Effect of Social Comparison in Social Media: Psychological Distress and the Role of Emotion Regulation as Moderator

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Abstract

Access to social media can encourage adolescents to make social comparisons, causing psychological distress. There are two emotion regulation strategies, namely cognitive reappraisal and expressive suppression. The cognitive reappraisal strategy weakens the relationship between social comparison on social media and psychological distress, while the expressive suppression strategy strengthens it. This study aimed to examine the role of emotion regulation as the moderating variable between social comparison and psychological distress. This study involved 562 participants aged 12-18 years in Indonesia. This study used Hopkins Symptoms Checklist-10 (HCL-10) to measure psychological distress in adolescents, Iowa-Netherlands Comparison Orientation Measure (INCOM), and the Emotion Regulation Questionnaire (ERQ). The data underwent simple moderation analysis. The result showed that expressive suppression significantly predicted psychological distress in adolescents. However, cognitive reappraisal and expressive suppression were not proven as moderating variables in the relationship between social comparison and psychological distress (β = -.000, SE = .000, p > 0.05). Emotion regulation did not reduce psychological distress in adolescents, so emotion regulation was not proven to be able to act as a moderating variable. However, adolescents tend to compare themselves to social media to be vulnerable to psychological distress.

Keywords: Adolescents; emotion regulation; psychological distress; social media; social comparison.

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Introduction

Many teenagers in Indonesia spend a lot on social media such as Youtube, WhatsApp, Facebook, and Instagram (Ardi & Putri, 2020; Junawan & Laugu, 2020). A study at a high school in Indonesia showed that 48.6% of 72 students experienced high social media addiction (Hendrawati & Sriati, 2020). In line with these results, a survey conducted by Asosiasi Penyelenggara Jasa Internet Indonesia showed that in 2021-2022, the number of Indonesians who actively use the internet is 77.02%, and the highest number of active internet users is in the age group 13-18 as much as 99.16% (Pahlevi, 2022).

Social media has positive sides, such as making it easier to find information according to needs, adding social networks, and being easier to connect with the closest people (Ardi & Putri, 2020). Social media has a negative side: cyberbullying, fraud, and harassment (Akram & Kumar, 2017). This negative side can make adolescents accessing social media experience psychological distress (Asibong et al., 2020; Keles et al., 2020).

Psychological distress is an unpleasant subjective state experienced by individuals (Mirowsky & Ross, 2015). Psychological distress is a form of negative psychological stress because the stressor comes from bad conditions or experiences (Greenberg, 2008). Psychological distress occurs due to the accumulation of exposure to stressful events threatening mental and physical health coupled with the inability to perform effective coping strategies (Horwitz, 2007). Psychological distress consists of two main forms, namely depression and anxiety (Mirowsky & Ross, 2015). Depression is characterized by feelings of sadness, hopelessness, worthlessness, loneliness, sleep disorders, crying, and feeling unable to live. Anxiety is a state characterized by feelings of tension, restlessness, worry, irritability, and fear (Mirowsky & Ross, 2015).

During the Covid-19 pandemic, the social restriction that is imposed by the government particularly distorted adolescents' daily lives. Adolescence is a stage of development when individuals ideally begin to explore more social situations and create peer groups (Papalia & Martorell, 2021). However, the social restriction during the pandemic hindered the milestone of social interaction that should occur in adolescence. Under this condition, adolescents are likely to encounter psychological negative

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impacts. Commonly, symptoms include reduced appetite, anxiety, depression, lethargy, and reduced social interaction (Jiao et al., 2020). Taking more consideration of mental health issues, especially psychological distress, is needed in this situation, mainly because the increased use of social media can contribute to a decline in adolescent mental health (Keles et al., 2020).

Previous studies showed that using social media can make adolescents experience psychological distress (Keles et al., 2020; Mahmood et al., 2020; Satici et al., 2021). The longer the time used by adolescents to access social media, the higher the potential for experiencing anxiety and depression (Hampton, 2019). When individuals surf in cyberspace, a lot of content can affect the psychological condition of adolescents. One is show-off content making adolescents compare themselves with what they see. In other words, adolescents make social comparisons (Wagner et al., 2021).

