

Chapter 5

General Discussion

Overarching Question of This Dissertation

Social comparison opportunities are entrenched in Western societies (Festinger, 1954; Kohn, 1992). Especially with the self-esteem movement, educational programs began to focus on what makes children stand out from others so as to make them feel special and exceptional (Dweck, 2006; Kohn, 1992). Yet, it has rarely been taken into account that such comparisons might involve the risk of making children desire for superiority over others (Mirgain, 2015). The novel contribution of this dissertation was showing that social comparisons indeed carry such a risk, as well as to demonstrate that temporal comparisons—comparisons with one’s own past self—achieve similar benefits without the risk that social comparisons carry.

It has been once said: “Remember that there is nothing noble in being superior to some other man. The true nobility is in being superior to your previous self (Sheldon, 1897, p. 61).” Yet, research in temporal comparisons failed to blossom over the course of years because such comparisons are assumed to be used merely in the absence of social comparison opportunities (Goolsby & Chaplin, 1988; Wedell & Parducci, 2000). Such scarcity in research in temporal comparisons is unfortunate given that temporal comparison information, together with social comparison information, represents two critical information resources children use to evaluate themselves and formulate their self-concept (Albert, 1977; Festinger, 1954; Harter, 2012). In this dissertation, I studied social and temporal comparisons jointly and sought to answer whether temporal comparisons would provide children and adolescents with the same benefits as social comparisons without the potential unwanted effects of social comparisons. I addressed this question in three empirical studies, utilizing various study designs.

Summary of The Main Findings

Chapter 2 presented a randomized field experiment that examined whether downward social comparison, which is a source of pride, might inadvertently trigger a desire in children to be superior to others, whereas downward temporal comparisons would trigger a desire to improve oneself (rather to be superior to others) while giving children a sense of pride, progress, and insight. We collected data from a large sample of children ($N = 583$, $M_{\text{age}} = 11.65$, $SD = 1.92$) to whom we asked to reflect on and write about their experiences involving social comparisons, temporal comparisons, and no comparison. We found that both downward social comparisons and downward temporal comparisons made children feel proud but downward temporal comparisons achieved this without making them desire to be superior to others and while giving them a sense of more progress and insight. The results were similar in middle-to-late childhood (ages 8-10), early adolescence (ages 11-13), and middle adolescence (ages 14-16).

Chapter 3 presented a daily diary study that examined how frequently adolescents made social and temporal comparisons in daily life and how doing so affected their emotions, needs, and goals. We collected data from adolescents ($N = 389$, $M_{\text{age}} = 12.69$, $SD = 0.97$) for five consecutive school days after school hours. We found that adolescents made more temporal comparisons than social comparisons. Daily downward and upward comparisons co-occurred with pride and shame, respectively, regardless of whether those comparisons were social or temporal. Daily downward comparisons co-occurred with competence and autonomy,

regardless of whether those comparisons were social or temporal. However, on days when adolescents made more downward *temporal* comparisons (but not *social* comparisons), they desired more for self-improvement over superiority and felt more related to others. This desire for self-improvement over superiority partially mediated the association between downward temporal comparison and a sense of relatedness.

Chapter 4 presented two empirical studies: one correlational (Study 1; $N = 382$, $M_{\text{age}} = 12.46$, $SD = 1.23$) and one longitudinal (Study 2; $N = 389$, $M_{\text{age}} = 12.69$, $SD = 0.97$). We tested whether narcissism—a personality trait that is marked by a belief and motive to be better than others—is linked to downward social comparisons (Study 1) and whether narcissism is, in part, maintained through downward social comparisons but not downward temporal comparisons (Study 2), both in adolescence. We found that downward social comparisons play a role in the self-regulatory nature of narcissism and that downward temporal comparisons may help curtail narcissism.

Discussion and Direction for Future Research

This dissertation shows that downward temporal comparisons provide youth with similar benefits as downward social comparisons do; both types of comparisons made youth feel proud, competent, and autonomous. It was only downward temporal comparisons, however, that made youth adopt a desire to improve themselves rather than to be superior to others while giving them a sense of progress, insight, and relatedness. Downward social comparisons and downward temporal comparisons were both used frequently by adolescents with high narcissism levels; however, only the former maintained adolescents' narcissism levels over a period of 3 months. Unlike adolescents with high narcissism levels, those with lower self-esteem made more upward social comparisons and hence maintained their self-esteem levels. Thus, overall, downward temporal comparisons have several beneficial outcomes than do downward social comparisons.

