the positive aspects resulting from the research were presented and discussed.

Thus, the effort made to achieve different educational objectives can present different cognitive loads, and the educational process can be directed towards different educational objectives depending on the epistemological beliefs, derived from various learning theories, with which the teacher enters the classroom. Because "the ultimate goal of all teachers should be to facilitate the use of computers and computing technologies as mind tools (cognitive tools) to accompany thinking, reasoning, creating, learning, and inventing" (Hamza et al., 2000, p. 73), and online learning cannot be achieved without digital

technologies, any effort to reduce unnecessary cognitive load means an opportunity to maximize learning. Since the approach and the matrix of the work also include learning theories, we will refer to them in the following.

Implications of cognitive theory in online learning

Looking to investigate the importance of cognitive processes and their consequences on learning behaviours, cognitivism aims a better correspondence between them. Therefore, the research of the representatives of the cognitivist current, such as Bruner (1966), Sternberg (1984), Piaget (2008) etc. argue that learning occurs through the direct involvement of the learner, being the result of the individual's attempts to *make sense of the world* (Reed & Bergemann, 1992). In this sense, the learner processes the stimuli (data, information) and creates mental representations, being an active agent in the learning process by trying to consciously process and classify the flow of information from the external environment (Fontana, 1981), adding information to memory, most studies carried out in the field of cognitive learning theory being based on remembering processes (Mayer, 2019).

Starting from these basic assumptions of cognitivism, in the case of online education, the relevant teaching-learning activities are those that focus on the organization of information in such a way that it results in an efficient processing of it. Thus, in an online learning context where an LMS is used, the teacher will focus on organizing the instructional-educational contents so that the students operate with them and assign meanings to them (Andronache & Bănuț, 2021).

From a pragmatic point of view, in order to improve learning based on cognitive principles, in online education, the teacher can pay more attention to the following e-Didactic actions:

- Constant creation of tasks/ assignments respecting instructional design concepts, such as gradually increasing their complexity and making sense of the addressed content (Wilson & Cole, 1991).
- The use of multimedia messages of educational platforms that allow the recording of systematic progress in learning, from simple to complex (Mutlu-Bayraktar et al., 2019; Wilson & Cole, 1991), these tools that provide a sense of progress, imprinting gamification features on the teaching process.
- Designing stages of learning assessment by carrying out quizzes, retention and transfer tests, tests with automatic scoring, to evaluate results of both rote and meaningful learning (Mayer, 2019; Mutlu-Bayraktar et al., 2019)

- Providing the possibility to see the results in a general catalogue, leading to self-reflective processes, to counterbalance those situations when it is supplemented by constant feedback (Wilson & Cole, 1991), such as assignments feedback.
- Organization of the presentation of instructional-educational content and other types of documents, considering the organization of words and images, as this will lead to the organization of mental representations (Mayer, 2019).
- The design of questionnaires, pools, surveys to take feedback from the students and thus obtain useful data in assessing the cognitive load on the instructional-educational process carried out (Mutlu-Bayraktar et al., 2019).

Therefore, a cognitivist approach in the online didactic process uses the premises of a learning focused on the involvement of the entire arsenal of cognitive mechanisms, which in fact determines a conscious learning and an educational act with meaning and significance for the student, in which the probability that the students will escape from the task, "hidden" behind the monitor, decreases more and more (Andronache & Bănuț, 2021).

Implications of constructivist theory in online learning

Starting from cognitivist principles and the research of authors such as Piaget (1970, 1973), Flavell (1992) or Sternberg, Wagner and Okagaki (1993) etc. and marking a firm opposition to explaining cognition by associating the functioning of the brain with that of a commercial computer (Searle, 1990), constructivism, seen from a pedagogical perspective, claims that effective learning is achieved through the systemic relation of new acquisitions with previous ones. From a constructivist point of view, it is the learner who actively forms his representations in the brain (Mayer, 2019), by formulating hypotheses, confronting misconceptions, constantly calling on previous experience and determining discrepancies between what he knows and what he discovers through direct exploration of the environment (McLeod, 2018), thus developing new knowledge structures. So, in a synthetic formulation, it can be stated that, in fact, the more we know, the more we can learn, and knowledge in this sense becomes an instrument of experience, because it does not aim to produce only a mental copy of reality, but contributes more notably to adaptation (Piaget, 1967, as cited by Von Glasersfeld, 1985), learning being treated more heuristically.

Considering the basic principles of constructivism, in the online educational process, learning situations must be structured in such a way as to take into account the particularities of the students and give them the opportunity

to go through the contents posted by the teacher at their own pace and according to the own organization of the study time (Andronache & Bănuț, 2021), instruction subjecting itself to problem-solving contexts (Wilson & Cole, 1991). This aspect is, in fact, the major advantage of asynchronous didactic activities, which ensures flexibility in learning, increases students' ability to reflect and develops their information processing skills (Hrastinski, 2008).

In the online implementation of instructional procedures based on constructivist theory, the teacher can use e-Didactic actions such as:

- Providing students with less structured content/data, in a raw version, which will bring the opportunity to interact with them, by editing documents or other types of media (Green & Gredler, 2002).
- Providing the opportunity for students to organize their learning time independently by making available some facilities of educational platforms, such as electronic calendars, because well-planned and well-scheduled activities are determining factors in increasing the success rate in learning (Toraman & Demir, 2016).
- Rigorous organization and storage, in the cloud, on specific topics, of instructional-educational content for each educational discipline, but also the possibility of transferring information from possible sources available in real life to one's own person (Huang, 2002).
- Predefining learning tasks in which the student can act without support from the teacher, using the assignment options of various educational platforms (Green & Gredler, 2002; Swan, 2005).
- Constantly conducting test and quizzes to provide, from the students' perspective, opportunities to confront misconceptions (Swan, 2005), and from the teacher's perspective to play the role of facilitator in learning (Amineh & Asl, 2015; Doolittle & Hicks, 2003), monitoring learning and identifying the current level of acquisitions to facilitate the development of new ones.
- Alternation of the instructional-educational process carried out synchronously with that carried out asynchronously, monitoring progress and thus promoting autonomy in learning (Huang, 2002), in a process of progressive reorganization of thought processes, in the spirit of the constructivist theory of cognitive development because of biological maturation and the experience of exploring the environment (McLeod, 2018).

In conclusion, the valorisation of the constructivist theory in the online teaching-learning process represents a scientifically based approach, with multiple training implications, from the promotion of an integrative type of learning to the development of transversal skills, such as the autonomy of learning (Andronache & Bănuț, 2021). With these underlying reasons, there are

opinions that consider it the most relevant theory for academic learning (Mayer, 2019), some states taking this approach as a central curricular benchmark, such as Turkey where, starting with 2005, it has been adopted at national level (Durmuş, 2016; Toraman & Demir, 2016).

Implications of social constructivist theory in online learning

Having researchers like Bandura (1986) or Vîgotsky (1978) as representatives, whose studies are based on essential principles of constructivism, social constructivism aims at demonstrating that the learning process is fundamentally supported by the social nature of the human psyche. Therefore, the social constructivist approach emphasizes the importance of the social environment in which learning occurs and the importance of the interaction between individuals and between the individual and the environment. So, a first important element in promoting learning, in the social constructivist view, is represented by social interactions (Swan, 2005), the construction of knowledge being related to the circumstances, which determine a learning through observation and modelling. A second important element is related to the contributions of L.S. Vygotsky, who, through the *theory of the zone of proximal development*, emphasizes the importance of the intervention of others, of more experienced people, in favouring the child's learning (Driscoll, 1994; Swan, 2005). Therefore, by interacting with adults or even with other more "experienced" colleagues, the child, starting from what he is already able to do on his own, from what he already knows, can also perform more complex tasks, which exceed his current level of development.

Considering the foundations of the social constructivist theory, in the online teaching-learning process, it remains extremely important to favor cooperative learning, which facilitates student-student and student-teacher interaction. In the digital age, carrying out the online teaching-learning process comes with the premise of valuing the students' informal experiences, the teacher being able to develop authentic learning communities, giving them the chance not only to develop cognitively, but also to develop social and communication skills, to learn to express their own ideas and to listen to others, to learn to give and receive feedback (Andronache & Bănuț, 2021).

From a practical point of view, in order to value the social constructivist paradigm in an online teaching-learning environment, the teacher can undertake e-Didactic actions of the type:

- Initiating videoconferences (Huang, 2002; Mbati, 2012) and encouraging students to keep the webcam open, so that there is also non-verbal communication and to obtain immediate feedback, aspects that improve interaction.

- Proposing learning tasks that recognize the importance of collaboration, using options such as breakout-rooms, which are available in many educational videoconferencing applications (Huang, 2002) or carrying out learning tasks in working groups (Amineh & Asl, 2015; Green & Gredler, 2002).
- Initiating chats or forums on various topics (Huang, 2002; Mbati, 2012; Woo & Reeves, 2007), leading the process towards interactive learning where students can have the opportunity to debate certain learning tasks.
- Using those functions of LMS platforms that can capitalize on students' experiences with social networks, by making frequent posts, publishing announcements and enabling replay options on announcements, so that students can express their point of view, which confirms the social presence in the learning activity (Mbati, 2012).
- Capitalizing on the potential of participation in social interactions, with the aim of developing a dynamic of the student group, through the elaboration of group assignments (Woo & Reeves, 2007), with the provision of permanent and prompt feedback, an important aspect in maintaining student motivation (Mbati, 2012).
- Creating collaborative documents (wiki-type), which students can access and edit jointly and synchronize, resulting in collaborative projects and activities (Huang, 2002; Swan, 2005; Woo & Reeves, 2007) where learning can benefit from the input of more capable peers.