Social comparison evaluates various life domains based on a standard of comparison (Festinger & Carlsmith, 1959). Individuals use others similar to themselves (for example, age and gender) to compare themselves with others. Social comparison can be divided into two based on the person being compared, namely downward and upward social comparison (Mirowsky & Ross, 2015). The downward social comparison refers to the comparison of oneself with others considered inferior to make oneself feel better (Möller & Marsh, 2013). On the other hand, upward social comparison refers to the comparison of oneself with others who are considered superior, threatening oneself (Strickhouser & Zell, 2015).

Social media expands social comparison. Individuals can compare themselves with anyone on social media (Warrender & Milne, 2020). Social comparison on social media is different from comparing directly (offline). Social comparison tends to be more negative on social media than directly because social media emphasizes the positive appearance of others so that it is easier for individuals to make upward social comparisons (Faranda & Roberts, 2019). Meanwhile, another study showed that passive use of social media could increase upward social comparison leading to depression compared to active use of social media (Pang, 2021). These studies explain that social media can encourage social comparison leading to psychological distress.

This study aimed to determine the effect of emotion regulation during social comparison in social media on psychological distress. Emotion regulation is one of the factors reducing psychological distress (Solbakken et al., 2021). Emotion regulation refers to understanding and regulating when and how emotions are experienced and expressed (Gross, 2014). Strategies in emotion regulation can be divided into two. The antecedent-focused emotion regulation strategy is carried out before an emotion appears fully and changes in behavior and physiological responses. Response-focused emotion regulation strategy is a strategy carried out after emotions have emerged. One of the techniques used in the antecedent-focused is reappraisal, while in the response-focused is expressive suppression. A reappraisal is a form of cognitive change to change the perspective of the situation so that it can reduce negative emotions. Meanwhile, expressive suppression suppresses the expression of positive and negative emotions (Gross & John, 2003).

In this study, emotion regulation is expected to reduce the negative effect of social comparison on psychological distress. Emotion regulation helps individuals be aware of negative emotions when comparing themselves on social media (Pang, 2021). Individuals can perform one of the emotion regulation techniques, namely cognitive reappraisal or expressive suppression, to regulate emotions that arise. This study showed that social comparison on social media did not always harm depression because social media users began to doubt the positive performance other people displayed on social media. This doubt can be called a form of cognitive reappraisal, helping a person not to internalize negative evaluations of oneself (Faranda & Roberts, 2019). In addition, this study also showed that high cognitive reappraisal could be beneficial for individuals because it can reduce the adverse effects of social media activity on mental health (Yang et al., 2020).

Previous studies have confirmed the negative impacts of social comparison on social media on psychological distress (Faranda & Roberts, 2019; Pang, 2021). Previous studies also have shown the benefit of cognitive reappraisal and the disadvantages of expressive suppression strategy to help individuals manage negative situations (Solbakken et al., 2021; Yang et al., 2020). However, the majority of those studies have focused on the direct connections between social comparison, psychological distress, and emotion regulation strategies. Little data have taken into account the

possibility of emotion regulation strategies having an impact on the connections between social comparison and psychological distress in adolescents. Therefore, using moderator analyses, this study examines under what conditions the correlation of social comparison in social media and psychological distress is higher or lower.

Based on the explanation above, there are three hypotheses tested in this study. This study's first hypothesis (H1) is that "there is an effect of social comparison on social media on psychological distress in adolescents". The second hypothesis (H2) is that "there is an influence of emotion regulation on psychological distress in adolescents". Specifically, cognitive reappraisal will reduce psychological distress, whereas expressive suppression will increase psychological distress in adolescents. The third hypothesis (H3) examines whether emotion regulation can moderate the relationship between social comparisons on social media and psychological distress in adolescents. The cognitive reappraisal strategy weakens the relationship between social comparison on social media and psychological distress, while the expressive suppression strategy strengthens it.

Method

This study used quantitative and correlation methods to determine the role of emotion regulation as a moderator in the relationship between social comparison and psychological distress. Thus, the variables were psychological distress (variable Y), social comparison (variable X), cognitive reappraisal strategy (variable W1), and expressive suppression strategy (variable W2).

Participant

Participants in this study were teenagers aged 12-18 years using social media, including Instagram, Twitter, YouTube, and other social media. Based on these criteria, 562 participants met the criteria to proceed to the data analysis process. Participants were obtained by distributing posters looking for study participants through social media. To ensure that the participants came from various regions in Indonesia, the researchers also contacted several schools to distribute measuring instruments in these schools.

