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Changes in late adolescents' trust before and during the COVID-19 pandemic

Shanshan Bi ^a, Asuman Buyukcan-Tetik ^b, Marlies Maes ^{a,c,d}, Jian-Bin Li ^e,
Catrin Finkenauer ^a and Gonneke Stevens ^a

^aDepartment of Interdisciplinary Social Science, Utrecht University, Utrecht, The Netherlands; ^bFaculty of Arts and Social Sciences, Psychology Program, Sabanci University, Istanbul, Turkey; ^cDepartment of School Psychology and Development in Context, Leuven, Belgium; ^dResearch Foundation – Flanders (FWO), Brussels, Belgium; ^eDepartment of Early Childhood Education, The Education University of Hong Kong, Xianggang, Jiaoyu, China

ABSTRACT

Trust is crucial to the public's compliance with policies and rules released by governments, particularly in times of the coronavirus disease 2019 (COVID-19) pandemic. However, it remains unclear whether and to what extent late adolescents' interpersonal and institutional trust fluctuated from the pre-COVID-19 pandemic to the lasting phase of the COVID-19 pandemic. The present study uses three-wave longitudinal data from the Youth Got Talent (YGT) project to address this gap ($n = 1,423$; 43% boys; $M_{age} = 17.85$, $SD = 1.95$). Latent basis growth curve models showed that interpersonal trust remained relatively stable over time. In contrast, institutional trust temporarily increased from pre-COVID-19 pandemic (Fall 2019) to the initial phase of the COVID-19 pandemic (Spring 2020) and subsequently, decreased during the lasting phase of the COVID-19 pandemic (Fall 2020). These results enhance our understanding of trust among late adolescents and have implications for policies aiming to manage the COVID-19 pandemic.

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Introduction

The coronavirus disease 2019 (COVID-19) was declared a pandemic on March 11, 2020 by the World Health Organization (2020). By the end of 2020, there were over seventy-nine million confirmed cases worldwide, and over seven hundred fifty thousand confirmed cases in the Netherlands (World Health Organization, 2020). Across the world, countries implemented measures to prevent the spreading of the virus. The success of the implementation relies on the compliance and support from the public (Anderson et al., 2020), which are strongly determined by people's trust (Devine et al., 2020; Esaïsson et al., 2021; Falcone et al., 2020; Schraff, 2021). Indeed, research has shown that trust may increase people's willingness to comply with governmental COVID-19 measures (e.g. social distancing) and to engage in COVID-19 related prosocial behaviours (e.g. doing the shopping for vulnerable neighbours; e.g. Han et al., 2021; Olsen & Hjorth, 2020). Trust generally plays a crucial role in prosocial behaviours (Bekkers, 2012; Han et al., 2021), social relationships (Holmes & Rempel, 1989), and cooperation (e.g. Balliet & Van Lange, 2013). Such outcomes and correlates of trust are not only essential to well-being and mental health in times of COVID-19 but play a crucial role in slowing the COVID-19 pandemic. This study investigated changes in trust from pre-COVID-19 to the initial and lasting phases of the COVID-19 pandemic. We focused on late adolescents, because they play a crucial role in spreading the virus (Wan, 2020). More importantly, late adolescence is an important

CONTACT Shanshan Bi  s.bi@uu.nl

developmental phase of trust (Abdelzadeh & Lundberg, 2017). However, external events and crises, such as the COVID-19 crisis, have the potential to intensify opportunities and risks that may change and/or reshape late adolescents' trust (Yeager et al., 2017).

Fluctuations in trust during the initial phases of the COVID-19 pandemic

Although there is no universally accepted definition, most definitions agree that trust is a positive expectation towards others' behaviour (Robinson, 1996). The trust literature distinguishes between interpersonal and institutional trust (e.g. Esaiasson et al., 2021). *Interpersonal trust* concerns people, including people who live in the neighbourhood, teachers, and classmates, while *institutional trust* concerns the government and (representatives of) authorities, including the police, banks, and non-governmental institutions (OECD, 2017). To formulate expectations whether these two types of trust changed during the COVID-19 pandemic, a distinction needs to be made between different COVID-19 phases.

During the initial phase of the COVID-19 pandemic, both types of trust may have increased. According to the 'rally-round-the-flag' effect (Mueller, 1970), in times of existential threat, such as the COVID-19 pandemic, citizens rally around national institutions as a lifebuoy (Esaiasson et al., 2021). This expectation is consistent with Terror Management Theory, which poses that in times of threat and death-related anxiety, people tend to support cultural worldview systems (TMT; Greenberg et al., 1986). Specifically, as a defence against threat, people may increase their willingness to comply with the governmental measures against the crisis, on the one hand (Han et al., 2021; Olsen & Hjorth, 2020), and experience enhanced feelings of group identity and group relationships, on the other hand (Greenaway & Cruwys, 2019; Li & Brewer, 2004; Pyszczynski et al., 2021). Extending these suggestions to the COVID-19 pandemic, interpersonal and institutional trust may both have increased in the initial phase of the COVID-19 crisis.

