Improvise, adapt, overcome?

The mental health and compliance of youth during the COVID-19 pandemic

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Chapter 6

General Discussion

This dissertation aimed to examine the mental health and the compliance of late adolescents and young adults during the COVID-19 pandemic, and the factors that may have influenced mental health and compliance (e.g., resilience and the availability of natural mentors). Four studies were conducted to meet these aims, of which two focused on compliance with the preventive COVID-19 measures, whereas the other two focused on mental health. The first study (Chapter 2) was an explorative cross-sectional study, examining which factors (e.g., mental health) were associated with the compliance to the COVID-19 measures in a sample of 263 Dutch late adolescents and young adults from the general population. Chapter 3 presented a qualitative interview study that was conducted to gain more insight in to what extent and why late adolescents and young adults comply with the COVID-19 measures, and whether their mental health and having a natural mentor influenced their compliance. The next chapter (4) presented a three-level meta-analysis, which examined the effects of the first year of the COVID-19 pandemic on (multiple aspects of) the mental health of late adolescents and young adults (16-30 years). Finally, chapter 5 presented a longitudinal multi-level study that examined the effects of the duration of the COVID-19 pandemic on the mental health of late adolescents and young adults from the general population. This study also examined the potential moderating effect of pandemic severity. In this final chapter, the main findings of these four studies are summarized and discussed in twofold. First, primary findings on compliance with the COVID-19 measures and mental health are discussed, after which these findings are integrated into an overall view. Further, limitations, strengths, and implications of the studies and their results are discussed. Finally, this chapter ends with the main conclusions.

Main Findings

Compliance

The first two studies on compliance to the COVID-19 measures aimed to gain more insight into how well late adolescents and young adults comply, why they comply, and which factors were associated with compliance.

The first study (Chapter 2) showed that compliance with social distancing measures was associated with less depressive symptoms, less distrust towards others, more resilience, applying active copies strategies, and having a natural mentor. Age and sex did not moderate these associations. This study also showed that most late adolescents and young adults generally adhered to all preventive measures (e.g., washing hands frequently) (84.8%), and social distancing in particular (85,9%). These findings show that most late adolescents and young adults complied with the COVID-19 measures, and

that multiple factors may influence compliance (e.g., more depressive symptoms can negatively impact compliance).

The results on the degree of compliance were confirmed in the second qualitative study (Chapter 3), showing that most late adolescents and young adults complied with the COVID-19 measures. The participants gave various reasons for their compliance: 'feeling solidarity with others' and 'feeling responsible for others' were the most frequently given arguments for compliance. This study also indicated that the participants experienced mental health problems, although positive outcomes were also identified, such as having more time for hobbies. Last, having a natural mentor proved to be positively associated with adherence to the COVID-19 measures.

It seems that late adolescents and young adults adhered to the preventive measures quite well. This is in line with other studies, including a review study, showing an overall high compliance in adolescents and young adults with the COVID-19 measures (Jaureguizar et al., 2021), even though self-reported compliance was generally higher than observed compliance (Selby et al., 2020). The other-directed instead of self-oriented reasons for compliance (i.e., 'feeling solidarity with others' and 'feeling responsible for others') can possibly be partly understood from the perspective that late adolescents and young adults themselves were not at risk of severe complaints of the COVID-19 virus (World Health Organization, 2023). Moreover, in their stage of development most adolescents and young adults have acquired the sociomoral competence of empathizing with others (Gibbs et al., 2007) indicating that they are capable of taking the perspectives of others and being emotional responsive to the situation of others. Given this competence, an important incentive for adolescents and young adults to adhere to the measures was to protect others, and specifically more vulnerable people such as those with pre-existing medical conditions. Other studies found similar results, with adolescents reporting 'social responsibility' as their reason for compliance to prevent others from getting sick (Alivernini et al., 2021; Craig et al., 2023; Oosterhoff et al., 2020). The current qualitative study also revealed that the dimensional size of physical environments acted as a facilitator for compliance, meaning that late adolescents and young adults were more likely to comply to social distancing measures in physical environments of substantial size (e.g., more likely to comply in a spacious supermarket than in a cramped supermarket).