Social Versus Temporal Comparisons

My dissertation has revealed important similarities and differences between social and temporal comparisons. Across two studies (Chapter 2 and 3), the findings showed that social and temporal comparisons shape children's and adolescents' emotional lives similarly. Theories of emotion (Lewis, 1995; Tangney & Dearing, 2002) and achievement motivation (Brunstein & Heckhausen, 2008; McClelland et al., 1953) have long suggested that self-conscious emotions appear when individuals compare themselves to certain standards. One type of standard that has been theorized to play a role is social in nature—a standard set by others. This type of standard is implied in making social comparisons (Tangney & Dearing, 2002). I introduced another type of standard that underlies self-conscious emotions. This type emerges from temporal comparisons. Unlike social comparisons, which represent a self-evaluation in relation to others (e.g., "I am better/worse than Sam"), temporal comparisons represent a self-evaluation in relation to one's own past self (e.g., "I am better/worse than I was before"). Although both self-evaluations are linked to pride and shame (Chapter 2 & 3), the underlying processes might be different. It is an exciting direction for future research to take a nuanced glance on the recent theories on pride (Tracy & Robins, 2007) and examine whether downward

social comparisons underlie hubristic pride (e.g., feelings of arrogance and smug) and downward temporal comparisons authentic pride (e.g., feelings of competence and self-worth). A similar approach might be adopted to examine whether upward social comparisons and upward temporal comparisons might induce shame that underlies inferior competence relative to others versus to one's past potential, respectively.

Another similarity between social and temporal comparisons is their relation to the need for competence (Chapter 3). Contributing to the demonstrated causal link between downward social comparisons and a sense of competence (Keil et al., 1990), our findings showed that downward comparisons are positively related to a sense of competence on daily life, regardless of whether these comparisons were social or temporal. Yet, the underlying processes of these comparisons might be different. Unlike the sense of competence that downward social comparisons trigger (i.e., one that depends on surpassing others), the sense of competence that downward temporal comparisons trigger might be more energizing and beneficial for intrinsic motivation, which is related to adaptive processes such as school achievement, persistence, and sense of autonomy (Corpus & Good, 2021; Corpus et al., 2006; Deci & Ryan, 1985; Taylor et al., 2014). For example, an experiment (Corpus et al., 2006) showed that children who received mastery praise that highlighted improvement over time following a puzzle they completed ("That's great work! You seem to really be getting the hang of it!" p. 338) showed more intrinsic motivation than children who received downward social comparison praise ("Nice job! Most kids don't do as well as that!" p. 338). Future research can examine whether the increase in intrinsic motivation is partly thanks to the nature of competence downward temporal comparisons trigger (i.e., competence in relation to one's own past self).

The final similarity between social comparisons and temporal comparisons was their relation to the need for autonomy (Chapter 3). Adolescents feel autonomous when they are part of something that they feel important and interesting (Ryan & Deci, 2000). The findings showed that on days adolescents made downward comparisons (both social and temporal), they felt autonomous (Chapter 3). This novel evidence bridged the literature on basic psychological needs and the literature on comparisons. In adolescence, social comparisons are prevalent especially in competitive school settings (Buunk et al., 2005) and the emphasis put on such comparisons can make them motivating and important to some students (Mansfield, 2010). However, social comparisons might not always satisfy a sense of autonomy, especially when individuals feel they lack control over their choices (Ryan & Deci, 2000). In primary school settings, where temporal comparison opportunities are more prevalent and highlighted (Ames, 1992; Midgley et al., 1995), children might feel that they have more control over their own progress and hence feel more autonomous when engaged in temporal than social comparisons. Thus, it might be an idea for future research to examine how social and temporal comparisons are related to autonomy in primary versus secondary schools.