Consistent with this suggestion, recent studies conducted in different countries suggest that interpersonal and institutional trust have increased during the initial phase of pandemic. More studies focused on changes in institutional trust than interpersonal trust. For instance, a large web-survey panel with adult Swedes found sharp rises in both interpersonal and institutional trust over a two-month period, from the initial phase of the COVID-19 crisis (February 2 to 10 March 2020) to the acute phase of the COVID-19 crisis (March 31 to 14 April 2020; Esaiasson et al., 2021). Nevertheless, interpersonal trust increased less than institutional trust (Esaiasson et al., 2021). In a nationally representative sample in the Netherlands, Schraff (2021) tracked citizens' perceptions of trust towards the national parliament over the course of March 2020, the month in which the Dutch government announced the first lockdown. Consistent with the Swedish study, trust in the parliament increased during this phase of the first lockdown. Similarly, in a large study among Dutch households, Groeniger et al. (2021) found that trust in Dutch government increased during the initial phase of the COVID-19 pandemic. Difference-in-difference analyses suggested that the imposition of lockdown measures caused an 18% increase in trust in the government. Finally, a study in New Zealand compared matched samples before and during the first 18 days of lockdown and found that the group during lockdown reported higher trust in science, politicians, and police than the group before lockdown (Sibley et al., 2020). In sum, emerging theoretical and empirical evidence suggests that there may have been increases in trust, especially institutional trust, during the initial phases of the COVID-19 pandemic.

Fluctuations in trust during the lasting phases of the COVID-19 pandemic

Although the 'rally-round-the-flag' effect suggest a short-term rise in trust, interpersonal and institutional trust may differentially change over the course of the COVID-19 pandemic. Regarding interpersonal trust, in a literature review on young people's reactions to the Great Recession, Schoon and Mortimer (2017) found an increased awareness of the importance of social

relationships and their communal responsibility in that period of time. More specifically, in the face of the economic crisis, young people showed an increase in support and concern for others, and they perceived more support and concern from others, especially those close to them. These observations are again consistent with the TMT, which states that people likely resort to close interpersonal relationships, which presumably is associated with interpersonal trust, to defend against existential threats such as COVID-19 (Pyszczyński et al., 2021). Similar to the adverse circumstances of the economic crisis, the COVID-19 pandemic has lasted much longer than expected and has required different combinations of measures in the Netherlands, including a second partial lockdown since October 2020. The extension of these measures may have required adolescents to continue to rely on the support of others who have their best interests at heart. Therefore, we expect that interpersonal trust among late adolescents may have continued to increase, or at least remained stable during the lasting period of the COVID-19 pandemic.

Regarding institutional trust, the expected change may be different from interpersonal trust. Given the longer duration of the COVID-19 crisis, an increasing number of people have been suffering from the virus or the preventive measures (e.g. social isolation), either personally and/or in their social networks. The longer duration may also indicate that the measures taken by the government and the lasting restrictions are failing. Consequently, people may lose their confidence in government-related institutions and their effectiveness in combatting the pandemic (Devine et al., 2020; Gaskell et al., 2020). Therefore, following the initial increase in institutional trust, we expect institutional trust to decrease as the pandemic continues to last and the Netherlands entered the second lockdown. Consistent with this suggestion, Amat et al. (2020) found that people's institutional trust decreased (i.e. trust in the Spanish government and the European Union), when they and/or their close networks experienced confirmed COVID-19 cases. Goldfinch et al. (2021) found a sharp increase for trust in government in the middle of the COVID-19 pandemic (July 2020) in Australia and New Zealand. The variation in the stringency of policies and measures to manage COVID-19 (Hale et al., 2021), may explain these differences in findings and underlines the importance of considering country differences when examining trust in times of a pandemic. Overall, research on the longer-term changes in institutional trust is lacking. While research suggests that institutional trust increases initially, institutional trust may decrease as the crisis unfolds, the threat to public health remains, and governmental responses seemingly fail to be effective.

Dutch policy responses to COVID-19

Compared to the stricter measures of neighbouring countries, in Spring 2020, the Dutch government announced a so-called 'intelligent lockdown' aiming to minimize the social, economic, and psychological costs of social isolation (Holligan, 2020; Ritchie, 2020). This first lockdown between March and June 2020, included several preventive measures against the rapid spread of the virus, such as a closure of schools, cafés, restaurants, and sports and cultural facilities (while shops remained open), a restriction of social contacts, and a strong recommendation to work from home if possible. This strategy of the Dutch government was criticized, because it did not include the use of masks to prevent the spread of the virus (Sterling, 2020). In June 2020, measures were relaxed gradually, but in July 2020, the numbers of infections increased, and in October 2020, the Netherlands returned to a partial, second lockdown to control the spreading of the virus. At this stage, cafés and restaurants were closed, public events were cancelled, and restrictions on public gatherings were imposed. Given the pressure to ease the strain on the healthcare system and the increasing numbers of infections, over the course of November 2020, the government announced a full lockdown, including the compulsory wearing of masks, closures of schools, workplaces and non-essential shops, and stay-at-home requirements (Staff, 2020). Although the government wanted to avoid the lockdown and

the sentiment was that the lockdown would be further damaging to the economy, the vaccination programme was in place, providing people with more perspective for the future at that time (*As the Netherlands Moves into Lockdown, a Round up of What the Papers Say*, 2020).