Other factors that positively influenced the compliance with the COVID-19 measures in late adolescents and young adults were fewer mental health problems, the availability of a natural mentor, greater resilience, and using active coping strategies. This is in line with other studies, showing that fewer mental health problems were related to higher compliance (e.g., Magson et al., 2021; Solomou & Constantinidou, 2020). Additionally, social support (whether or not in the form of a natural mentor) can be

beneficial to the promotion of health behavior, such as compliance with the preventive COVID-19 measures (Kwasnicka et al., 2016). One study found that social support from family members increased compliance, but that social support from friends decreased compliance (Paykani et al., 2020). This may be explained by the increased (social) pressure from friends to ignore the preventive measures to engage in (physical) contact with people outside of their household (e.g., to leave one's house to meet up). Further, higher levels of resilience were positively associated with compliance, which is in line with other studies (Hassanien et al., 2022; Kaim et al., 2021). Active coping strategies were also positively associated with compliance, which has also been found in several studies (Alyami et al., 2021; Kleitman et al., 2021). Last, studies found that providing sufficient (understandable) information about the COVID-19 virus positively affected compliance, while lack of or incorrect information may cause mistrust (e.g., in the government), which can hinder compliance (Nivette et al., 2021; Raude et al., 2020). In sum, the current two studies on compliance (Chapters 2 and 3) align with the results of other studies and show that compliance was fairly high in late adolescents and young adults, and was influenced by various factors, which affected to what extent late adolescents and young adults were willing to comply with the preventive measures.

Mental health

After gaining insights into compliance during the COVID-19 pandemic and its relation with mental health problems, the effects of the COVID-19 pandemic on the mental health of late adolescents and young adults were examined. To achieve this, a three-level meta-analysis (Chapter 4) was first conducted, which synthesized longitudinal studies that had at least one pre-COVID measure and at least one measure during the first year of the COVID-19 pandemic. Mental health was operationalized as thirteen different mental health aspects that were referred to as mental health "domains" (e.g., depression or anxiety). These domains were subsequently merged into two overarching categories: internalizing and externalizing symptoms. The results showed that the COVID-19 pandemic did not have a significant effect on any of the thirteen mental health domains nor on the two overarching categories, indicating that mental health of late adolescents and young adults from the general population did not worsen or improve during the first year of the COVID-19 pandemic.

To gain insight into potential effects of the COVID-19 pandemic on the mental health of late adolescents and young adults, a longitudinal multi-level study (Chapter 5) was conducted that examined whether the duration of the COVID-19 pandemic affected mental health, and whether pandemic severity moderated this relation. The results

showed that the mental health of late adolescents and young adults from the general population in the Netherlands was not affected by the duration of the COVID-19 pandemic, and that pandemic severity was not a moderator. Additional results showed that females experienced more mental health problems than males, and that higher resilience was associated with fewer mental health problems.

When combining the results from both studies, it seems that mental health of late adolescents and young adults from the general population from Western countries did not deteriorate during the first year of the COVID-19 pandemic. This was unexpected, since multiple studies provided evidence of mental health deterioration during other pandemics due to measures such as quarantine (Brooks et al., 2020; Hawryluck et al., 2004; Huremović, 2019; Loades et al., 2020), and because many researchers expressed their worries about the impact of social distancing measures on mental health (e.g., Cullen et al., 2020; Sahu, 2020; Usher et al., 2020). While research on the effects of the COVID-19 pandemic on mental health is still accumulating, it seems that findings on the potential effects of the COVID-19 pandemic and its associated preventive measures on the mental health of late adolescents and young adults are at least equivocal.

When looking at recent studies, more and more seem to report on negative effects of the COVID-19 pandemic on the mental health of late adolescents and young adults (e.g., Kauhanen et al., 2023; Marra et al., 2024). There are, however, also studies reporting that the COVID-19 pandemic did not influence mental health (Knowles et al., 2022; Stamatis et al., 2022; Van der Velden et al., 2022). Additionally, there are studies that provide mixed results across mental health problems, such as an increase in anxiety but a decrease in depression (Hawes et al., 2021; Lee et al., 2020; McLafferty et al., 2021; Wieman et al., 2022). There are also studies reporting a deterioration of mental health during the first period or lockdown of the COVID-19 pandemic, which stabilized or returned to baseline over time (Deng et al., 2022; Gagné et al., 2021; Graupensperger et al., 2022). Last, when looking at available research that focused on specific groups, such as those with pre-existing mental health issues, the COVID-19 pandemic seemed to have had a strong negative impact on their mental health (Fischer et al., 2023; Kauhanen et al., 2023; Kleine et al., 2023; Zijlmans et al., 2023).