Therefore, the realization of the teaching-learning process in the online environment highlights how the learning behaviour and the environment in which it is acted on are in a systemic and social interaction, which is based on the specificities of socio-constructivist learning.

Triangulating learning theories with cognitive load and online education

Naturally, the suggestions in the previous sub-chapters should not be seen as exhaustive, nor their corroboration with the cognitive load associated with the LMS e-Tools used and which will be treated in this sub-chapter, but they can be capitalized according to individual and age specificities of the students, the specifics of the study discipline, the specifics of the contents or the operational objectives of the lesson. Given the fact that the electronic sub-tools available in online learning are implemented in the form of modules (internal or external), LMSs have a modular design, and they could be applied fragmentary. The present paper comes to help the teaching staff to avoid being seduced by subsets of electronic tools, giving them concrete directions to delimit the instructional design from the modular design of educational platforms, placing online education closer to methodology, rather than to technology.

In this regard, the collection of suggestions above is not a rigid one, because, for example, each of the models of learning can benefit from communication, not just the socio-constructivist one, just as any of the models can benefit from practical explorations, not only the constructivist one. Each model can incorporate concepts from another model, turning into common points such as assessment and feedback, the importance of which is recognized by most learning theories (Swan, 2005). Also, the assignment tasks, from the previous findings, support the implementation of each learning theory, differing by certain accents such as a more pronounced gradual progression of the learning task from simple to complex in the cognitivist perspective (Wilson & Cole, 1991), individual elaboration, without support from the teacher in the constructivist perspective (Green & Gredler, 2002; Swan, 2005) and engaging in group assignments to develop interactions between colleagues in the socio-constructivist perspective (Woo & Reeves, 2007). This type of asynchronous activity offers flexibility in approaching the didactic activity from any perspective of learning theories, flexibility being a common feature in thinking and action between them. Therefore, this paper encourages the interrelationship of e-Didactic actions specific to all learning theories, described above, this way promoting an effective and student-centred online education, and in order to make this desire a more accessible one, the previous actions will be completed by monitoring the cognitive load in online courses for students.

For increasing teaching in quality and learning in efficiency and for being more deeply centred on the student, in addition to examining the impact of the epistemological beliefs which teachers operate with in online teaching environments, we will also refer to the cognitive load which involves the use of some LMS functions. These e-Tools represent an empirical reality of cognitive organizers, in the online environment, for information processing, which together with learning theories and cognitive load, will provide data from several sources, the technique being specific to triangulation (Russek & Weinberg, 1993), to get a broad picture of best practices for teaching online.

Bloom's Taxonomy in the revised version (Krathwohl, 2002), specifies how information is processed through the lens of six cognitive processes, the first of them being remembering. Regarding the teaching-learning process, the appropriate use of images in multimedia materials can have a good impact on memorization, superior to written words (Lewis, 2016). Also, regarding the evaluation process, it is known that it is associated with the lowest cognitive process because, most often, it measures what had been memorized (Ben-Jacob, 2017), and quizzes or tests are such an example (Mutlu-Bayraktar et al., 2019).

To escalate the scale of cognitive processes and aim for understanding the contents of the teaching, teachers could design a series of assignments that require students to deepen the topics covered in class. This way, students could

correct their preliminary understanding from the classroom and evolve in this direction with each feedback received (Swan, 2005). In the same sphere of cognitive processes and in the spirit of social constructivist theory, students are in a process of searching for meanings when they engage in synchronous or asynchronous discussions (Huang, 2002), communication and interactions with peers and adults leading to the development of understanding (Amineh & Asl, 2015; Green & Gredler, 2002; Swan, 2005; Woo & Reeves, 2007). Also, a better understanding of the information can be obtained by using hypermedia solutions (Huang, 2002), collaborative wiki documents providing hyperlinks between various multimedia elements.

The foundations of constructivist theory start from the premise that the application of knowledge supports learning (Green & Gredler, 2002), and this type of actions coincides with engaging in a way of thinking specific to the third stage of cognitive processes (Krathwohl, 2002). In an asynchronous scenario, such as assignments or editing documents, students might apply a formula or definition (Jensen et al., 2019). In a synchronous scenario, for example, one could implement various educational objectives to improve learning, approaches to a certain learning theory, reciprocal teaching method, a game according to a certain scenario, etc.

A concept that emerges from the assumptions of cognitive theory is the sequencing of learning, which leads to analysis tasks and processes (Wilson & Cole, 1991), favouring not only the transition from simple to complex, but also the reverse, from complex to simple, for those students who learn by decomposition, the technique helping to reduce the degree of difficulty for a given task. Thus, for teachers inspired by cognitivist approaches to teaching, the tasks designed for the didactic activity should have a greater correspondence with the analysis and challenge students to such processing of information, such as the use of surveys of opinion that involves an analysis of the perception of a certain phenomenon. But students can also conduct discourse or content analyses (Woo & Reeves, 2007), processes that can be related to speeches from online meetings or content made available to students through cloud storage. Also, in this sphere of cognitive processing comes the ability to reflect, for which tools are needed that challenge students to look back at the effort made and analyse the achieved performance (Wilson & Cole, 1991), and one such tool is the catalogue noting all the activities the student has engaged in or other forms of recording progress in learning.

It is known that in online educational environments, learning is consistently supported by the fact that students can approach the contents at their own pace and as their time allows, the existence of a calendar with the programming of all activities asking them to evaluate their personal schedule in relation to the study program, to achieve the desired learning outcomes. Evaluation is the fifth

dimension of cognitive processes that requires a critical approach (Krathwohl, 2002). So, this type of processing involves critical thinking, which from a socio-constructivist perspective is present in collaborative environments through critical reflections carried out at group level (Huang, 2002; Mbati, 2012; Wilson & Cole, 1991; Woo & Reeves, 2007) or by referring to the communications made through posted announcements, and from a constructivist perspective it is present in independent learning (Amineh & Asl, 2015), students evaluating most of the time the content made available, in the cloud or stored in another form, through the lens of personal criteria and standards: easy/difficult, pleasant/unattractive, relevant/irrelevant, etc.

The highest level of cognitive processing involves the ability to create (Krathwohl, 2002), and people have had to, over time, show off their creativity to solve various problems. Creative thinking and problem solving are connected to the principles of social constructivist theory through collaborative learning (Amineh & Asl, 2015; Mbati, 2012), benefiting from the creative force of the group. Thus, students can be engaged in group work to generate ideas (Woo & Reeves, 2007) and record them in the documents produced.

Considering the principles and characteristics of the analysed learning theories, certain working tools, that various educational platforms may have, find a better correspondence with them, but each of these e-Tools challenges students to different types of information processing and can bring a different degree of cognitive load when interacting with other elements in the learning situations that the teacher generates. From this perspective, the data collected from the specialized literature, triangulated, and analysed before, were synthesized in Table 1, the result obtained representing a possible useful tool for the conception of an online instructional design scientifically based on theories such as those described previously. The triangulation of these data taken from several sources in the specialized literature provides an extended picture of the prevailing cognitive processes regarding the influence of the tools used in the online space, without being seen as exhaustive processes for the given context.

The triangulation of learning theories with cognitive load and online education is the result of a qualitative analysis through which their descriptors were collected, from several sources, and which were correlated in such a way as to support the realization of an instructional design at the border between methodology and technology. Thus, certain tools of the virtual environment can be prioritized not only to frame the didactic act in the epistemological beliefs derived from learning theories which the teaching staff resonates with, but also to anticipate the impact of instructional design on the cognitive effort that appears as a consequence of teaching. The relationships established through this triangulation can contribute to the configuration of a system of effective didactic tools and practices, developed both according to the characteristics and needs of the student

and, why not, those of the teacher and his teaching style, so that the learning is one in depth. By integrating students' prior knowledge and elaborated content with the thought processes, deep processing of information can benefit.

Table 1. Results of qualitative analysis of possible cognitive load factors in online learning at the border between technology and methodology

e-Tools	Cognitive domain	Learning theories
Videoconference	Understanding Apply Analyse	Socio-constructivism
Calendar	Evaluate	Constructivism
Chat/ Forum	Understanding	Socio-constructivism
Announcements	Evaluate	Socio-constructivism
Documents (create & edit)	Apply Create	Cognitivism Constructivism
Assignments	Understanding Apply	Cognitivism Constructivism Socio-constructivism
Tests/ Quizzes	Remembering	Cognitivism Constructivism
Surveys/ Polls	Analyse Evaluate	Cognitivism
Catalogue/ Attendances	Analyse	Cognitivism
Wiki	Understanding Apply Create	Socio-constructivism
Groups	Understanding Apply Evaluate	Socio-constructivism
Course progress	Analyse	Cognitivism Constructivism
Cloud storage with file sharing	Analyse Evaluate	Constructivism

In an e-Learning paradigm where it is not the educational platform used that matters, but the possibilities and options it offers, trends in their use may arise that deviate from instructional design and develops through the lens of the options that digital technologies provide. In the instructional design, behavioural specific learning objectives are specified, which will be organized in relation to the conceptual models forwarded by learning theories and types of learning, systematizing the training conditions to subordinate them (Wilson & Cole, 1991). In this regard, the resulted article, thus, develops the links that online education makes between learning theories and learning objectives, related through a series of e-Tools specific to educational platforms with various types of learning. Thus, the use of these e-Tools can be calibrated to better address certain

sensory dimensions, to process distinct multimedia materials or to be as feasible as possible with certain preferences or thought processes and reduce intrinsic cognitive load, which is in direct relation with the achievement of learning objectives, increasing the probability of their achievement.