The current study

The current study aimed to investigate changes in late adolescents' trust from pre-COVID-19 pandemic (T1; Fall 2019) to the initial and lasting phases of the COVID-19 pandemic (T2 and T3; Spring and Fall 2020, respectively). We distinguished between interpersonal and institutional trust to explore the differences and similarities in their development. Specifically, we posed the following two research questions: (1) How has interpersonal trust changed from T1 to T2 and T3? (2) How has institutional trust changed from T1 to T2 and T3? Based on existing theory and empirical studies, we hypothesized that interpersonal trust would increase from T1 to T2, and either stabilize or continue to increase from T2 to T3. In addition, we hypothesized that institutional trust too would increase from T1 to T2 but would decrease from T2 to T3.

Methods

Sample and procedures

We used the three-wave longitudinal data from the Youth Got Talent project (YGT), including first-year students from three tertiary vocational schools in the Netherlands. All the participants provided active consent to participate in this study. Self-report questionnaires were initially administered in the physical classroom in November 2019 (pre-COVID, T1, $n = 1,231$) and, due to the lockdown measures, were administered in the online classroom between 7 May 2020 and 25 June 2020 (the initial lockdown; T2, $n = 830$), and between 26 October 2020 and 8 January 2021 (the 2nd lockdown, T3, $n = 576$). Ethical approval was gained from the Ethics Assessment Committee of the Faculty of Social Sciences at the Utrecht University. Due to the COVID-19 pandemic and education transitioning to being (largely) online, the data collection was adjusted correspondingly. A sizable number of adolescents who participated at T1 dropped out from the following data collection. Of all the *classes* that participated at T1, approximately three quarters continued to participate at T2. Within these classes, nearly 35% of the adolescents did not complete the survey (15% had dropped out of school before T2); roughly half of the classes participated at T3, and within these classes, about 40% of the adolescents did not complete the survey (20% had dropped out of school before T3). Only about a quarter of the adolescents participated in all three study waves ($n = 386$).

Compared to the participants with missing values, participants who participated in all three study waves were more likely to be younger ($M = 17.39$ vs. $M = 17.93$; $t(913.77) = 5.50$, $p < .01$), and scored higher on family affluence ($M = 0.55$ vs. $M = 0.49$; $t(737.38) = -3.75$, $p < .01$), interpersonal trust at T1 ($M = 6.64$ vs. $M = 6.12$; $t(1167) = -5.03$, $p < .01$), and institutional trust at T1 (5.65 vs. 5.24 ; $t(748.91) = -3.52$, $p < .01$). All effect sizes of the mean differences between the two groups were small ($0.22 < \text{Cohen's } d < 0.33$) based on Cohen's conventional criteria for effect sizes (Cohen, 1992).

Measures

Trust

Interpersonal trust was measured using the 5-item interpersonal trust scale developed by the OECD (2017). Participants rated their trust towards (certain) individuals (i.e. 'most people', 'people I know personally', 'people who live in my neighborhood', 'my classmates', and 'my teachers').¹ *Institutional trust* was measured using the 7-item institutional trust scale developed by the OECD (2017), on which participants rated their trust towards institutions (i.e. 'Dutch politicians', 'the police', 'health care professionals, such as doctors and psychologists', 'people who work for the government', 'the news',

'courts and judges', and 'information on social media'). Both scales were identical in format, namely 'I trust ___', and participants rated their trust on an 11-point scale, ranging from *not at all* (0) to *completely* (10). The average score was computed for each scale and used in the analyses. Higher scores indicated higher levels of trust. The internal consistency of both scales was good (interpersonal trust alphas .85 (T1), .84 (T2), .84 (T3); institutional trust alphas .90 (T1), .90 (T2), .89 (T3), respectively).

Control variables

Age was calculated by the date of data collection minus each participant's date of birth. Sex was reported by a survey question ('Are you a boy or girl?') and was coded as *female* (0) and *male* (1). Family affluence was measured using the Family Affluence Scale (FAS; Torsheim et al., 2016), consisting of six items about material assets in the participants' families, such as a child's own bedroom, a car, and a dishwasher. Scale scores were calculated by summing the scores of all six items. For participants who completed all scale items, we riddit-transformed the sum score into a continuous family affluence score (range = 0–1; mean = 0.5), a higher score indicating more material assets (Elgar et al., 2017).

Data analysis

Using a growth curve model for both types of trust, we estimated the average scores of study variables at T1 (i.e. intercept) and the average trajectories over time (Curran et al., 2010). Due to having only three time points, we were not able to examine quadratic changes across the study waves in latent growth curves. Because we aimed to examine whether the change between T1 and T2 was different from the change between T2 and T3 (e.g. an increase in the first-time interval vs. a decrease in the second time interval), we used a latent basis growth curve model (see, Li et al., 2020). In the latent basis growth curve model, it is possible to detect a nonlinear change using three time points. That is, we coded the loadings of T1 and T2 as 0 and 1, respectively, but freely estimated the loading of T3 (Burant, 2016; Grimm et al., 2011). Thanks to this free estimation, our latent basis growth curve models revealed the shape of change based on the observed data. In our analyses, we first examined the linear change in interpersonal and institutional trust, respectively, and then compared the fit statistics of that growth model with the fit statistics of the latent basis growth model. We evaluated both the chi-square difference test and Bayesian Information Criterion (BIC) scores in our comparisons, and Comparative Fit Index (CFI) and Root Mean Square Error of Approximation (RMSEA) levels in the examination of each model's fit.