Based on the results of demographic data, participants in this study consisted of 63.7% (358) female participants and 36.3% (204) male participants. In terms of age, participants were predominantly aged 14-15 (41.6). Regarding education level, participants were from junior high school (73%) and high school (27%). The participants were from several islands in Indonesia, but the distribution was uneven. Most participants were from East Nusa Tenggara (61%), while the rest came from Java (19%), Kalimantan (7%), Sumatra (6%), Bali (4%), and Papua (3%).
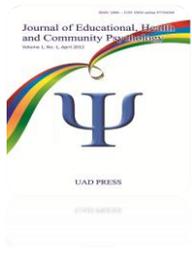
Measuring Instruments

There were three measuring instruments used in this study. The first measuring instrument, the Hopkins Symptoms Checklist-10 (HCL-10), aims to measure psychological distress in adolescents and adults (Kleppang & Hagquist, 2016). HCL-10 consists of ten items measuring psychological distress based on two dimensions: 4 items measuring symptoms of anxiety (e.g., "Suddenly scared for no reason" and "Feeling fearful") and 6 items measuring symptoms of depression (e.g., "Blaming yourself for things" and "Feelings of worthlessness"). Each item consists of four answer choices ranging from 1 (not disturbed) to 4 (very disturbed). The responses of each item were then averaged for later analysis. The value ≥ 1.85 and 1.85 indicates that the psychological distress experienced by adolescents was classified as high. HCL-10 used in this study has been adapted. The internal consistency reliability test scored = 0.85. The results of the reliability test using internal consistency showed = 0.895. The validity test results by measuring different items showed that the correlation coefficient scores between items were in the range of 0.482-0.748 (Puspitaningrum & Pudjiati, 2021).

Social comparisons on social media was measured with the Iowa-Netherlands Comparison Orientation Measure (INCOM), developed by Gibbons and Buunk (1999), which included: "I always pay a lot of attention to how I do things compared with how others do things in social media", "I often compare on social media how I am doing socially (e.g., social skills, popularity) with other people", and "I often try to find out in social media what others think who face similar problems as I face". This questionnaire consists of two dimensions. Namely, six items emphasize comparisons of abilities and five emphasize comparisons of other people's opinions with an answer range from 1 (strongly

disagree) to 5 (strongly agree). This study used the total score instead of the score for each dimension to measure the social comparison carried out by adolescents on social media. The internal consistency test performed by Gibbons and Buunk showed 0.83, and corrected item-total correlations were above 0.36. The results of the reliability test in this study showed that internal consistency was 0.768 and corrected item-total correlation scores were in the range of 0.078-0.648.

Furthermore, emotion regulation was measured using the emotion regulation questionnaire (ERQ) (Gross & John, 2003). The ERQ consists of 10 items divided into two types of emotion regulation strategies: 6 items measuring cognitive reappraisal strategy (e.g., "I control my emotions by changing the way I think about the situation I'm in." and "When I want to feel less negative emotion, I change the way I'm thinking about the situation.") and 4 items measuring expressive suppression strategy (e.g., "I control my emotions by not expressing them." and "I keep my emotions to myself."). Each item is accompanied by an answer from 1 (strongly disagree) to 7 (strongly agree). The score used in the data analysis was the total score of each strategy. The internal consistency test performed by Gross and John showed the Cronbach's alpha coefficient range between 0.75-0.80 for cognitive reappraisal strategy and 0.68-0.76 for expressive suppression strategy. In this study, the results of the reliability test showed that internal consistency was 0.730 for the cognitive reappraisal strategy, 0.679 for the expressive suppression strategy, and 0.825 for the ERQ measuring instrument. Corrected item-total correlation scores were in the range of 0.329-0.649 for the ERQ.

INCOM and ERQ require to be adapted to the Indonesian context before being distributed for data collection. The adaptation procedure included: (1) translating the items into Bahasa, (2) back translation process into English by two experts, (3) reviewing the translated item, and (4) calculating Cronbach's Alpha coefficient and corrected item-total correlation using the data trial from 134 high school participants. Two items in INCOM showed a corrected item-total correlation coefficient under 0.3. Both of these items contain a negative word (e.g., "I am not" and "never") which is then revised to make it easier for adolescents to understand the items. In addition to the three measuring instruments above, researchers also asked about the demographics of participants as well as social media usage activities (types of social media, duration, and activities carried out on social media).