All of this shows that research that examined potential effects of the COVID-19 pandemic on the mental health of late adolescents and young adults is not univocal. At the time this dissertation was written, there were still no studies available that longitudinally examined the mental health of late adolescents and young adults and that included measures before and after the COVID-19 pandemic. Therefore, it remains unclear whether the COVID-19 pandemic did have long term effects on the mental health of late adolescents and young adults. Furthermore, studies show that even before the

COVID-19 pandemic a trend indicating an increase of mental health problems in children and adolescents was reported, and therefore the COVID-19 pandemic may not have been the (sole) cause of an increase in mental health problems, if an increase was found at all (Abrams, 2023; Boer et al., 2022; CBS, 2018).

Considering the theoretical frameworks of identity development and self-determination, it is likely that the limited social contact during the COVID-19 pandemic could have had a negative impact on mental health. Additionally, the current longitudinal study identified being female as a risk factor, which aligns with previous studies (Kleine et al., 2023; Magson et al., 2021; Thorisdottir et al., 2021; Stevens et al., 2024) and the finding that females tend to be more prone to developing mental health problems than males (Boyd et al., 2015; Seedat et al., 2009). However, protective factors may act as a buffer against developing mental health problems. This dissertation revealed some of these factors.

The most influential factor seemed to be resiliency. There is a great body of literature, including reviews and meta-analyses, highlighting the importance of resilience in preventing mental health problems (e.g., Gheshlagh et al., 2017; Hu et al., 2015). Following the process-oriented approach, resilience is best seen as a dynamic process in which individuals actively adapt to major adversities and, when successful, overcome them (Fergus & Zimmerman, 2005). In this light, whenever individuals have sufficient assets or resources (i.e., protective factors) to successfully adapt to a major adversity (e.g., the COVID-19 pandemic), they can overcome the adverse situation. If insufficient protective factors are present to mitigate the risk factors, individuals may be unsuccessful in adapting to the situation and experience the negative outcomes/risks associated with the adverse situation (e.g., developing mental health problems due to limited social contact during the COVID-19 pandemic). Additionally, social support, particularly in the form of a natural mentor seemed to be a protective factor. This is in line with a substantial body of literature stating that social support is associated with fewer mental health problems (Budimir et al., 2021; Harandi et al., 2017; Heerde & Hemphill, 2018). The availability of a natural mentor, who can provide social support, is also associated with fewer mental health problems (Hurd & Zimmerman, 2010; Hurd & Zimmerman, 2014; Van Dam et al., 2018). Having a natural mentor can also contribute to greater resilience, which is, as stated earlier, also related to fewer mental health problems (Southwick et al., 2007; Van Dam & Schwarz, 2020). Last, being able to use active coping strategies as the main strategy to deal with difficult situations was associated with fewer mental health problems, which is also in line with a great body of studies. Active coping, problem-focused, or task-oriented coping are associated with fewer mental health problems, whereas emotion-oriented coping and/or avoidance coping are related with more mental health problems (Budimir et al., 2021;

Flett et al., 2012). Furthermore, active coping strategies have been shown to be positively associated with resilience, with resilient adolescents using active coping strategies more frequently than those with lower resilience levels (Dumont & Provost, 1999).

In sum, the effect of the COVID-19 pandemic on the mental health of late adolescents and young adults remains uncertain, with contrasting results across studies. Some risk factors for developing mental health problems during the COVID-19 pandemic, such as being female or having pre-existing mental health problems, were identified in several studies. Additionally, many factors may have influenced the relation between the COVID-19 pandemic and mental health, and some could have acted as buffers, such as social support or resilience. These factors also may have influenced each other (e.g., having a natural mentor being beneficial for resilience), indicating mental health is a complex and multifaceted construct.