We used two separate univariate latent basis growth models for interpersonal trust and institutional trust because examining the links between their growth factors exceeded the scope of this research. Furthermore, we investigated the associations between intercepts and slopes to test whether the level at T1 was a predictor of change over time. Moreover, we checked the effects of our control variables (i.e. age, sex, and family affluence) on both the intercept and slope of each trust variable. Age and family affluence were centred on their mean. Sex was half effect coded (female = -0.5 and male = 0.5). We used full information maximum likelihood estimation with robust standard errors in Mplus Version 8 (Allison, 2003; Enders & Bandalos, 2001; Muthén & Muthén, 1998–2017), which deals with missing data even in studies like ours with large proportions of missing data (Johnson & Young, 2011). Thus, we were able to keep the participants who participated only at one or two study waves in our analyses.

We also computed the estimated trust means at each study wave. For this purpose, we used not only the estimated intercept and slopes of each trust variable but also the means and effect estimates of the control variables (e.g. the effect of sex on the slope; Muthén & Muthén, 2010, pp. 44–49). Note that the means of the two centred control variables (i.e. age and family affluence) were zero, but the mean of sex was not. Therefore, the estimated intercept and slope means considering the control variables were slightly different from the estimated intercept and slope,

respectively. Additionally, we conducted repeated-measures ANOVAs including the control variables (i.e. age, sex, and family affluence) as sensitivity analyses, for detecting differences between average trust levels at each study wave among the participants who filled in the surveys across all three waves (i.e. listwise deletion).²

Results

Descriptive results

Table 1 presents the means, standard deviations, and correlations among the study variables. For both types of trust, mean scores were all greater than mid-point of the scale. Both interpersonal trust and institutional trust were highly stable, with stability coefficients across waves ranging from .52 to .75 ($ps < .01$). Interpersonal trust was positively associated with institutional trust, both cross-sectionally (rs ranging .58 to .66, $ps < .01$) and across measurement waves (rs ranging .38 to .51, $ps < .01$). Also, interpersonal and institutional trust were negatively associated with age across measurement waves (rs ranging $-.12$ to $-.07$, $ps < .05$), and positively associated with family affluence (rs ranging .12 to .14, $ps < .01$).

Main analyses

Interpersonal trust

To examine the change in interpersonal trust, we conducted unconditional analyses for both a linear growth curve and a latent basis growth curve model (Figure 1) and examined their fit statistics (Table 2). Comparison of the BIC values of the linear and latent basis model revealed a slight difference (Table 2), indicating weak evidence for the superiority of the latent basis model (< 2 , Raftery, 1995). We continued with the latent basis model to investigate the hypothesized non-linear change over time. Note that the linear and latent basis model had the same degrees of freedom ($df = 1$; Table 2) and thus similar levels of parsimony, because residual variance at one study wave was set to zero in the latent basis model for identification purposes. Because of the same degrees of freedom in both models, using the chi-square difference test to compare the linear and latent basis models was not possible.

We also investigated the fit statistics of the latent basis model with control variables. The latent basis model with control variables had a strong evidence of superiority with the lowest BIC value (Table 2; differences from linear model and latent basis model without control variables > 10 ; Raftery, 1995). The Satorra-Bentler scaled chi-square difference test to compare the latent basis models with and without control variables was not significant ($p = .44$; Muthén & Muthén, 1998–2017). We continued with the latent basis model with control variables considering the strong BIC evidence

Table 1. Correlations Among Variables.

	<i>n</i>	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8
1. Age	1423	17.85	1.95	-							
2. Sex ^a	1418	0.43	0.49	0.04	-						
3. Family affluence	1273	0.5	0.28	-0.16**	0.06*	-					
4. Interpersonal trust at T1	1169	6.28	1.66	-0.07*	0.11**	0.14**	-				
5. Interpersonal trust at T2	796	6.37	1.51	-0.12**	0.06	0.12**	0.63**	-			
6. Interpersonal trust at T3	554	6.3	1.52	-0.11*	0.09*	0.13**	0.52**	0.70**	-		
7. Institutional trust at T1	1167	5.36	1.91	-0.10**	-0.03	0.13**	0.66**	0.49**	0.43**	-	
8. Institutional trust at T2	796	5.8	1.79	-0.08*	-0.06	0.14**	0.44**	0.62**	0.51**	0.65**	-
9. Institutional trust at T3	554	5.57	1.76	-0.10*	-0.02	0.12**	0.38**	0.50**	0.58**	0.59**	0.75**

Note. *n* = sample size. *M* = mean. *SD* = standard deviation. T1 = First study wave, T2 = Second study wave, T3 = Third study wave.

^aFemale is the reference group.