Despite their similar outcomes in affective states and basic psychological needs for competence and autonomy, social comparisons and temporal comparisons had different outcomes in relation to goals they triggered in youth (Chapter 2 & 3). Whereas social comparisons made children adopt superiority goals, temporal comparisons made them adopt improvement over superiority goals. Theories of competition suggest that social comparisons

put individuals into a competitive mindset that encourages them to make more of these social comparisons (Garcia et al., 2018). Our finding showed that downward social comparisons trigger a desire in children to be better than others and on days when they make such comparisons they focus on superiority over others. Such superiority goals can work as a mechanism that maintains the loop of competition and downward social comparisons, discussed in competition theories (Garcia et al., 2006, 2018). Especially for those who are more prone to chronic social comparisons (e.g., children with higher narcissism levels), downward social comparisons can cultivate excessive focus on surpassing others ultimately at the cost surpassing one's own self. This trade-off is already taking its toll on children's desire to improve themselves (over surpassing others) in middle-to-late childhood (Chapter 2); thus, primary school years may be a good time to encourage frequent temporal comparisons. If children would learn to make more temporal comparisons already in primary school years, they might use them more readily when they transition to secondary schools, especially at times when they notice they are drawn to social comparisons. By changing their comparison strategies from social to temporal, children might refrain from sacrificing learning opportunities for the sake of demonstrating superiority over others.

An additional benefit of downward temporal comparisons over social comparisons was that only the former met the satisfaction of the basic psychological need of relatedness (Chapter 4). Unlike social comparisons that instill a competitive mindset (Garcia et al., 2006), temporal comparisons might instill a cooperative mindset. Hence, downward temporal comparisons could make adolescents more open to engage with peers so as to improve oneself—as shown in Chapter 4. Future research can test the interpersonal consequence of psychological comparisons from the framework of egosystem versus ecosystem motivation (Crocker, 2008). From that perspective, social comparisons might trigger egosystem motivation that makes individuals see others' achievements as a threat to oneself and thus encourage zero-sum relationships. Unlike social comparisons, temporal comparisons might trigger ecosystem motivation that makes individuals see others as resourceful collaborators and thus encourage connected and supportive relationships.

Overall, it is important that researchers examine the consequences and correlates of temporal comparisons jointly with those of social comparisons, so that we can obtain a more complete picture of their similar and unique role in various outcomes of youth. For example, recent research showed that social and temporal comparisons influenced adults' self-evaluations in health and fitness similarly, such that downward and upward comparisons triggered positive and negative self-evaluations, respectively (Vogel et al., 2020). Another important benefit of studying social and temporal comparisons simultaneously is that this will enable researchers to uncover their potential role in developmental pathways leading to several maladaptation (e.g., narcissism, low self-esteem, depression, anxiety) in adulthood. In Chapter 4, I demonstrated it is only downward social comparisons (but not temporal comparisons) that maintain narcissism levels over time among young adolescents.

Narcissism Versus Self-Esteem

One reason for me to embark on this research was my desire to contribute to the interventions that could curb narcissism. Youth with high narcissism think they are better than

others and desire admiration and respect from others (Brummelman, Thomaes et al., 2016; Taylor et al., 2007; Thomaes & Brummelman, 2016). Surpassing others make them feel proud; however, when they are overshadowed by others, they often react aggressively (Bushman et al., 2009; Thomaes et al., 2009, 2016; Tracy et al., 2009). As surpassing others is more important to them than getting along well with others, they may fail to maintain close interpersonal relationships (Ackerman et al., 2011; Campbell & Green, 2008). In sharp contrast, youth with high self-esteem levels think they are neither better nor worse than others (Rosenberg, 1965). They tend to value close relationships with others more than surpassing others (Eaton et al., 2006; Park & Colvin, 2015). Unlike narcissism that is linked to several maladaptive characteristics such as aggression and addiction, self-esteem is linked to adaptive characteristics such as lower levels of depression and anxiety (Orth et al., 2015; Zhou et al., 2020). Unfortunately, however, interventions that curb narcissism, while maintaining or increasing self-esteem levels, are missing.

In the last decades, a significant progress has been achieved in designing interventions that reduce the outcomes of narcissism or state narcissism (e.g., Giacomini & Jordan, 2014, 2018; Thomaes et al., 2009). Yet, little is known about the processes that do or do not maintain narcissism. This seems unfortunate, as intervening the processes that could maintain personality traits might be one way to curb them (Brummelman, 2018). In Chapter 4, I identified downward social comparison as one mechanism that maintains narcissism. Unlike downward social comparisons, downward temporal comparisons do not maintain narcissism. Interventions could focus on encouraging children with higher narcissism levels to make more downward temporal comparisons, as such comparisons help individuals satisfy and maintain their positive self-evaluations (Pyszczynski et al., 1985; Wilson & Ross, 2000) without triggering their chronic desire to be better than others (Chapter 2).