Data Analysis

The data obtained were to be analyzed using IBM SPSS version 22. The first was descriptive statistical analysis to describe demographic data and study variables. Then, multiple regression analysis was used to determine social comparison, cognitive reappraisal, and expressive suppression in predicting psychological distress in adolescents. Furthermore, the data analysis used was simple moderation with PROCESS version 3.5 and SPSS version 22.0 (Hayes, 2018) to determine whether there was an interaction between social comparison, cognitive reappraisal, and expressive suppression in predicting psychological distress.

Results

Descriptive Statistics and Item Correlation

Based on the descriptive statistics in Table 1, in general, psychological distress in adolescents was above 1.85 (M = 1.988, SD = 0.754), with the average level of depression (M = 2.094) higher than the level of anxiety (M = 1.830) experienced by adolescents.

Based on item correlation, the strongest correlation was found in the relationship between social comparison and psychological distress (r = 0.345), especially in symptoms of depression (r = 0.364) compared to symptoms of anxiety (r = 0.236). In addition, emotion regulation (r = 0.202) either cognitive reappraisal strategy (r = 0.147) or emotion regulation strategy (r = 0.209), had a significant and positive relationship with psychological distress. The strongest correlation between the two strategies in emotion regulation was found in the relationship between the expressive suppression strategy and the level of depression (r = 0.220).

Table 1.

Descriptive statistics, item correlation, and cronbach's alpha.

	1	2	3	4	5	6	7
1. Psychological Distress	-						
2. Anxiety	.858**	-					
3. Depression	.948**	.649**	-				
4. Social Comparison	.345**	.236**	.364**	-			
5. Emotion Regulation	.202**	.123**	.222**	.248**	-		
6. Cognitive Reappraisal	.147**	.076	.169**	.202**	.897**	-	
7. Expressive Suppression	.209**	.144**	.220**	.230**	.816**	.476**	-
Mean	1.988	1.830	2.094	34.52	49.97	30.67	19.30
SD	0.754	0.788	0.849	8.317	11.125	7.306	5.602
α	0.895	0.823	0.834	0.768	0.825	0.730	0.679

Note. N = 562. *Cronbach's alpha* was obtained based on adapting the measuring instrument to 134 participants. **$p < 0.01$

The categorization of psychological distress in adolescents is based on cut-off point of 1.85. The results showed that 286 participants (50.89%) had high psychological distress, while the rest 49.11% of participants had low psychological distress. The number of participants experiencing high and low psychological distress was almost equal. Meanwhile, in social comparison variables, the majority of adolescents, or 40.21%, tend to make social comparisons in the moderate category, and 27.94% of adolescents tend to make social comparisons in the high category (Figure 1). This means the social comparison shown by the participants in this study mostly leads to the moderate and high categories.
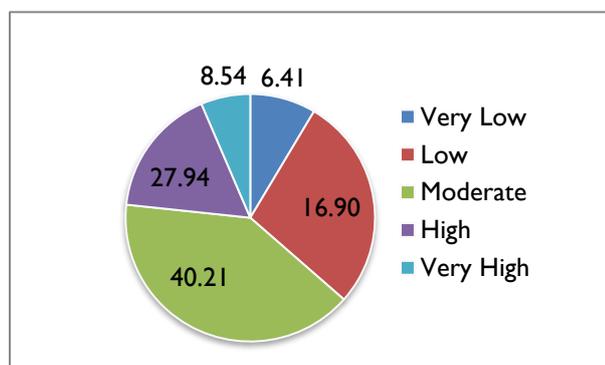