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

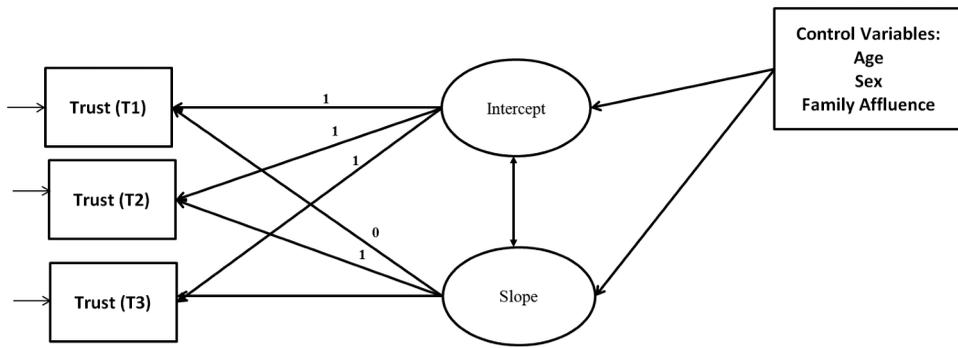


Figure 1. Latent basis growth curve model.

Note. Factor loading for trust's slope at the third study wave (T3) is estimated freely in the latent basis growth curve model but set to 2 in the linear growth curve model. T1 = First study wave, T2 = Second study wave, T3 = Third study wave. This model is used for interpersonal trust and institutional trust separately. Age and family affluence were centred on their mean. Sex was half effect coded, female = -0.5 and male = 0.5 . In the latent basis growth curve models for interpersonal and institutional trust, the residual variances of trust at T3 and T2 were set to zero, respectively, for identification purposes.

Table 2. Fit Statistics of the Growth Curve Models.

Model	AIC	BIC	RMSEA	CFI	χ^2	df	Scaling correction	<i>p</i>
<i>Interpersonal Trust Models</i>								
Linear growth curve	8831.30	8873.11	0.03	1.00	2.43	1	1.09	0.12
Latent basis growth curve	8829.43	8871.24	0.00	1.00	0.84	1	0.93	0.36
Latent basis growth curve with control variables	8108.48	8180.09	0.00	1.00	3.52	4	1.07	0.47
<i>Institutional Trust Models</i>								
Linear growth curve	9513.98	9555.78	0.16	0.93	35.01	1	1.16	0.00
Latent basis growth curve	9473.96	9515.75	0.00	1.00	0.50	1	1.37	0.48
Latent basis growth curve with control variables	8712.19	8783.79	0.02	1.00	6.17	4	1.09	0.19

Note. Factor loading for trust's slope at the third study wave (T3) is estimated freely in the latent basis growth curve model but set to 2 in the linear growth curve model. Control variables incorporated sex, age, family affluence.

for the superiority of that model and to investigate the effects of control variables on growth factors. The latent basis growth model's indices with control variables were excellent (Table 2; RMSEA = .00, CFI = 1.00).

The slope of interpersonal trust had neither a significant mean ($M = -0.03, p = .09$) nor a significant variance ($p = .27$; see, Table 3), despite the fact that the factor loading for slope at T3 was 3.60 (which was greater than 2). Thus, the average interpersonal trust level was stable across the three study waves for all participants. Estimated interpersonal trust means at each study wave are presented in Table 4 and plotted in Figure 2 (Muthén & Muthén, 2010, pp. 44–49).

The significant variance of the intercept ($p < .001$) suggested that there were individual differences in initial level of interpersonal trust (see, Table 3). As shown in Table 5, younger adolescents showed higher levels of interpersonal trust at T1 ($b = -0.05, p = .04$), and the same was true for males ($b = 0.29$,

Table 3. Growth Factors of Trust Variables in the Latent Basis Growth Models with Control Variables.

Model	<i>M</i>	<i>p</i>	Var.	<i>p</i>
<i>Interpersonal Trust</i>				
Intercept	6.32	<.001	1.64	<.001
Slope	-0.03	.09	0.10	.27
<i>Institutional Trust</i>				
Intercept	5.36	<.001	2.02	<.001
Slope	0.31	<.001	0.77	<.001

Note. Var. = variance.

Table 4. Estimated Trust Means at Each Study Wave Based on Latent Basis Growth Models with Control Variables.

Model	Interpersonal Trust	Institutional Trust
First Study Wave (T1)	6.31	5.37
Second Study Wave (T2)	6.27	5.69
Third Study Wave (T3)	6.19	5.45

Note. Estimated trust means were computed following the recommendations of Muthén and Muthén (2010, pp. 44–49).

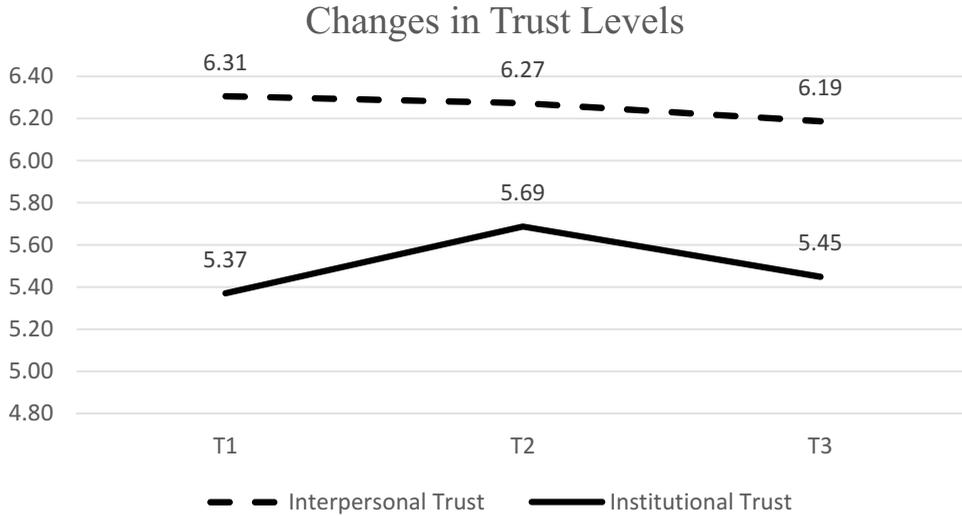


Figure 2. Changes in trust levels (illustration of the results in Table 4).