One of the most important findings reported in this dissertation pertain to the way narcissism and self-esteem differ from each other and in their relation to social comparisons. The view that narcissism is a form of high self-esteem has been deep-seated in psychology (Baumeister et al., 1993, 1996; Edwards et al., 2013; Veronese et al., 2011). If that view were true, we would predict that adolescents with high self-esteem would engage in frequent downward social comparisons just like those with high levels of narcissism. With two studies in Chapter 4, however, we showed that it was only those with higher narcissism levels (not higher self-esteem levels) who engage in frequent downward social comparisons. Additionally, it was only those with lower self-esteem (not lower narcissism levels) who engage in frequent upward social comparisons. Up to date, the link between narcissism and downward social comparison had been found among adults through two studies (i.e., Bogart et al., 2004; Krizan & Bushman, 2011). Our research shows that this connection already exists in adolescence, when narcissism is still in development. Hence, our findings may have clinical implications because they suggest that it can be ideal to intervene with comparison strategies that maintain narcissism and low self-esteem before those self-views have become enduring in adulthood. Narcissism and self-esteem are rather stable in the short term and medium term (Chopik & Grimm, 2019; Zimmerman et al., 1997); however, they are not carved in stone, and as most personality traits, they are more prone to change in childhood than in adulthood (Huang, 2010). This may create an excellent opportunity to examine the role of downward temporal comparisons in protecting

against the development of pathological personality structures in adulthood. Interventions could test if the encouragement of downward temporal comparisons instead of downward social comparisons can be an effective strategy to prevent narcissism levels from increasing over time.

This dissertation has practical implications for educators and parents. Thus far, research on temporal comparisons has been rare. One possible reason has been the assumption that temporal comparisons might not be needed when social comparison opportunities are available. The findings showed, however, that adolescents make frequent downward temporal comparisons on a daily basis. Leveraging adolescents' extant tendency to make downward temporal comparisons, educators can design settings (e.g., cooperative) to encourage more of these comparisons to help adolescents manage the competitive secondary school settings. In cooperative settings, which is marked by information exchange to achieve a mutual goal, mastery goals could trigger more temporal comparisons than social comparisons (Ames, 1992; Rothstein & Pierotti, 1988). Parents might consider offering their children with temporal comparison feedback instead of social comparison feedback. Feedback that focuses on improvement over time (i.e., mastery praise) increases intrinsic motivation, which encourages children to engage with challenging tasks and learn from them (Corpus et al., 2006). Finally, parents could discuss with their children in what ways they have changed over time. Such discussion might steer children into making more temporal comparisons.

Strengths and Limitations

This dissertation has several strengths, including its combination of experimental, daily diary, cross-sectional, and longitudinal designs to address a specific novel research question. By studying two crucial comparison types (social and temporal comparisons) together with their directions (downward and upward), it showed the unique and common effects of these comparisons on children's and adolescents' several outcomes, such as their affective states and goals.

Samples recruited for studies involve children and adolescents from different developmental groups. Being able to access such samples enabled us to understand, for the first time, whether developmental group (from middle childhood through middle adolescence) has an impact on how comparisons affect youth's outcomes. This contributed to the developmental models of comparisons that could be rarely found in literature. Furthermore, all studies in this dissertation were statistically well-powered. Finally, in addition to quantitative data, we collected qualitative data (i.e., writing exercises in Chapter 2), which offered a deeper insight concerning the comparison experiences of children and adolescents (i.e., insight).

Despite several strengths, this dissertation is not without its limitations. First, samples in all studies included Western youth. In Western societies, social comparison opportunities are plenty and are often accompanied by interpersonal competition (Garcia et al., 2018). Although such competition is a prominent element of educational systems both in Western and non-Western societies (Shih & Alexander, 2000), social comparison opportunities could be perceived by students from non-Western societies as opportunities for growth and improvement more than do so by those from Western societies (Watkins, 2007; White & Lehman, 2005). Thus, it is for future research to examine how youth from different societies interpret social

comparison opportunities and whether the detrimental effects of such comparisons are less prominent among youth from non-Western than Western societies.