Figure 1. Categorization of social comparison in social media by adolescents

On the other hand, most of the emotion regulation shown by adolescents was in a high category (42.70%, Figure 2). This shows that most participants in this study tend to regulate their emotions oftenly.
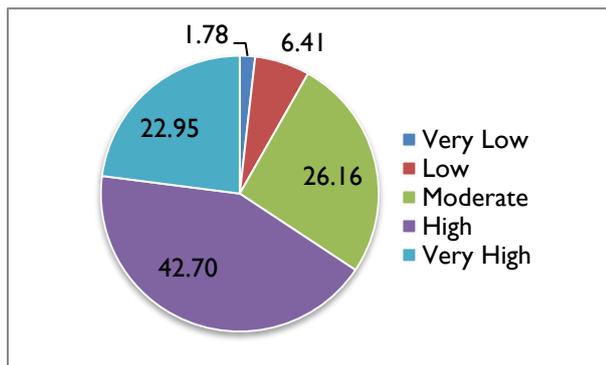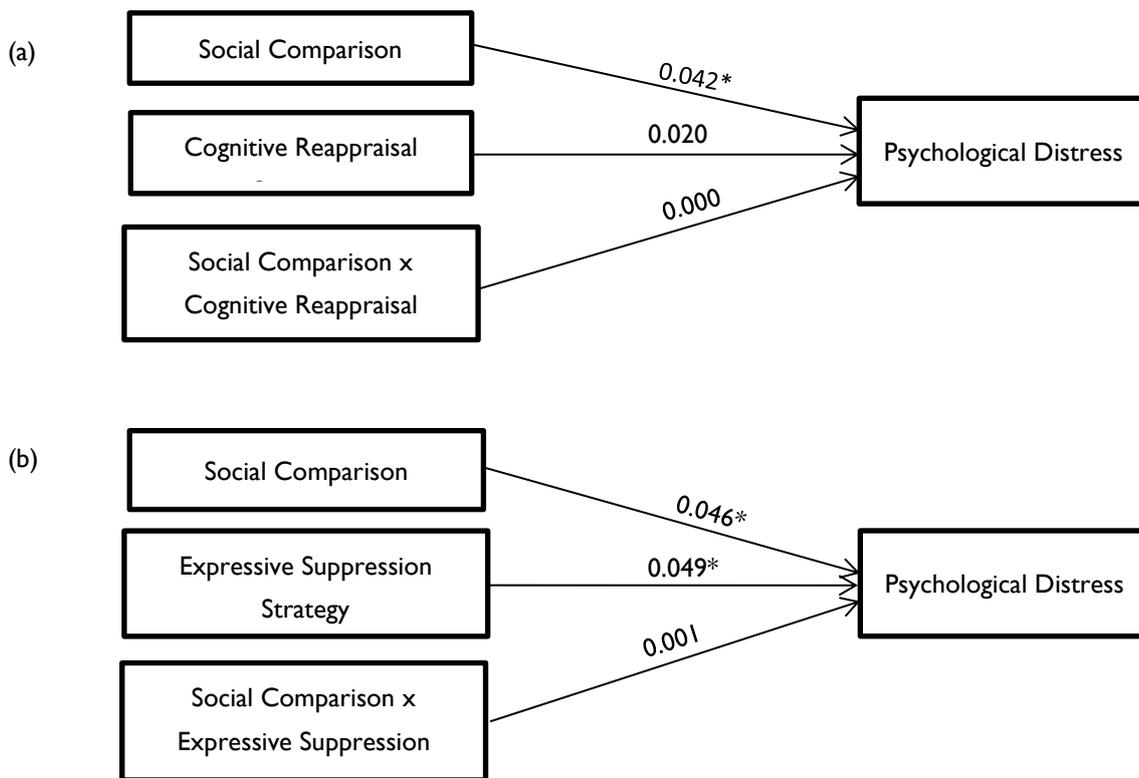

Figure 2. Categorization of emotion regulation in adolescents

Regression Analysis and Moderation

The results of multiple regression analysis showed that social comparison in social media, cognitive reappraisal, and expressive suppression significantly predicted psychological distress in adolescents, $F(3, 558)= 29,655$; $p < 0,001$. The three predictors were able to explain 13.3% of the variation in psychological distress, while other variables influenced 86.7% of the variation. Furthermore, partially social comparison ($\beta = 0.311$, $p < 0.001$) and expressive suppression ($\beta = 0.127$, $p < 0.001$) had significant effect on psychological distress, but cognitive reappraisal did not ($\beta = 0.023$, $p = 0.607$).

A simple moderation analysis was carried out to find out the moderator role of each emotion regulation strategy. In models 2 and 3, the results showed that cognitive reappraisal was not a moderating variable in the relationship between social comparison and psychological distress ($\beta = .000$, $SE = .000$, $p > 0.05$). Likewise, expressive suppression was not proven as a moderating variable in the relationship between social comparison and psychological distress ($\beta = -.001$, $SE = .001$, $p >$

0.05). Social comparison in social media had an unconditional effect on psychological distress, regardless of whether the adolescent has good emotion regulation (See table 2).