Table 5. Effect Estimates in the Latent Basis Growth Models with Control Variables.

Model	Interpersonal Trust		Institutional Trust	
	<i>b/r</i>	<i>p</i>	<i>b/r</i>	<i>p</i>
Intercept <-> Slope	-0.09	0.31	0.22	0.14
Age -> Intercept	-0.05	0.04	-0.07	0.03
Sex -> Intercept	0.29	.002	-0.13	0.22
Family Affluence -> Intercept	0.74	< .001	0.78	< .001
Age -> Slope	-0.002	0.87	0.04	0.28
Sex -> Slope	-0.02	0.64	-0.15	0.16
Family Affluence -> Slope	-0.08	0.29	0.30	0.13

Note. <-> and *r* represent bidirectional whereas -> and *b* represent unidirectional effects. Age and family affluence were centred on their mean. Sex was half effect coded, female = -0.5 and male = 0.5.

$p = .02$), and adolescents from more affluent families ($b = 0.74, p < .001$). Nevertheless, the slope of interpersonal trust did not change as a function of any of the included control variables. Moreover, the change in interpersonal trust was not associated with trust levels at T1 ($p = .31$; see, Table 5).

Institutional trust

Comparison of the models for institutional trust showed that the latent basis growth model with control variables had the lowest BIC value with a strong evidence of its superiority (Table 2; differences from linear model and latent basis model without control variables > 10; Raftery, 1995). Satorra-Bentler scaled chi-square difference test showed that latent basis models with and

without control variables were not significantly different from each other ($p = .11$; Muthén & Muthén, 1998–2017). Considering the BIC evidence, we again continued with the latent basis model with control variables, which had excellent levels of fit indices (RMSEA = .002, CFI = 1.00; Table 2).

The analysis revealed a significant change in institutional trust across three study waves, the slope mean being significantly different from zero ($M = 0.31$, $p < .001$; see, Table 3). Given that factor loading for slope at T3 was estimated freely in the latent basis growth curve model, the value of 0.25 (which was much less than 2) suggested that the change in institutional trust was non-linear across three study waves. The non-linear change was plotted in Figure 2 based on the estimated institutional trust means at each study wave (see, Table 4). As shown in Figure 2, institutional trust slightly increased from T1 to T2 and then decreased slightly from T2 to T3.

There were significant individual differences in the initial levels of and the change in institutional trust across three study waves, since variances of the intercept and the slope were significant ($ps < .001$; see, Table 3). As shown in Table 5, age and family affluence had, respectively, a negative and positive effect on the level of institutional trust at T1 ($b_{age} = -0.07$, $p = .003$; $b_{family\ affluence} = 0.78$, $p < .001$). Sex was not related with the intercept of institutional trust ($b = -0.13$, $p = .22$). Similar to the results for interpersonal trust, none of the control variables had a significant effect on the slope of institutional trust. Thus, the change of institutional trust was consistent across both sexes, across age and family affluence. Moreover, the change in institutional trust was not associated with trust levels at T1 ($p = .14$; see, Table 5).

Sensitivity analyses

To investigate the differences in average trust levels across study waves, we conducted repeated-measures ANOVAs with control variables. Only participants who filled in the trust and control variable measures at all three study waves were included in this analysis. Consistent with the results of the main analyses, the results for interpersonal trust revealed that there was no average change over time ($F [1, 346] = 0.02$, $p = .90$, partial $\eta^2 = .00$). Pairwise comparisons showed that the estimated marginal mean of interpersonal trust at T1 ($M = 6.67$, $SE = 0.08$) was not significantly different from the estimated marginal mean of interpersonal trust at T2 ($M = 6.55$, $SE = 0.07$) ($p = .07$). Nevertheless, there was a slight, but significant ($p = .02$) decrease in interpersonal trust from T2 ($M = 6.55$, $SE = 0.07$) to T3 ($M = 6.41$, $SE = 0.08$).

The results for institutional trust showed a significant average change over time ($F [1, 346] = 5.63$, $p = .02$, partial $\eta^2 = .02$). Both the differences in institutional trust levels between T1 ($M = 5.67$, $SE = 0.09$) and T2 ($M = 5.91$, $SE = 0.09$), and T2 and T3 ($M = 5.62$, $SE = 0.09$) were significant ($p = .003$ and $< .001$, respectively). There was no significant difference between T1 and T3 ($p = .54$). In sum, the results of the repeated-measures ANOVAs were consistent with the results in the latent basis growth curve models reported above.