Conclusions

Digital technologies provide an environment suitable to learning, but online instruction must be thought, planned, designed, and coordinated by the teacher (Glava, 2009). The triangulation of theories of learning with cognitive load and online education, carried out by this paper, helps precisely in this sense by providing guidelines for how digital technologies should be used with applicability in online education. Any instructional model dedicated to online learning must not only consider the procedural aspects closely related to the functions that a LMS can provide, but also the methodological and conceptual aspects, in order to be functional from educational policies to their implementation. Optimizing the use of e-Tools of online educational platforms to trigger certain cognitive processes, depending on epistemological beliefs that have their source in various learning theories, on the theoretical landmarks centralized by this paper, highlights the application of educational sciences in online learning.

By referring to the basic principles of constructivism, in the online teaching-learning process, learning situations must be structured in such a way as to generate a problematic framework that allows students to build knowledge through their own experimentation. On such a framework as online learning and compared to traditional learning, it is considered that conceptual learning is supported more and procedural learning less (Parker & Gemino, 2001, as cited by Swan, 2005). The Internet of Things (IoT) should bring about a change in this regard. Because IoT grows, the online activities could have a more pronounced socio-cultural component, relating to objects and establishing new forms of communication and collaboration. These objects and information from the internet can be integrated into the supplementary materials that a course makes available to students. The teacher will select the information from the internet and help the students relate to this information and process it, because raw information is not knowledge.

This paper focused on information processing and suggested, from a didactic perspective, useful ways to examine the cognitive processes that underlie the successful completion of tasks in learning situations typical to online education. Educational processes that do not identify cognitive objectives and cognitive efforts that students should make in the interaction with educational stimuli, risk cognitively loading their processing capacity and adversely impacting the achievement of educational objectives.

For a person involved or interested in the design of instructional procedures, the article can be a source of inspiration to design authentic learning activities, but updated to the present time, through the lens of learning that takes place in a technology-rich environment. Online learning activities carried out through various tools of educational platforms and inspired or guided by the principles of certain learning theories, challenge students to various cognitive processes in direct relation to the learning objectives, which, through the interaction with other teaching elements, contribute to total cognitive load. Knowing some ways to optimize information processing in relation to the facilities offered by educational platforms can, on the one hand, support the reduction of the cognitive load necessary to achieve the learning objectives, and on the other hand, support the increase in deep learning.

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Academic Writing Needs of International Psychology PhDs in a South African University

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ABSTRACT. The paper examines the academic writing experience amongst international psychology PhD students at a South African public university. The paper also discusses the challenges of academic writing and the support structures of academic writing. Sixteen (16) international students studying at PhD level in psychology were selected by purposive sampling from a public South African university in KwaZulu-Natal. Drawing from generated by iproposalss, findings suggest that participants experienced academic writing challenges in drafting PhD proposal, supervisor's feedback and plagiarism. Academic writing challenges were aggravated for international PhD students from non-native English-speaking countries. Findings also suggest that university support structures such as academic writing retreats improved the academic writing of participants and exposed them to the rigors of academic writing.

Keywords: academic writings, PhD doctoral program, analytical, research, and communication skills

Introduction

South Africa hosts many international PhD students involved with academic writing as part of their PhD program (Oyewo, 2022). Academic writing plays a significant role in university graduate students' assignments, theses, and dissertations (Liang et al., 2022; Almarwan, 2020). Academic writing comprises a formal tone, research problem, and precise word choice (Arianingtyas, 2018). Academic writing is a crucial component of a PhD doctoral program, which requires

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graduate students to write using a scholarly technique for their thesis and scholarly publications (Arianingtyas, 2018). However, PhD students sometimes need more specialized training in academic writing. Lea and Street (1998) describe three models of student writing to highlight student writing and literacy in academic contexts: study skills, socialization, and academic literacies. The study skills model presupposes proficiency in academic writing based on the language's surface elements, such as grammar, syntax, punctuation, and spelling. The academic socialization model implies that learning the ground norms of a given academic discourse is necessary for academic writers to be successful (Delport, 2018; Lea & Street, 1998). Academic writing intersects academic literacies and links to meaning-making identity and considers student writing as epistemology rather than competence (Rooji, Bruinsma & Jansen, 2019; Lynch, Salikhova & Salikhova, 2018; Oumarou & Uddin, 2017; Lea & Street, 2006). Academic writing is regulated by norms and practices that convey a distinct, imaginative, and expert picture of a specific subject without compromising academic standards (Delport, 2018; Wilkes, Godwin & Gurney, 2015). Writing for academic purposes calls for knowledge of disciplinary rhetoric and the ability to produce coherent, grammatically correct phrases (Delport, 2018). Academic writing also uses a particular "structural code" and adheres to a consistent stylistic approach, such as the Chicago Manual of Style, MLA, America Psychological Association (APA), or Harvard Method of Referencing (Delport, 2018, p.2)

PhD involves students writing a dissertation, which forms the bulk of research work that expands the boundaries of knowledge (Mckenna & Kyser, 2021; Odena & Burgess, 2017; Gumbo, 2017). Academic writing is important for PhD candidates, and it requires effective academic writing to convey their ideas clearly and concisely (Lipson, 2004). It aids in developing critical communication skills necessary for working with colleagues in the academic community, attending conferences, and presenting research findings (Gupta et al., 2022). Consequently, PhD candidates should be proficient in academic genres, such as thesis, journal articles, conference proposals, and presentations during their doctoral studies (Gupta et al., 2022; Schulze & Lemmer, 2017). Many studies documented the difficulties of academic writing among postgraduate students because of the high demand for analytical, research, and communication skills (Inouye & McAlpine, 2023; Rooji, Bruinsma & Jansen, 2019; Delport, 2018; Schulze & Lemmer, 2017). Studies indicate that the process of writing is closely linked to the identity development of PhD students and should not be viewed as merely a skill that needs to be learned but also a sociocultural tool (Gupta et al. 2022; Inouye and McAlpine, 2019; Lonka et al., 2019). Academic writing is also a socially situated process that occurs in social discourses and is predicated on close engagement with the text and scientific communities in many cases. Graduate

students eventually develop an academic identity because of this process, which defines how they articulate scientific arguments, epistemologies, methodologies, and theoretical approaches that they support and embrace as they advance in their careers as scientists (Gupta et al. 2022; Inouye & McAlpine, 2019; Lonka et al., 2019). Academic writing is core aspect of students who study by PhD by Publication.

The PhD model offered in South Africa universities is the traditional PhD, a PhD by publication, a taught PhD and Professional PhD (Lewis & Zaid, 2021; Mckenna, 2019; Peacock, 2017; Diogo & Carvalho, 2019; Gumbo, 2017). A PhD by publication is a PhD based on a supervised research project and is determined by the number of peer-reviewed academic papers that the student has either published or been accepted for publication (Lewis & Zaid, 2021; Gumbo, 2017; Peacock, 2017; Louw & Muller, 2014). Practitioners in their field and research-active students without a high formal academic qualification benefit from the PhDP (Shannon, 2018; Peacock, 2017; Cloete et al., 2015).The purpose of the PhDP was to provide the opportunity for professionals with publications still engaged in research, such as creative writers and health and business professionals, to achieve the highest level of academic recognition (Peacock, 2017, p. 124). Students pursuing the PhDP must submit three to five original papers in which they are the primary author across all submitted journals (Pham, 2021; Lewis & Zaid, 2021; Gumbo, 2017).

PhD is becoming increasingly popular in South African universities because of the increase in peer-reviewed articles published in prestigious journals associated with the government grant provided by the DHET (Department of Higher Education & Training). PHDP also has high scholarly productivity and generates more PhD graduates at a faster pace (Gumbo, 2017).