Note. * p < .05

Figure 5. Results of moderation analysis with cognitive reappraisal (a) and expressive suppression (b) as moderators.

The results of simple moderation between model 2 and model 3 showing cognitive reappraisal (a) and expressive suppression (b) as moderators between social comparison and psychological distress can also be seen in Figure 5. The two dimensions of emotion regulation, cognitive reappraisal, and

expressive suppression, did not serve as moderating variables for social comparison with psychological distress. Table 2 show the result of regression analysis with simple moderation.

Table 2.

Multiple regression analysis and simple moderation analysis of psychological distress in adolescents.

	B	SE	T	P	95% CI
Model 1					
Constant	0.611	0.166	3.688	0.000	[0.286, 0.937]
Social comparison	0.028	0.004	7.665	0.000	[0.021, 0.035]
Cognitive Reappraisal	0.002	0.005	0.515	0.607	[-0.007, 0.012]
Expressive Suppression	0.017	0.006	2.803	0.005	[0.005, 0.029]
	F (3, 558) = 29,655, p < 0.001, R^2 = 0.138, Adj R^2 = 0.133				
Model 2					
Constant	0.331	0.477	0.694	0.488	[-0.606, 1.268]
Social Comparison (X)	0.042	0.015	2.857	0.004	[0.013, 0.070]
Cognitive Reappraisal (W)	0.020	0.015	1.351	0.177	[-0.009, 0.050]
Social Comparison x Cognitive Reappraisal (XW)	0.000	0.000	-0.835	0.404	[-0.001, 0.001]
	F (3, 558) = 26.925, p < 0.001, R^2 = 0.126				
Model 3					
Constant	0.077	0.386	0.2	0.841	[-0.680, 0.835]
Social Comparison (X)	0.046	0.011	4.009	0.000	[0.023, 0.068]
Expressive Suppression (W)	0.049	0.020	2.480	0.013	[0.010, 0.088]
Social Comparison x Expressive suppression (XW)	-0.001	0.001	-1.607	0.109	[-0.002, 0.000]
	F (3, 558) = 30.550, p < 0.01, R^2 = 0.141				

Discussion

The results found that psychological distress in adolescents during the pandemic was relatively high (M = 1.988). This is in line with previous studies describing that adolescents are prone to experiencing psychological symptoms, such as anxiety and depression, as well as low positive emotions (Liang et al., 2020; Racine et al., 2021; Rogers et al., 2021). In addition, most adolescents in the study showed low emotion regulation (42.70%). Emotion regulation will be used more often with age (Riediger & Klipker, 2014). It is not surprising that the results of this study indicate the low level of emotion regulation carried out by adolescents because dominated the number of participants were at the early development stage aged 12-15 years (80.2%). Meanwhile, 40.21% of adolescents showed moderate social comparison. A study mentioned that adolescents tend to be higher in social comparisons than in other stages of development because adolescents are the period for forming self-identity so they evaluate themselves by doing social comparisons with peers (Buunk et al., 2020). However, this study was limited to directly measuring social comparison on social media, not social comparison in real life.

Effect of Social Comparison in Social Media on Psychological Distress

The results proved that social comparison on social media could predict psychological distress in adolescents (β = 0.311, p < 0.001). This is in line with several previous studies showing social comparison on social media can increase psychological distress, one of which is anxiety (Hasanati & Aviani, 2020; Jang et al., 2016; Wang et al., 2020) Although previous studies measured social comparison on Facebook (Alfasi, 2019; Jang et al., 2016) or Instagram (Hasanati & Aviani, 2020), this study measured social comparison on social media. The results reinforced that regardless of the type of social media an individual uses, comparing oneself with other people's profiles on social media can increase psychological distress. The information on social media tends to be displayed positively, making users compare themselves with people who are better than themselves and leading to depression, inferiority, and poor mental health (Pang, 2021; Wang et al., 2020).

Effect of Emotion Regulation on Psychological Distress

Based on the results of the regression analysis, only the expressive suppression strategy had a significant effect on psychological distress (β = 0.127, p < 0.001), while the cognitive reappraisal strategy did not (β = 0.023, p = 0.607). This is also in line with previous studies showing that expressive suppression harms psychological distress (Garnefski et al., 2001). individuals who harbor emotions tend not to tell others about their problems, so these problems will increasingly make individuals feel depressed and lead to increased psychological distress (Gubler et al., 2021).