Second, it remained unclear why upward temporal comparisons are less insightful than downward temporal comparisons (Chapter 2). I speculated that upward temporal comparisons might lack a reflection on perceived effort and effective strategies. Research on growth mindset shows that talking about mistakes could make children realize that self-improvement is possible (Haimovitz & Dweck, 2016). A similar approach might also work for upward temporal comparisons. Future research could test whether discussing the reasons for deterioration over time, what works and what fails to work in the self-improvement process, and how to replace ineffective strategies with potentially effective ones can help children gain more insight from upward social comparisons.

Third, I did not examine the long-term consequences of social and temporal comparisons. The longest time period that I could examine was the consequences of those comparisons over a period of three months (Chapter 4). Although this offers some information about the amount of change, it fails to offer potential trajectories of change (linear versus non-linear change; Robins et al., 2001). Overall, future research might benefit from adding additional waves to test whether the outcomes of social and temporal comparisons I observed in the relatively shorter term also occur in the medium- and long-term.

Future Research Directions

Several studies in this dissertation (Chapter 3 & 4) examined how social and temporal comparisons relate to youth's multiple outcomes. One underlying mechanism that we could explore was how the desire for self-improvement over superiority works as a bridge between downward temporal comparison and a sense of relatedness. Other processes might also be possible. For example, it might be that temporal comparisons give children a sense of progress and this in turn makes them feel more competent (Butler, 1987). Moreover, temporal comparisons might trigger in children a belief that they are capable of achieving the task at hand and this in turn might make them focus on improving themselves rather than outperforming others. A valuable goal for future research would be to examine the exact mechanisms through which social and temporal comparisons exert their influence on children's beliefs and goals.

Studies in this dissertation showed that emotions, goals, and perceptions of youth are affected by social and temporal comparisons. An important question for future research concerns how children learn making these comparisons. Research in praise shows that the type of praise adults give to children elicit different reactions in them (e.g., Cimpian, 2017; Gunderson et al., 2013) because of different underlying messages they involve (Brummelman, Crocker et al., 2016). For example, when adults highlight in their praise children's intelligence (rather than their effort), children may avoid challenges (Mueller & Dweck, 1998), perhaps because they think they will not be able to maintain their worth as a person in the face of failure ("If success means that I'm clever, failure means that I'm not"). In a similar vein, children might learn to engage in certain type of comparisons more frequently than they do others due to parental feedback. For example, children who receive frequent social comparison feedback from their parents might internalize the message that being better than others is more important

than improving oneself, whereas those who receive frequent temporal comparison feedback might internalize that improving oneself is the core goal. From another perspective, some children might elicit more social comparison feedback from their parents. For example, children who like to be under the spotlight or are highly competitive might steer their parents' praise like "You are the star of your class!" Thus, it is a crucial next step to investigate how socialization practices shape children's psychological comparisons and are shaped by children themselves.

Finally, this dissertation did not examine the role of broader settings such as classrooms. The finding that social and temporal comparisons lead youth to pursue different goals might be examined together with the role of classrooms. Classrooms are crucial settings to examine comparisons because they involve and facilitate frequent psychological comparisons (Dijkstra et al., 2008). Goal theories posit that competitive classroom settings tend to elicit ego involvement rather than task involvement (Ames, 1992; Nicholls, 1984). Thus, it would be interesting to examine what type of comparisons are prevalent in competitive versus cooperative classrooms and whether children could be made more task-oriented through encouraging temporal comparisons over social comparisons in classrooms (e.g., via temporal comparison feedback on homework).

Conclusion

Collectively, studies in this dissertation answered its overarching question by showing that temporal comparisons have similar benefits as social comparisons without the risks of social comparisons. Specifically, my research has shown that downward temporal comparisons make children feel proud but without making them desire to be superior to others and while giving them a sense of more progress and insight. Such processes also occur on a daily basis: On days when adolescents make more downward temporal comparisons (but not social comparisons), they desire self-improvement over superiority and feel more related to others. In line with these findings, I found that downward temporal comparisons may help curtail narcissism. I call for interventions to test whether encouraging temporal comparisons over social comparisons can disrupt youths' thoughts and beliefs about superiority over others toward developing oneself to improve youths' developmental outcomes, for instance in the domains of interpersonal relationships and academic competence. Future research should also consider whether youth with high narcissism levels respond better to such interventions (as they already have downward temporal comparisons in their comparison repertoires). If this is the case, it might contribute to efforts that aim to curb narcissism and raise self-esteem.