The taught PhD is also referred to as 'course work' and structured on the North American PhD model (Gumbo, 2017). The taught PhD model was first introduced as the new route PhD in the UK in 2001 (Park, 2007; Scott, Lunt, & Thorne, 2004). According to Gumbo (2017) and Louw & Muller (2014), the taught PhD is an apprenticeship that combines supervision under a supervisor with research training. Even though coursework may be required to help students prepare for a PhD or enhance their thesis, it is not considered creditable in South African universities (Cloete et al., 2015, p.102). Cloete et al. (2015, p. 136) note that PhD degrees are awarded by coursework and thesis at South African universities such as the Department of Economics at the University of Cape Town (UCT). The taught PhD program at UCT is designed to be completed in four years, full time. Cloete et al. (2015, p.136) note that South African universities like the Department of Economics, University of Cape Town [UCT] offer a PhD degree by coursework and thesis. The taught PhD program at UCT is designed to be

completed in four years, full-time. The four-year program is divided into two parts: the first two years cover prerequisite courses, and the second part covers thesis writing. McKenna (2019) notes that taught PhD programs benefit PhD candidates by providing them with the academic tools necessary for a PhD. McKenna argues that few universities offer coursework as part of their PhD program because it is not recognized as credit in South Africa. Previous studies highlight that PhD students encounter challenges in academic writing and lack an understanding of academic writing requirements, especially students from non-English speaking countries (Gupta et al., 2022; Almarwan, 2020; Boyle, Ramsay, & Struan, 2019; Jusslin & Widlin, 2021). Postgraduates experience stress in writing because they need more writing proficiency and academic writing skills (Liang et al., 2022). Studies suggest that other critical factors, such as the supervisor's receptiveness, availability, flexibility and timely feedback, also influence academic writing (Almarwan, 2020; Boyle, Ramsay, & Struan, 2019; Jusslin & Widlin, 2021; Oumarou & Uddin, 2017). Previous research by Delport (2018) and Lategan (2017) suggests one of the challenges of academic writing is aggravated for PhD students from non-English speaking countries with limited language proficiency. PhD students complete a significant amount of writing, with their PhD thesis being the most extensive writing assignment of their training because they must exhibit the capacity to generate substantial work that is autonomous, comprehensive, publishable, and fits the standards of scholarly readers in the intended audience (Delport, 2018).

While extensive scholarly attention has been given to the challenges of PhD studies, research directed toward understanding the challenges of academic writing from the perspectives of international psychology PhD students at South Africa University is scarce. To achieve our research goal, the study had two main objectives. To examine the academic writing experience amongst international psychology PhD students at a South African public university. To discuss the challenges of academic writing and the support structures of academic writing. Sixteen (16) international students studying at PhD level in psychology were selected by purposive sampling from a public South African university in KwaZulu-Natal.

Research Design

A phenomenological qualitative research method was employed in this study. According to Patton (2014), the phenomenological approach is a methodical, exacting, and comprehensive explanation of how individuals encounter specific phenomena (Neubauer et al., 2019). Phenomenological approach seeks answers to the question "What are the perspectives/experiences related to this phenomenon?"

and "What are the environments and conditions in which experiences of this phenomenon occur?" (Creswell, 2018). Consequently, sixteen participants were selected using a purposive sampling technique and referrals from a South African university in KwaZulu-Natal [KZN].

Participants were PhD students or recent graduates [less than a year] from the Discipline of Psychology. Participants were assigned pseudonyms P1-P16 to protect their identity. The data was analyzed by thematic analysis because it provides patterns and meanings and classifies data into themes and sub-themes (Busetto, Wick & Gumbinger, 2020; Creswell, 2018; Yin, 2018). By illustrating various facets of a phenomenon, thematic analysis highlight themes of contextual meaning from the data (Creswell, 2018; Nowell et al., 2017). Thematic analysis provides a comprehensive but intricate explanation of the findings that can be obtained through the flexible approach (Nowell et al., 2017; Braun & Clarke, 2006). Thematic analysis also provides an explicit understanding of the aspects of a phenomenon that participants frequently discuss through thematic analysis (Creswell, 2018). A thematic analysis was performed on the generated data. Finding patterns in interview meanings and classifying data into themes and sub-themes are two aspects of thematic analysis (Busetto, Wick & Gumbinger, 2020; Creswell, 2018; Yin, 2018). By illustrating various facets of a phenomenon, thematic analysis highlights the themes of contextual meaning from the data (Nowell et al., 2017). The researcher must become familiar with the data and code every piece of information as part of the thematic analysis analytical process (Nowell et al., 2017; Braun & Clarke, 2006). The study was carried out at a South African University with a strong research focus. Thus, thematic content analysis was done by familiarizing the data and coding all the data generated from the interviews. After coding all the data, the codes were arranged based on similarities in themes and sub-themes.

Results and Discussion

The demography of the participants indicates country of origin for the participants was Nigeria [6], Zimbabwe [4] and the Democratic Republic of Congo [6]. The summation of the theme that emerged from the findings is a) challenges drafting a PhD proposal because of English language proficiency among non-English speakers PhD students and previous Master's program training., b) supervisors' comments and feedback, c) plagiarism, d) Academic Writing Support and Retreat.

Theme 1: Challenges Drafting PhD Proposal

56.1% (n=9) of participants stated that writing a PhD proposal in the first year was difficult and, in a sense, increased the number of years needed to complete the program on time. This alludes to the limited English language proficiency among non-English speakers PhD students and previous Master's program training. Participants from the Democratic Republic of the Congo [DRC] stated that writing a PhD proposal and thesis is an enormous undertaking for international students from French-speaking countries because English is not their first language.

> 'There are differences between writing and speaking French and English. I occasionally write in French first, then translate it to English'(P6).

P3 expressed that,'

> 'Your brain is empty in the first year, so it was difficult to write a PhD proposal... You are a PhD candidate in the first year and are unsure of how to write. I wasted time and energy for the first six months since I had no idea how to write the PhD proposal because you never know what is expected of you'.

P7 holds a different perspective:

> 'As a student who finished my Master's from this school and is pursuing a PhD, I am accustomed to the school environment. Despite being accustomed to the system, I encountered difficulties with the research proposal during my first year because I decided to conduct research in my home country, Zimbabwe. I had to redo it, and I wasted six months doing it(proposal)'.

P14 opines:

> 'In the process of finding a potential supervisor before I was accepted for the PhD program, the first supervisor requested that I write a research proposal. I wrote the research proposal twice since the topic did not fall under one of her research areas. Later, my supervisor informed me that she could not supervise me again due to plagiarism in my work. It was annoying because I had to spend six months looking for a new supervisor before I was finally assigned another supervisor after submitting a second proposal.

Writing in French and translating it into English is common among French students. Findings also suggest that being a non-English speaker affects drafting a PhD proposal. Participants' perspectives suggest that poor English

language could affect writing a PhD proposal and dissertation in the first year PhD. Writing a proposal during the first-year PhD could be challenging for international PhD students because of insufficient English language proficiency, research topic and previous research training. Specifically, participants from the DRC mentioned that the French language, their home country's native language, affected their writing skills. According to participant perspectives, inadequate English language proficiency may impact writing a PhD proposal and dissertation during the first year of PhD. Due to their lack of experience with research, research topics, and English language skills, international PhD students may find it challenging to write a proposal in their first year of study. Particularly, participants from the Democratic Republic of the Congo highlighted how their native French language impacted their academic writing.

P12 remarked that French communication is distinct from English because he writes in French and translates to English. P7 stated that he had challenges because of the topic he chose for his PhD. P3 asserted that the first-year PhD was difficult because he needed clarification on what he was supposed to do as a PhD student. He wasted six months of his PhD first year because of his inability to write a proposal. Similarly, international PhD students' capacity to write a PhD proposal in their first year of study was influenced by the prior research training they had received during their Master's program.

P13 voiced:

> 'The Masters program in Nigeria does not sufficiently prepare students for conducting research at the PhD level. During my first year of the program, I encountered difficulties locating relevant literature, references, and paraphrasing without resorting to plagiarism. My ability to address these issues was significantly improved by the PhD Cohort training provided by my university'.

Theme 2: Supervisors' Comments and Feedback

Another theme from the study is supervisor's input scaffolding student academic writing. Supervisors also improve the academic writing of PhD students by writing and publishing two peer-reviewed journals together before their PhD graduation. P15 mentioned how her supervisor complains about her grammar, punctuation and writing in her PhD draft, discouraging her supervisor from reading and correcting (editing) her work. P15 mentioned further that late feedback from the supervisor lengthens the PhD duration, which is disadvantageous for students on scholarship. Nonetheless, it was difficult to publish with supervisors when the PhD proposal was not progressing as planned because many journal editors rejected the manuscript because of grammatical blunders and disconnected articulations of ideas.

In the words of P1:

> 'PhD students funded by the Nigerian Government scholarship, which the Nigerian Government sponsors, must finish their program on time. Even though other factors affect the completion rate, such as the supervisory relationship... In some situations, that results in eight years'. The supervisor does little to guide you and asks which university you study at Master's levels'... Sometimes your supervisor throws away you PhD draft because he is angry.'

P13 highlighted the disadvantage of being supervised by a professor.

> 'Sarcastically, P13 said, "I don't like having a professor oversee me." When supervisors first bag their PhD, they are excited to mentor students because they want to get to the top AS professors. However, once they are professors, they find it difficult to help you and constantly complain about your work. There is limited interaction, and you are unable to report them to the school administration because they will always find a way to justify their lack of feedback'.

On the contrary, P12's situation is different, as described:

> 'My PhD supervisor was the same person who supervised me during both my Master's program and my PhD level...Because my supervisor lacked expertise, we did not have a good working relationship. He refused to acknowledge his lack of knowledge and eventually told me to find another supervisor'.

Another participant had this to say:

> 'Due to his heavy workload as the acting Head of Department and academic research chair, my supervisor does not have time for me and frequently forgets to return my work by the deadline' (P10).

As stated by PI5,

> 'I enrolled full-time in my PhD program in 2013...In 2016, I conducted my field study collected and analyzed data, but my supervisor did not provide timely feedback. She was either unwell or overworked, and it was difficult to see her after leaving school and moving back to her home country. I was angry and unsure of what to do.I asked the academic leader for advice, but she persisted in using political posturing to claim that my work was subpar'.
> 'At a particular time, the school threatened to deregister as a student because I stayed too long as a PhD student'(P14).