Overarching perspective

When taking both the results on compliance and mental health into consideration, it remains unclear how the mental health of late adolescents and young adults was associated with compliance. It is possible that those with (pre-existing) mental health problems had more trouble with compliance due to insufficient 'resources' (i.e., physical and psychological assets) as described in the maintenance of behavior change theory (Kwasnicka et al., 2016). When one's 'resources' are limited or depleted, this can hinder one's self-regulatory capacities. Compliance with preventive (social distancing) measures may also increase the risk of developing mental health problems due to severely limited opportunities for social interaction (Loades et al., 2020). Another study found that a high compliance group showed more depressive symptoms than a low or medium compliance group (Coulaud et al., 2023). On the contrary, one study found that adherence to stay-at-home measures protected against mental health problems (Magson et al., 2021). For instance, social anxiety symptoms may have been decreased because of compliance with stay-at-home measures (Hawes et al., 2021). As social gatherings were generally not allowed, and social distancing measures prevented crowd forming, social anxiety was not or or only somewhat induced by these situations. However, there are studies that did not find a relation between compliance and mental health (Padrosa & Bolíbar, 2022). The current dissertation shows that compliance seems to be related with mental health, but does not provide a clear view on how compliance is related to (various) mental health problems, while international literature offers mixed results.

Strengths and Limitations

The outcomes of this dissertation should be considered in light of several limitations. The first was that most studies were based on self-reported data, which could have biased the results. For instance, studies have shown that self-reported compliance tends to be higher than observed compliance (Selby et al., 2020). This could be due to social-desirability bias in answering the survey. Due to the nature of the COVID-19 pandemic, obtaining observation data for compliance was difficult due to the lockdown and social distancing measures.

A second limitation was that this dissertation only focused on the first year of the COVID-19 pandemic, and therefore no claims could be made about potential long-term effects of the COVID-19 pandemic. It could be that, due to pandemic fatigue, the longer the COVID-19 pandemic existed, the higher the risk of developing mental health problems. This may have particularly been the case since the preventive measures were constantly changing with relaxations and restrictions following each other. At the time of writing, there were still insufficient published studies available on the full duration of the COVID-19 pandemic that should be better able to grasp the effect of the COVID-19 pandemic on the mental health of late adolescents and young adults.

A third limitation was that this dissertation focused on Dutch-speaking populations in the Netherlands (with exception of the meta-analysis). During the COVID-19 pandemic there were different preventive measures in place across countries at different times. What type of measures were taken depended on the virus spread with more infections leading to additional measures and less infections leaving space for relief of measures. Therefore, the results are difficult to generalize since measures differed across countries in the same period of time. For example, the Netherlands had a curfew from January 2021 to the end of April 2021, while the US did not have a curfew in the same period (RIVM, n.d.; CDC, n.d.). This illustrates that the situation across countries was incomparable during the same period of time.

Despite these limitations, this dissertation also has its strengths. It examined both compliance and mental health during the COVID-19 pandemic using various research designs (i.e., a cross-sectional design, a qualitative design, a meta-analytical design, and a longitudinal design), providing a multi-faceted insight in these constructs and increasing robustness.

In addition, the focus on late adolescents and young adults (16 to 24 years) also provides an insight in a somewhat understudied population. It seems more common to study children and adolescents (0 to 18 years) or adults (18 years and older). The population of late adolescents and young adults constitute a heterogenous group, consisting of both students and working young people. Additionally, they are in a specific

developmental phase, which is different from both children and adults. Therefore, the results of the present dissertation complement the results of other studies examining different populations.

Last, this dissertation studied multiple relevant factors to gain a better understanding of the effects of the COVID-19 pandemic on late adolescents and young adults, such as resilience and having a natural mentor. These factors emphasize that the effects of the COVID-19 pandemic on mental health are complex and depend on multiple factors, which could buffer or exacerbate the effects.

Implications

The implications of this dissertation are mainly focused on policy, as the COVID-19 pandemic ended on May 5, 2023, (World Health Organization, 2024). The results of this dissertation show that late adolescents and young adults from the general population complied quite well with the preventive COVID-19 measures, and that their mental health remained rather stable during the first year of the pandemic. This indicated that the preventive measures that were imposed by the Dutch government may be justified from a mental health perspective (in late adolescents and young adults from the general population), considering these measures 'flattened the curve' of the spread of COVID-19 and prevented hospitalizations and even death while not affecting the mental health of late adolescents and young adults from the general population. To fully answer whether the preventive measures were justified other perspectives should also be considered, such as the medical and economical perspective. Additionally, it may be assumed that the governmental communication on the measures they imposed, was adequate, since compliance was quite high. Studies show that compliance also depended on how the information was provided, as it should be understandable and sufficient (Liao et al., 2010; Nivette et al., 2021; Raude et al., 2020). The COVID-19 pandemic was a turbulent time with many uncertainties. Giving as much adequate information and clarity as possible can prevent distrust and provide some tranquility.