Discussion

The COVID-19 pandemic and associated containment measures may have a great impact on trust (Esaïsson et al., 2021; Schraff, 2021). This impact may be especially important for late adolescents, who are transitioning to new adult roles involving education, work, leaving home, partnership, and family formation, and for whom the pandemic may shape their opportunities and life chances. The containment measures may impact late adolescents' judgements of the trustworthiness of others, teachers, classmates, and other persons, on the one hand, and (representatives of) authorities, such as the police, banks, and non-governmental institutions, on the other hand (OECD, 2017). This study examined whether and to what extent interpersonal and institutional trust fluctuated among Dutch late adolescents over a span of 12 months, ranging from the pre-COVID-19 pandemic to the initial phase of the COVID-19 pandemic and to the lasting phase of the COVID-19 pandemic. The results

showed that interpersonal trust remained relatively stable over time. Institutional trust temporarily increased from pre-COVID-19 pandemic to the initial phase of the COVID-19 pandemic and decreased during the lasting phase of the COVID-19 pandemic.

Contrary to our expectations and recent empirical research, no overall change in interpersonal trust was found. In line with this finding, Esaiasson et al. (2021) found that the 'rally-round-the-flag' effect was much weaker for interpersonal trust than for institutional trust in times of the COVID-19 pandemic. Interpersonal trust can be considered as the outcome of a long-lasting socialization process based on knowledge, past social experiences, and the quality of one's personal relationships, which may have been stabilized in late adolescence (Abdelzadeh & Lundberg, 2017). Institutional trust, however, only emerges in adolescence when young people start interacting with institutions themselves and learn how to assess the trustworthiness of institutions, such as the police, healthcare, and government (Yeager et al., 2017). In light of the differential developmental trajectories, external events and temporary crises may have less effect on interpersonal trust than on institutional trust. In addition, we found some support for a slight decrease in interpersonal trust from the initial phase of the COVID-19 pandemic to the lasting phase of the COVID-19 pandemic, although this result only appeared in the subsequent analyses with a limited sample. More research on the developmental trajectories of the two types of trust and their dynamics in response to societal changes is warranted.

Consistent with the 'rally-round-the-flag' effect (Mueller, 1970), institutional trust has been found to increase from pre-COVID pandemic to the initial phase of the COVID pandemic. In line with the literature on existential threats, this increase of institutional trust had also been observed by researchers investigating responses to disasters and terrorism (Goldfinch et al., 2021; Pyszczynski et al., 2021; Skitka, 2005; Toya & Skidmore, 2014). Facing the shared threat of the pandemic, young people may yield a greater sense of solidarity with the community by strengthening their affective ties and cohesion with local and national (representatives of) institutions.

Nevertheless, our findings showed that this upsurge in institutional trust was relatively short-lived, as institutional trust levels returned to pre-COVID levels between Spring and Fall 2020. Several explanations for this result can be advanced. First, in line with the different epidemiological phases of pandemics (Fegert et al., 2020), between Spring and Fall 2020, the pandemic infections might have passed the so called *punctum maximum* phase, the peak incidence of new cases and mortality. Thus, the 'rally-round-the-flag' effect on institutional trust may be fading away (OECD, 2021, p. 206). Second, the increased spread of conspiracy theories and beliefs may have resulted in the decrease of institutional trust. Specifically, research shows that in times of crisis, conspiracy theories and the spread of misinformation increase substantially (Dussaillant & Guzmán, 2014; Van Prooijen & Douglas, 2017; Van Prooijen & van Dijk, 2014). Consistent with the concern that conspiracy theories increasingly gained attraction during the COVID-19 pandemic (Ellis, 2020), over time, the pandemic has given rise to more speculations and misinformation about the origin and nature of the virus. Such conspiracy theories and beliefs are negatively related to trust in institutions and science (Imhoff & Lamberty, 2020; Karić & Međedović, 2021). More research is needed to understand whether or not the decrease of institutional trust during the lasting phase of the pandemic was associated with an increase in conspiracy theories and beliefs.

The findings of the present study carry two implications for institutional trust. The results revealed that institutional trust declined between the initial and lasting phases of the COVID-19 pandemic. Although institutional trust did not drop beneath the pre-COVID-19 level, it might be expected that the level of institutional trust has decreased further after our last assessment (January 2021), as the most stringent measures of the second lockdown in the Netherlands were imposed from January 2021 onwards. Also, institutional trust might be under pressure for a longer period of time, because COVID-19 and related rules and regulations may return in the upcoming years (United Nations, 2022). Therefore, it is essential to extend research on the further development of institutional trust among late adolescents in this remarkable period of time, because trust is key to compliance with institutional guidelines and rules during and beyond the pandemic. Moreover,

because trust is generally important for adolescent health and well-being (Mmari et al., 2016), schools may need to monitor the development of institutional trust among their students in the upcoming period.

Younger adolescents and/or adolescents living in higher family affluence reported higher initial levels of interpersonal and institutional trust. Male adolescents were more willing to trust in others at pre-COVID-19 period than female adolescents. In addition, the findings suggested that the change in institutional trust, but not interpersonal trust, differed across individuals. To advance our understanding on change of trust in adolescence, future studies should take individual differences into consideration.