Co-authoring multiple papers with supervisors constituted rigorous research training as a step towards academic writing. PhD students were very dependent on supervisors' advice in the early PhD phase. As P3 noted,

> 'When we first started assembling our papers, it was a very time-consuming process involving numerous meetings and review rounds. Despite being challenging, the process prepared us to build on the experience as the PhD went on. The next papers were comparatively easier to put together'.

Theme 3: Plagiarism

Plagiarism was another theme that emerged from the findings. The majority of the participants identified causes of plagiarism as the inability to paraphrase, insufficient writing skills and ignorance. The participants also indicated that paraphrasing was the major challenge they encountered. Some participants also expressed they do not consider paraphrasing plagiarism because they cited the authors in their work. The participants need help to create original work while relying on other researchers' study results. Writing a research paper necessitates combing a large amount of data to substantiate their argument. Thus, in academic writing, students rely on already established concepts and ideas in other author's work. Other authors' research underpins academic writing; even the most well-intentioned student can mistakenly plagiarize. Plagiarism is a complex subject for students to understand, particularly when they are expected to expand on the work of other experts in their field. This suggests that participants were inadequately prepared for academic writing at the Master's level which made them unintentionally commit plagiarism due to their incapacity to paraphrase and cite.

Theme 4: Academic Writing Support and Retreat

Findings indicate that most participants were not adequately prepared for academic writing during their Master's program. Students' academic writing practices are significantly impacted by prior academic writing during their master's level. The participants echoed that they attended academic writing retreats in the form of writing seminars, conferences and research boot camps organized by their university, which aided them in writing their PhD proposals, analyzing data and avoiding plagiarism. The training is viewed positively by the participants. Writing retreats such as PhD workshops/seminars benefit international students in several ways. PI0 mentioned that he learned data

analysis at PhD workshop. For P12, the PhD workshop/seminar equipped her to cite references properly and paraphrase to avoid plagiarism. P13 stated that PhD Cohort training prepared her to conduct a literature search, references and address plagiarism. Such PhD academic retreat is significant for the participants because the Master's training program in their home country's university did not prepare them for the rigors of research at PhD level. Thus, higher education institutions employ measures to assist students in avoiding plagiarism in academic writing. The participant noted that during PhD Cohort and academic writing retreats, they were taught academic writing conventions and the relevance of publishing in peer-reviewed journals. In addition, they have been aware of Turnitin software and the negative impact of plagiarism on their PhD trajectory. The participants also stated that they were not familiar with Turnitin software when they were enrolled in their master's program, in contrast to international students who attended undergraduate institutions in South Africa. Although systems, policies, and procedures are devised in South Africa, universities are in place to identify, respond, and minimize instances of plagiarism. This includes awareness and education and informing the appropriate academic managers and university authorities about any accusations of plagiarism. Also, the whistleblowers' policy allows for anonymous reports. Coupled with forensic investigators for thoroughly examining purported plagiarism and additional recommendations. Any other pertinent external authorities, such as professional associations or the South African Police Services, may also investigate plagiarism.

Discussion

The results of this study provide insights into the academic writing challenges of international psychology PhD students in a South African university in KwaZulu-Natal. These challenges include drafting a PhD proposal because of English language proficiency among non-English speaking PhD students and previous master's program training. Research by Inouye and McAlpine (2019) reveals that PhD students are expected to have a thorough understanding of their field, mastery of relevant research techniques, and the ability to explain complex concepts to their peers, the larger scholarly community and society at large. Even native English speakers may find the academic writing process difficult. As a result, non-native language speakers may experience difficulties beyond simple grammar or idea expression, which can negatively impact doctorate students' self-esteem. This is especially true for those who have English as a second language, as it impedes the development of their researcher identity. Previous studies found that postgraduate students in South African universities struggle to cope with academic writing demands, such as dissertations

and journal publications (Schulze & Lemmer, 2017). The proficiency of ESL (English as a Second Language) students in writing theses and dissertations has become a particular concern at the postgraduate level (Arianingtyas, 2018; Delport, 2018; Schulze & Lemmer, 2017). This is especially true in the social sciences, where academic writing conventions are less explicit than in the natural sciences (Delport, ·2018; Schulze & Lemmer, 2017). Moreover, some universities require publication in English-language journals as an additional requirement before PhD students can graduate (Gupta et al., 2022; Schulze & Lemmer, 2017).

Studies such as Schulze and Lemmer (2017) argue that the growing number of English Second Language (ESL) students globally at the postgraduate level, who choose to study and publish in English, face challenges in meeting the standards of quality academic writing. The participant's view suggests that PhD candidates who are not native English speakers find it challenging to write a proposal. A study by Oumarou and Uddin (2017) of forty African international PhD students in Middle Eastern universities found that many African PhD students struggled with selecting a topic for their research and writing their doctoral proposals. PhD students can modify their research proposal by following the steps outlined by Oumarou and Uddin (2017, p. 83) in their description of the research proposal writing process. Writing occurs in five stages: planning, revision, structure, control, and voice, according to Sverdlik et al. (2018, p. 364). In light of the participant perspectives, Oyewo(2022) echoes that PhDs are independent researchers in training who may initially struggle and be frustrated during the dissertation writing because of difficulties they encounter, such as defining a research problem and the rigors involved in carrying out research.

The participants' narratives from the DRC indicate why countries like Canada, the UK, Australia, and the USA require international students to take the TOEFL (Test of English as a Foreign Language Exam) for admission to gauge their English language proficiency. In the South African context, this also underscores why prospective international PhD students who intend to study at South African Universities evaluate their previous qualifications by the South African Qualification Authority [SAQA] to place them on the National Qualification Framework [NQF] educational band in South Africa.

Also, the study found plagiarism to be a significant impediment to student academic writing. It is well documented that PhD students unintentionally plagiarize. As Carmela, Dixon and Yeo (2020) noted that student plagiarism remains a source of worry in higher education institutions, especially in developing countries. This alludes to plagiarism being academic misconduct among university students. Carmela, Dixon, and Yeo (2020) also highlighted that university academic staff address cases of student plagiarism in various ways that are not necessarily consistent with their institutions' academic integrity policies and procedures. Because rhetorical writing styles vary from language

to language due to cultural differences, international students may need help meeting academic writing expectations (Grabe & Kaplan, 2014). This is because success in a PhD thesis requires the ability to write by the forms and conventions of disciplinary academic writing. Academic writing in PhD programs is also an academic task students find difficult to finish because it presents a challenge to the lecturers who supervise them. Students often face difficulties related to their insufficient research and writing skills. Their current research experience with dissertation writing has been impacted by their lack of exposure to academic writing during their previous Master's studies. Academic writing also poses many challenges to PhD candidates during their program (Delport, 2018, p.2). A study by Lategan (2017, P. 5) suggests that several PhD students are unable to complete a publication as a requirement for graduation, the study defense (viva), or presenting the research findings to a larger research community (Lategan, 2017, P. 5).

The current study also uncovered the importance of supervisors in the academic writing of international PhD students. Co-authoring multiple papers with supervisors constituted rigorous research training as a step towards academic writing. PhD students were very dependent on supervisors' advice in the early PhD phase. Sverdlik et al. (2018, p. 369) highlight that supervisors are vital in providing guidance, redirecting, and guaranteeing that the dissertation is finished on time, given the challenges associated with academic writing. Delport (2018, p.2) asserts that supervisors' advice to PhD students' often polishes the complexities of writing and locates the problem in the writer. Schulze and Lemmer (2017) found that a major barrier to postgraduate students completing their dissertations successfully has been identified as their lack of academic writing skills and one of the issues that supervisors and students during the supervision process. Mckenna and Christine (2021) reiterated that academic writing workshops benefit international PhD students with improved writing skills. Existing research by Schulze and Lemmer (2017) stressed that language conventions in dissertation texts require advanced knowledge of the disciplinary norms governing the conceptualization, production, and reporting of knowledge in various fields; a structured argument and the application of coherence techniques; adherence to standard conventions for citing, acknowledging, and making judgments about prior research; and the appropriate use of the technical language of the field in aspects like variations in the requirements for academic writing across disciplines and correct grammar and accurate spelling. South African universities are also providing their students with institutional assistance in tackling these issues. Researchers have found several strategies that help PhD candidates improve their academic writing. According to Delport (2018, p.5), encouraging international students to integrate into departmental communities may help them develop their academic writing abilities. Academic and social

integration (workshops and meetings) can help achieve this by collaborating with other students. PhD students can improve their academic writing skills by attending conferences and developing networks, according to Wisker (2015:70), a researcher with a wealth of experience in PhD-level academic writing (Delport, 2018, p.2). Writing a dissertation is one of the most challenging types of academic writing and a significant obstacle while pursuing a PhD degree Several initiatives by their universities are put in place to support the academic writing skills of PhDs in the study.