However, the Dutch government could also improve. At the start of the COVID-19 pandemic, the 'Outbreak Management Team (OMT)' comprised various health care experts (such as virologists) to advise the government in the actions that were necessary to take to 'flatten the curve'. For a substantial period of time, the OMT did not include health professionals with expertise in the mental health of children, youth, adults, and/or elderly and mainly comprised medical staff and microbiologists. Therefore, there was sufficient expertise in how to prevent the COVID-19 virus from spreading, but insufficient expertise in potential side-effects of measures on mental health of different populations.

In future pandemics, experts in mental health (e.g., psychiatrists or psychologists) should be consulted to ensure that the mental health perspective is taken into account.

Last, the government should be considerate of those who are more at risk of developing mental health problems (e.g., females) or those whose problems could worsen (e.g., those with pre-existing mental health issues) during a situation such as the COVID-19 pandemic. This dissertation showed that resilience and social support (availability of a natural mentor) could act as buffers. Therefore, the Dutch government should be mindful of people who may need additional support in crisis situations that require drastic measures, for instance by supporting mental health organizations and initiatives directed to offering social support, resiliency programs, and easily accessible mental health care.

Conclusions

Taken together, this dissertation provides insight into the compliance and mental health of late adolescents and young adults from the general population during the first year of the COVID-19 pandemic. Overall, it seemed that they complied very well to the preventive (social distancing) measures, and therefore contributed to reducing the incidence of the COVID-19 virus. It was also found that various factors may have influenced compliance to measures, such as mental health. Overall, the present dissertation did not find an effect of the COVID-19 pandemic on the mental health of late adolescents and young adults in the first year of the pandemic. As such, this dissertation provides a critical look on the dominating view of the negative effect the COVID-19 pandemic had on the mental health of late adolescents and young adults. It highlights that not everyone was negatively affected by the COVID-19 pandemic, as some even experienced positive outcomes. The results of this dissertation, however, cannot be generalized to all individuals. Multiple factors may have buffered potentially negative effects of the COVID-19 pandemic, such as resilience or social support (whether or not in the form of a natural mentor). On the contrary, factors such as being female or having pre-existing mental health problems may have been risk factors for developing or worsening mental health problems. That being said, the measures taken by the Dutch government, which aimed to reduce the incidence of COVID-19 and save lives, may not have had a severe negative impact on the mental health of late adolescents and young adults from the general population. However, this dissertation cannot draw any conclusions about the legitimacy of the preventive measures. If any conclusion is to be drawn, it should be based on multiple points of view. This dissertation does provide valuable insights that contribute to this discussion.

During the COVID-19 pandemic everybody had to improvise to make the best of the situation (e.g., watching movies online together with friends or working from home). Furthermore, everybody youth had to continuously adapt to everchanging circumstances, which were shaped by the spread of COVID-19 and the measures that were imposed to reduce the virus spread. The question is whether late adolescents and young adults did overcome the COVID-19 pandemic. This dissertation cannot provide a conclusive answer, but does provide valuable empirical information. It seems that mental health was not severely impacted in the general youth population during the first year, but long-term effects cannot be ruled out. Additionally, the effects of the COVID-19 pandemic may have been different for various subsamples (e.g., those with pre-existing mental health problems), and it is therefore plausible to suggest that not every individual did overcome the difficulties of the COVID-19 pandemic. Resilience is a dynamic and multisystemic concept, which pertains to how individuals and their social environments interact to adapt to minor and major stress-inducing life events. This dissertation (with the backing of international literature) indicates that societies should focus on enhancing resilience to ensure youth (and possibly other age groups as well) can adapt and overcome stressful life events, such as the COVID-19 pandemic, and in pursuance to prevent mental health problems.