Limitations and suggestions for future research

The effects of the pandemic are still unfolding and robust evidence about how late adolescents are responding to this crisis is needed now, evidence that the current study uniquely provides. Nevertheless, several limitations of the present study should be noted and point to future research directions. Based on our findings, we proposed that late adolescents' trust, especially institutional trust, may continue changing as the COVID-19 pandemic lasts and thereafter. Future work will need to expand our work and examine late adolescents' trajectories further during and after the pandemic, ideally illuminating factors that lead to individual differences in trust. Replicating earlier research (Flanagan & Stout, 2010), we found that trust was negatively related with age. Although this study controlled for age, given the correlational design of this study, the effects of the COVID-19 pandemic and chronological changes are confounded. Indeed, we cannot conclude that changes in trust reported here were only driven by the pandemic. Time trends such as ageing and seasonality may also have played a role. However, given the relatively large sample, the prospective study design and comparable methods during all data collections, we deem it most plausible that effects are directly related to the pandemic. In addition, participants who participated in all three study waves were more likely to report higher levels of interpersonal and institutional trust than the participants with missing values. Therefore, the sizable amount of dropout of adolescents at T2 and T3 is a limitation of this study. Nevertheless, we firmly believe that the findings of this study were robust for two reasons. First, the results of the latent basis model with control variables showed that neither the changes in interpersonal nor institutional trust were associated with trust levels at T1. Second, the results of the latent basis growth curve models were consistent with the results of the repeated-measures ANOVAs. Longitudinal studies investigating the trajectory of trust among adolescents are needed to replicate and extend our findings to other phases of the pandemic and to other countries and measures.

Interpersonal and institutional trust are theoretically and practically relevant to understand and respond to the effects of the COVID-19 pandemic, nevertheless, the results may be specific to the Netherlands, where national indicators of social welfare and measures to combat COVID-19 differed from other countries. Moreover, compared to other countries, especially non-European countries, the country-level trust in the Netherlands is relatively high (GTRC; <https://globaltrustresearch.wordpress.com/results/>). To enhance our understanding of changes in late adolescents' trust and to obtain more robust evidence on the impact of the COVID-19 pandemic, future studies that extend our work to other countries would be promising.

Conclusion

The current study examined changes in late adolescents' trust before and during the COVID-19 pandemic. Interpersonal trust remained relatively stable across three study waves. In contrast, institutional trust showed a small short-term increase from pre-COVID-19 pandemic to the initial phase of the COVID-19 pandemic, and then showed a small decrease from the initial phase of the COVID-19 pandemic to the lasting phase of the COVID-19 pandemic. Given the crucial role of trust as

a predictor of compliance with public policies and rules, social relationships, and cooperation, during and after the COVID-19 pandemic, it is important to continue to track late adolescents' trust and identify conditions that will help maintain their trust.

Notes

1. After submitting the preregistration, we noticed that interpersonal trust was measured by five items, and did not include the item—"trust in my family".
2. In contrast to the preregistration, we did not conduct simplex autoregressive analyses.

Authors' contributions

S.B., C.F., and G.W.J.M.S. conceived of the study, interpreted the data, and drafted the manuscript together; M.M. contributed to conceiving of the study, interpreting the statistical analysis, and revising the manuscript; A. B. contributed to conceiving the pre-registration, conducting and interpreting the statistical analysis, and revising the manuscript; J-B.L. conceived of the study, interpreted the data, and revised the manuscript. All authors read and approved the final manuscript.

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Notes on contributors

Shanshan Bi, MA, is a Ph.D. candidate at the Department of Interdisciplinary Social Science, Utrecht University. Her major research interests include perceived social support, trust, relationships, child and adolescent development.

Asuman Buyukcan-Tetik is an Assistant Professor in the Psychology Program of Sabanci University. Her main research areas are close relationships, self-regulation, and grief.

Marlies Maes is an assistant professor at the Department of Interdisciplinary Social Science, Utrecht University. Her major research interests include adolescent loneliness, peer relationships, and meta-analyses.

Jian-Bin Li is an Assistant Professor at the Education University of Hong Kong. His research interests focus on understanding and facilitating adjustment and well-being from childhood to adulthood.

Catrin Finkenauer is a Professor Youth Studies at Interdisciplinary Social Science, Utrecht University, Netherlands. She is chair of the interdisciplinary research program Youth in Changing Cultural Contexts and scientific director of the Utrecht University interdisciplinary research centre Dynamics of Youth. Her interdisciplinary work seeks to understand how we can strengthen lasting social connections and supportive relationships in adolescence, especially for the most vulnerable adolescents.

Gonneke Stevens Stevens is an Associate Professor of Interdisciplinary Social Science at Utrecht University. Her research focuses on understanding social inequalities in adolescent mental wellbeing.

ORCID

Shanshan Bi  <http://orcid.org/0000-0001-7710-1078>

Asuman Buyukcan-Tetik  <http://orcid.org/0000-0002-0541-702X>

Marlies Maes  <http://orcid.org/0000-0002-1710-5728>

Jian-Bin Li  <http://orcid.org/0000-0002-8995-3304>

Catrin Finkenauer  <http://orcid.org/0000-0002-5429-0627>

Gonneke Stevens  <http://orcid.org/0000-0001-9929-7972>

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