Conclusion

Academic writing is prevalent among international PhD students who are required to write a thesis as part of PhD training and publish in peer-review journals. However, academic writing continues to be a skill that is difficult to master for international PhD students because academic writing needs to meet literary writing conventions. Such problems can lengthen PhD duration. This also manifests in journal editors rejecting papers from PhD students, partly due to a lack of idea about academic writing and disconnected articulations of ideas. The study reveals that students' academic writing abilities have revealed the linguistic difficulties that international students have writing their dissertations in English with academic language and learning support strategies being offered to overcome these obstacles. The study demonstrates that academic writing presents considerable difficulties for international PhD students because of inadequate command of grammar and academic writing skills. To address these challenges, the paper suggests sufficient creation of resources like the Writing Center, one-on-one writing coaching in this area can help international PhD students succeed, address common writing mistakes, and lighten the workload of supervisors. To offer a supportive and encouraging environment and resources to help students succeed in their PhD journey and successfully complete their thesis on time, a multifaceted approach is required at different levels.

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Digital technologies for open and collaborative teaching. A brief framework

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ABSTRACT. The present paper aimed to open a debate about the increasing needs of collaborative learning in digital learning contexts. Collaborative teaching and learning are effective approaches to enhance learning and facilitate students' satisfaction. Digital platforms may help teachers develop collaborative learning environments and provide ways of building various teaching scenarios, promoting autonomous and structured learning contexts.

Key words: collaborative teaching and learning, digital learning, digital platforms, lesson design

ZUSAMMENNFASSUNG. Dieser Beitrag soll eine Debatte über den wachsenden Bedarf an kollaborativem Lernen in digitalen Lernkontexten eröffnen. Kollaboratives Lehren und Lernen ist ein effektiver Ansatz, um das Lernen zu verbessern und die Zufriedenheit der Studierenden zu fördern. Digitale Plattformen können Lehrkräften dabei helfen, kollaborative Lernumgebungen zu entwickeln und bieten Möglichkeiten, verschiedene Unterrichtsszenarien aufzubauen, die autonome und strukturierte Lernkontexte fördern.

Schlüsselwörter: kollaboratives Lehren und Lernen, digitales Lernen, digitale Plattformen, Unterrichtsgestaltung

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Introduction

By introducing the term *digital pedagogy,* Kearney & Nielsen (2020, p. 213) describes the art of teaching and learning with contemporary educational technologies. He also argued that teachers need a theory of learning to drive their digital pedagogical decision-making and planning. Furthermore, having high-quality digital resources and hardware willingly available, teachers are expected to move beyond traditional approaches to more fully realize the potential of using learning technologies to support teaching and learning in more progressive ways.

Since the 1990s, more open-ended software has been developed to support students' creativity and critical thinking. For instance, critical thinking applications include concept maps for collaborative learning, spread-sheets for problem-solving and modelling, and simulations for hypothesis testing (Kearney & Nielsen, 2020). All these applications persisted overtime as very well-known pioneers or foundations of contemporary student-centred digital pedagogies.

Looking at the construct of collaborative learning, it reveals a set of factors and facets grounded on step-by-step processes. Small or large groups share learning outcomes, efforts, responsibility, and authority. According to Mehta (2019), we can infer, by an analogy, that textbooks form the infrastructure of knowledge within a classroom and the collaborative learning forms the infrastructure of learning. When explaining how to approach the collaborative learning over the time, different authors (Arends, 1994, Quinn et al., 2014, Kimmelmann & Lang, 2019, Mehta, 2019, Maier & Simkins, 2023) are providing a convergent guidance towards a set of values and indicators of the cooperative learning design:

- develop a sense of community among members who are learning together within the cooperative groups;
- set realistic goals and expectations regarding the learning activities and outputs when planning cooperative teaching situations;
- work through conflicts, the positive interdependence leads to achieving goals;
- shift from teachers to learners: collaborative teaching and learning requires equal collaboration from teachers and students;
- continuously assess the results: even though it takes time for a group to form itself, an than to collaborate and learn, it is important to assess results at every stage.

The end results are not the only results that matter, but how effective communication is, how easily conflicts are resolved it is equaly important. Continuous assessment leads to the identification of things that need to be worked on (Mehta, 2019).

1. Collaborative teaching and learning. The concepts and present-day paradigms vs. digital tools

Digital technology and contemporary learning applications can be used to guide pairs or small groups of learners through active-teaching and active-learning settings and facilitate more autonomous, collaborative learning.

Regarding the use of cooperative teaching and learning approaches, Maier & Simkins (2023, p. 71) summarized the most important literature recommendations, based on research findings: group size of 2-4 students with heterogeneous skill levels and backgrounds, organized by the teacher. In addition, group work needs to be well structured so that students can function on learning rather than second-guessing what they should be doing. Ideally, this structure requires each student to have a clearly-defined and purposeful *role* in group work (note-taker, time-keeper, summarizer, etc.) and should include a mechanism for enforcing the individual accountability to reduce problems with "free-riding".

In different terms, emphasizing the more motivating and developmental factors involved in, Mehta (2019) summarises the core elements of collaborative teaching and learning:

- the *common goal* ensures all the efforts are put towards it;
- *decision making* towards the common goal: once teachers and students understand it is the impact and overall good that matters, decisions become easier;
- as a group, encouragement from each helps the *holistic development*, strengths are encouraged and weaknesses are improved on;
- *supportive learning environment*: there are not just ideas that get exchanged, personalities are shown, and their ability to work as a team is challenged;
- *social skills* facilitate the entire process of collaborative learning: they are required to help the students bridge the information gap, from finding information to garnering a knowledge construct.

Digital platforms may help teachers develop collaborative learning environments and provide ways of building various teaching scenarios, promoting autonomous and structured learning contexts.

However, the top three tools (YouTube, PowerPoint, and Google Search) are not intended for – or designed for – education (Stripe & Simpson-Bergel, 2023). From a learning design perspective, selecting the tool should be one of the last steps – not the key focus. Prefacing his book, Matt Jarvis (2023, viii) emphasise upon the judicious approach: "Being pedagogy-led and tech-enabled". Teachers should be thinking about choosing a platform or platforms

only in the light of what they want to achieve. In other words, they should set the goals according to principles of good pedagogy and use the technology to enable the students to achieve these goals. According to Jarvis (2023), planning teaching activity starts "from the point of what the teacher and the class would like to be able to do, not what a particular application can easily do or what it looks like it should be used for"(viii).

2. Facilitating collaboration in teaching-learning through the use of online platforms

2.1. Miro

Miro (www.miro.com) is an improved online whiteboard platform that offers many facilities to encourage collaborative learning. It is a suitable tool for creating both synchronous or asynchronous teaching activities adapted to the needs of generation Z and digital natives.

Miro can be accessed from any web-enabled device, such as computer, tablet, or phone, directly from an internet browser or downloaded using App Store/Google Play. The platform requires an initial registration using either Google Mail or another e-mail. (Figure 1).

Figure 1. Creating an account on Miro platform

After registration, the user has to set up a team. The free version of Miro allows users to create one team and three different boards within it. The first board is automatically generated and can be modified. By clicking on "new board", another blank board can be created, or a board with a template by choosing from the template library (Figure 2).
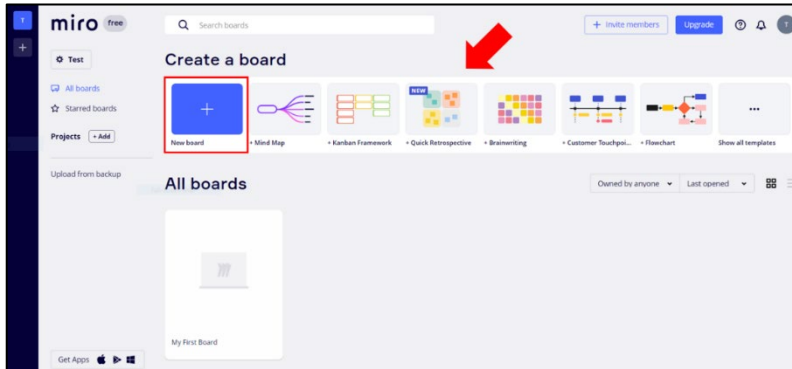
Figure 2. Creating a board in Miro platform

The templates from the library support presentation of notions, by the instrumentality of diagrams, and collection of ideas and feedback. They also facilitate figurative representation and display in virtual classes and the creation of agile workflows for students (Figure 3).
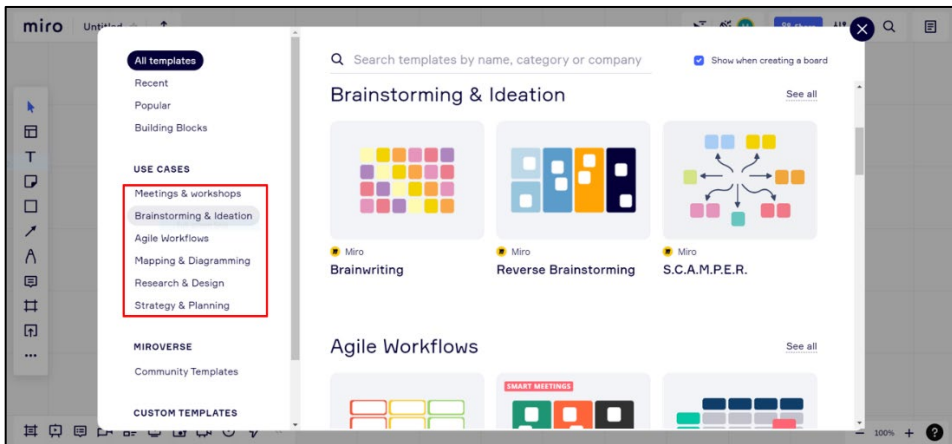