Although cognitive reappraisal did not affect psychological distress in adolescents, this study found a positive and significant correlation between cognitive reappraisal and psychological distress (r = 0.147, p < 0.01). Cognitive emotion regulation is not always adaptive (Garnefski et al., 2001). Cognitive strategies such as rumination, self-blame, and catastrophizing are associated with increased emotional problems. This can explain how the cognitive reappraisal strategy in this study can be positively related to psychological distress because it is suspected that adolescents use reappraisal, which tends to be maladaptive, so an increase in psychological distress accompanies it.

Based on the correlation results, emotion regulation was positively correlated with psychological distress (r = 0.202, p < 0.01). This is not in line with previous studies showing emotion regulation negatively correlated with psychological distress (Yang et al., 2020). On the other hand, this is in line with a study by Solbakken et al. (Solbakken et al., 2021) on more than 4000 participants showing that difficulties in emotion regulation can predict a decrease in symptoms of depression and anxiety in the future. Therefore, further studies are needed to ascertain the relationship between emotional regulation and adolescent psychological distress.

Emotion Regulation Moderates the Relationship between Social Comparison in Social Media and Psychological Distress

The results are not in line with a study by Yang et al. (2020) showing that emotion regulation, especially cognitive reappraisal, can mediate the relationship between social media and mental health. Several things can explain the insignificance of emotion regulation as a moderator. First, a study by

Yang et al. (Yang et al., 2020) measured the use of social media in general, while this study specifically measures social comparison behavior on social media so that there is a different mechanism for how emotion regulation cannot be a moderator in the relationship between social comparison and psychological distress. Second, among the three predictors, when compared to each other, it can be seen that social comparison had a greater effect of ($\beta = 0.311$) than expressive suppression ($\beta = 0.127$) and cognitive reappraisal ($\beta = 0.023$) on psychological distress in adolescents. The researcher suspects that the reason for emotion regulation cannot inhibit the effect of social comparison on psychological distress in adolescents because emotion regulation does not have a strong effect on reducing psychological distress in adolescents. Third, the participants in this study were dominated by adolescents (73.5%, see Figure 1) who were in the early stages of adolescent development. Generally, early teens often experience negative or mixed emotions and sudden mood swings (Papalia & Martorell, 2021; Riediger & Klipker, 2014). With these emotional conditions, adolescents' emotion regulation also does not overcome psychological distress, especially caused by social comparison on social media.

Limitations and Suggestions

One of the limitations is the uneven distribution of study participant data from various regions in Indonesia. There are several regions, especially the capital city, which are not represented by the participants obtained. This limitation causes the results of the study cannot be generalized to all adolescents in Indonesia. In addition to the unequal distribution of regions, this study is also dominated by adolescents from junior high school (73.5%) compared to adolescents from high school (26.5%), so the study's results should be applied to individuals who are in early adolescent development.

This study has implications for the importance of intervention for adolescents who tend to compare themselves on social media because they will be prone to experiencing psychological distress. In addition, this study showed that 286 adolescents (50.89%) had high psychological distress. Therefore, adolescent mental health needs attention from parents, schools, or health experts. The next study can review what factors can inhibit the negative effect of social comparison on social media, such as self-acceptance or gratitude.
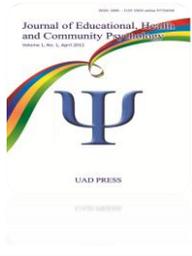
Conclusion

The results reinforced previous studies explaining that social comparison on social media negatively impacts adolescents' psychological distress. Based on the results, this study provided benefits for adolescents to realize the dangers of comparing themselves to social media. On the other hand, in contrast to previous studies, this study showed a positive and significant correlation between emotion regulation and psychological distress in adolescents. Therefore, further studies are needed to test effective emotion regulation that can reduce or even increase adolescent psychological distress. Meanwhile, the results found that the expressive suppression strategy harmed psychological distress. This study provided benefits about the importance of expressing feelings healthily to avoid psychological distress. Unfortunately, this study failed to prove that emotion regulation can mediate the relationship between social comparison on social media and psychological distress in adolescents.

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