Figure 3. Choosing a template from template library in Miro platform

The board interface offers a variety of options that support the transmission of information and the creation of interactive lessons and exercises: adding text boxes or sticky notes and uploading different files. Also, Miro allows users to add comments with suggestions of improvements, or that facilitate the distribution of autonomous tasks to the pupils or students (Figure 4, no. 1). Other functions of the platform include attaching different charts, tables, mind maps, icons, and stickers/emojis, which enhance students' or pupils' involvement in activities (Figure 4, no. 2).
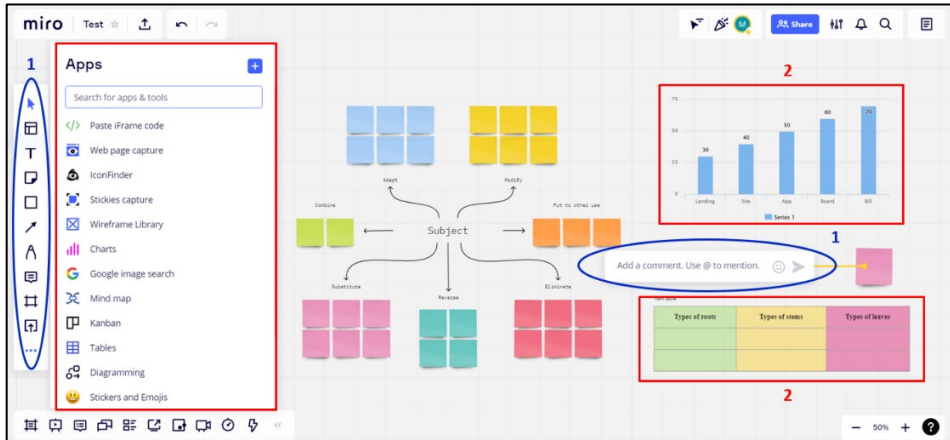
Figure 4. Introduction of diagrams, charts, comments,
tables and other options in Miro board

Miro supports collaborative learning and effective teamwork through the medium of its share option. The online whiteboard can be shared using the "share" button. Students or pupils can be invited to participate in real-time lessons, edit exercises and work together to achieve better results, using either their e-mail or a link invitation (Figure 5).
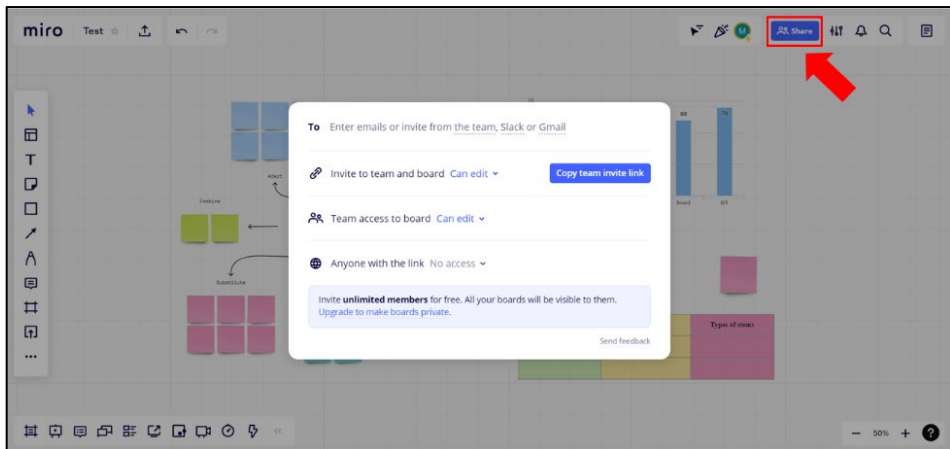

Figure 5. Sharing a board in Miro platform

Moreover, the online whiteboard allows teachers to monitor the activity of the students or pupils and intervene to provide additional explanations and guidance, if necessary (Figure 6).
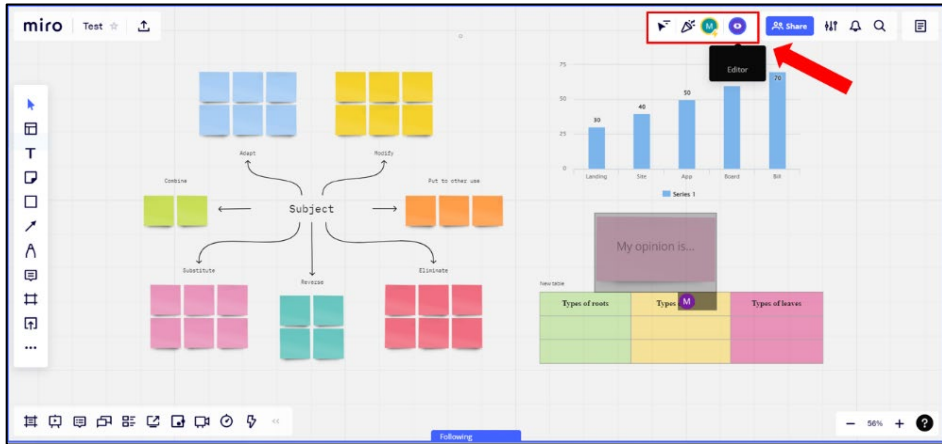
Figure 6. Monitoring students' or pupils' activity in Miro platform

To summarize, Miro is an example of an accessible digital platform that sustains open, collaborative teaching-learning. Its options allow the creation of interactive lessons and virtual "classrooms" in which valuable resources can be distributed and organized to facilitate collaboration among students or pupils.

2.2. Visme

Visme (www.visme.com) is another digital instrument that empowers open, collaborative teaching-learning. It is a visual content creation and collaboration platform that enables users to design different projects.

Visme can be online accessed from any internet browser and any web-enabled device (computer, tablet, or smartphone) or downloaded on a personal computer. The platform requires an initial registration using either Google Mail or another e-mail (Figure 7).
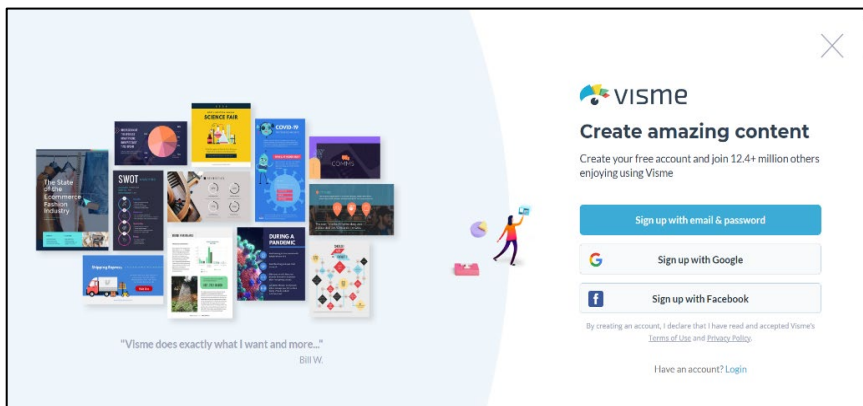
Figure 7. Creating an account on Visme

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The free version of Visme allows users to create multiple Workspaces, in which a limited number of participants (maximum 10) can design/organize and share projects available to the team members within that Workspace. Members also need to create an account on Visme and can be added by clicking on the button "add members" via e-mail or invitation (Figure 8).
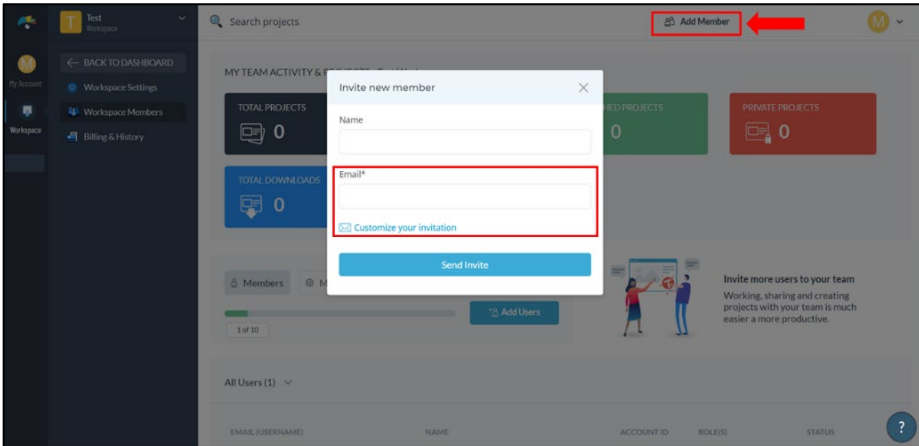

Figure 8. Adding members in a team within a Workspace on Visme

Team members within a Workspace can collaborate to develop a variety of products: presentations, documents, graphics, also videos. By clicking on "create new" from section projects, a blank project can be created, or a suitable template for the project from the library can be chosen (Figure 9, Figure 10). In the free version, a PowerPoint presentation with a maximum of 10 slides can also be uploaded and modified on the platform (Figure 9).
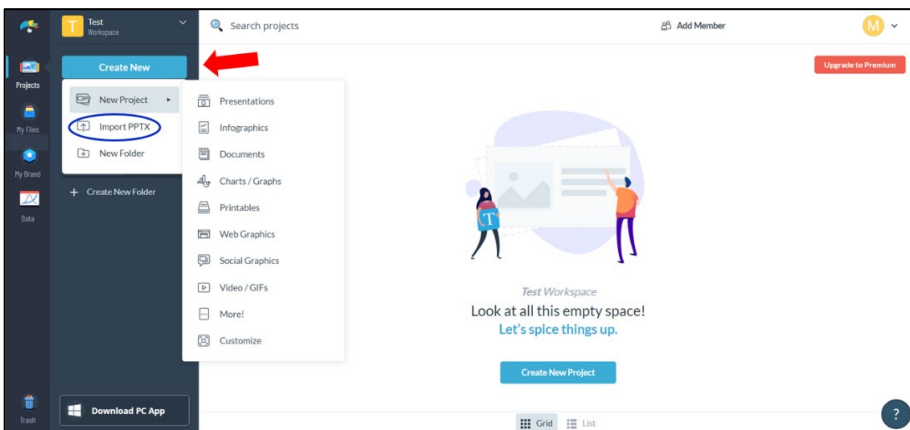

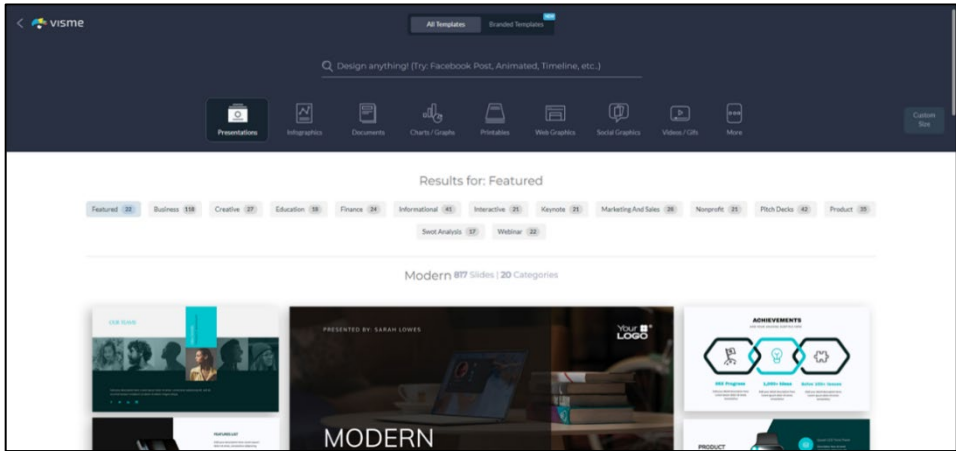**Figure 9.** Creating a new project in Visme

Figure 10. Choosing a template for the project from the library in Visme

The features of Visme enhance the creation of interactive lessons or other figurative representations. For example, team members can choose to add to their presentation different fonts, stats&figures or diagrams, a variety of graphics (3D/animated), photos, data (tables, maps), media (videos), and even select the theme colors, or upload files (Figure 11).
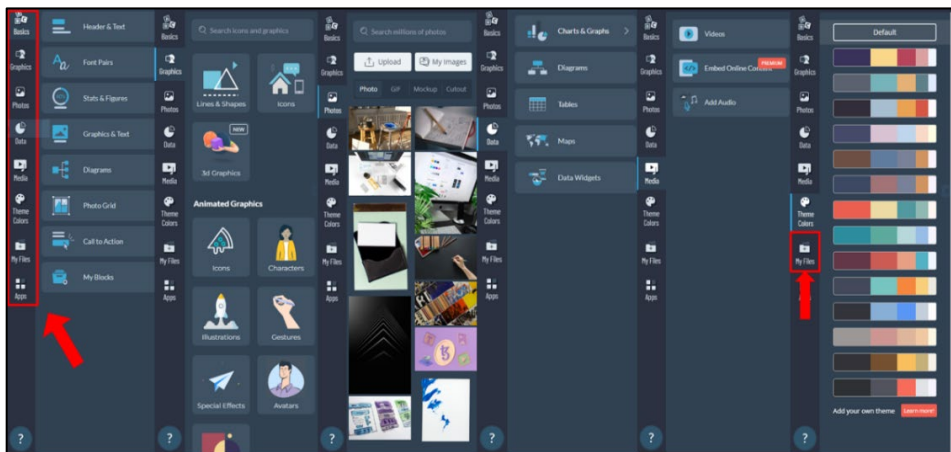

Figure 11. Designing a presentation in Visme

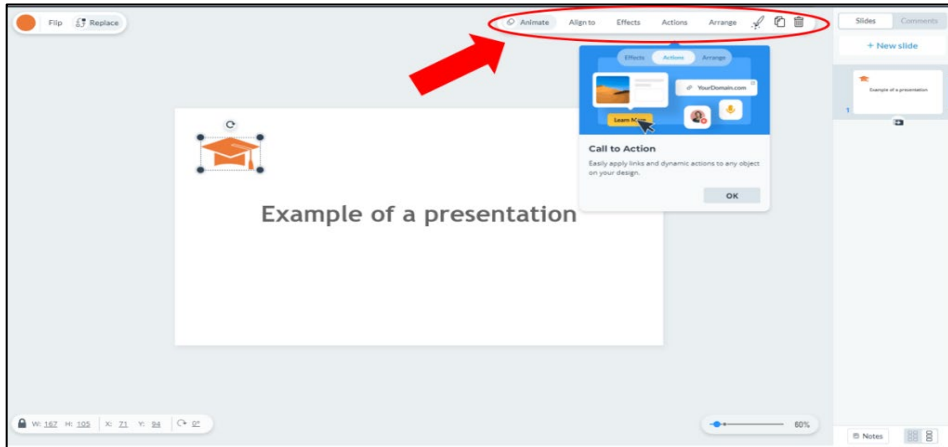In addition, users can add animations, actions, or effects to design a more interactive presentation (Figure 12).

Figure 12. Adding animations, actions, or effects to a presentation in Visme

To achieve different projects, collaborators within a team can edit, pin, add comments or suggestions in real-time. Teachers can also monitor students' or pupils' involvement during activities. Unfortunately, the platform's free version only allows users to present their project online and not download it.

To outline, Visme is an intuitive, easy-to-use platform that sustains collaborative learning-teaching and the creation of interactive, visual content tailored to the needs of digital natives.

3. Psychological and educational implications of teaching through collaboration

Successful collaborative teaching and learning using digital tools can have many benefits for students and can increase their participation in learning process. From students' perspectives, it seems that there are some critical elements which can improve their learning outcomes and their collaboration in online settings as the teacher support, using interactive functions of digital tools, synchronous meetings, clear objectives and goals, opportunities to interact with their classmates through different apps (Lee et al, 2011).

In the previous section of this paper, we presented some relevant digital tools aiming to facilitate collaborative learning. Those resources provide multiple options for building collaborative learning environments by sharing material options, interacting, supervised practical activities, audiovisual materials etc. Those tools, together with a well-structured lesson design and using the right apps for each activity, can significantly increase cognitive processing, motivation, engagement, and well-being. Previous studies have recognized the importance of making dynamic activities by introducing collaborative elements and tools

which also facilitate peer collaboration. (Gray & DiLoreto, 2016). Moreover, building on a collaborative framework with the help of different digital platforms and apps, increase students learning outcomes, help to build social skills and to have positive educational experiences (Aslan, 2015).

An interesting topic to discuss is related to how collaborative learning may contribute to fulfilling psychological needs. According to self-determination theory (SDT; Deci & Ryan, 1985), there are three psychological needs relevant for individual well-being and satisfaction- autonomy (feeling in control), competence (feeling effective and having self-efficacy) and relatedness (feeling connected, understood, loved). When learning design and school successfully addresses these needs, students are more implicated, more active and have positive feelings about their learning (Hsu et al., 2019).

Recently, Ryan and Deci (2020) discussed the importance of investigating the satisfaction of the three psychological needs in online learning settings. Some recent research showed that engaging digital tools together with teachers support and guidance in collaborative activities satisfy the needs of autonomy, competence, and relatedness. More specific, students feel autonomous when they can choose the tools or technologies to learn, they feel competent when they do the learning tasks on different platforms and have a strong sense of connectedness through working with their peers and through interaction with teachers (Chiu, 2020). The platforms and tools we presented in the previous sections, if used properly, can contribute to increasing students' well-being and cognitive, emotional, and behavioral engagement.

From a cognitive processing perspective, collaborative learning using digital tools enhance shared meaning and build contexts for the restructuration of previous knowledge and facilitate shared information through negotiation. (Hernandez-Selles, Munoz-Carril & Gonzales-Sanmamed, 2019).

Regarding the social aspect of learning, it is extremely important to mention that a critical factor associated with the effectiveness of collaborative learning is the quality of teacher-student relation. A good relation is associated with designing collaborative learning communities, a sense of belonging and task persistence (Pérez-Mateo & Guitert, 2012). Teacher social strategies are essential for building a meaningful education.

Conclusions

The success of collaborative learning is at present highly dependent on the teacher's competence to infuse pedagogical content to digital elements, together with constant monitoring, social interaction guidance and support.

The systematic use of this approach at all educational levels will increase students 'learning outcomes and will enhance their adaptability, problem-solving skills, and their capacity to integrate different areas of knowledge.

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