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Building trust in times of crisis: A panel study of the influence of satisfaction with COVID-19 communication and management

Ali Abdelzadeh [ID] | Thomas Sedelius [ID]

Political Science, School of Culture and Society, Dalarna University, Falun, Sweden

Correspondence
Ali Abdelzadeh, Political Science, School of Culture and Society, Dalarna University, Falun, SE-791 88, Sweden.
Email: aaz@du.se

Abstract

This study examines the relationship between citizens' satisfaction with government COVID-19 communication and management (SWCCM) and institutional trust. By employing a longitudinal approach, using three-wave panel data from Sweden from 2020 to 2022, the study addresses the current lack of research on the interplay between SWCCM and institutional trust across different stages of a societal crisis like the COVID-19 pandemic. The results show that SWCCM increased slightly over the pandemic period, while trust in institutions slightly decreased. The study also finds that changes in SWCCM predict changes in trust in institutions, suggesting that increased satisfaction with communication and management is associated with increased trust in institutions. Additionally, we find that higher initial levels of SWCCM contribute to a faster decline in trust over time. However, no evidence supports the idea that initial trust in institutions predicts changes in SWCCM. This suggests a unidirectional relationship where SWCCM is a key driver of institutional trust during a crisis. Overall, the study uncovers intriguing dynamics in the relationship between SWCCM and trust over time, and it emphasizes the significance of effective and consistent communication and management in maintaining and boosting public trust during crisis.

KEYWORDS

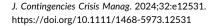COVID-19 pandemic, crisis communication, crisis management, institutional trust, panel data

1 | INTRODUCTION

During a public health crisis, such as the COVID-19 pandemic, it becomes essential for government communication to effectively persuade citizens to increase risk awareness and comply with governmental directives, thereby containing the spread of the virus and mitigate broader societal damages (Lee & Li, 2021; Vardavas et al., 2021). Efficient compliance with such directives

relies heavily on citizens' trust in the government, its authorities and the directives themselves (Freimuth et al., 2014). Studies have found that trust in government influences how individuals evaluate risks and accept preventive measures (Siegrist et al., 2003) ultimately impacting health-related outcomes during a pandemic (Quinn et al., 2013).

On the other hand, efficient and transparent communication from the government and health agencies is also expected to build

and maintain trust throughout a crisis (Hyland-Wood et al., 2021). By providing relevant, accurate and timely information, crisis management organisations can help the public (re-)building trust, fostering desired social norms and behaviour such as social distancing or vaccination (Lee & Li, 2021). Hence, institutional trust can be perceived both as a catalyst and an outcome of effective government communication and management (Auger, 2014; Yang et al., 2015).

This study has two main objectives. *First*, it aims to examine the developmental trajectories of citizens satisfaction with government COVID-19 communication and management (SWCCM), as well as institutional trust over time throughout the COVID-19 pandemic. *Second*, it seeks to provide insights into the role of crisis communication and management in fostering institutional trust during this global health crisis. By these objectives, the study addresses two significant limitations identified in previous research. The first limitation pertains to the lack of studies exploring the individual developmental trajectories of the role of communication and management as well as citizens' attitudes towards different government institutions over time and throughout a crisis. This study addresses this gap by a longitudinal analysis, examining the development of citizens' SWCCM as well as their trust in various governmental institutions over time. The second and related limitation is the lack of empirical studies that explore the interplay between citizens' SWCCM and institutional trust, especially in the context of a global pandemic. This lack poses a significant challenge to the development of evidence-based strategies, guidelines and interventions to improve crisis communication, identify appropriate responses and building trust. Our study seeks to address this limitation by using unique panel data collected from Sweden during various stages of the COVID-19 pandemic. More specifically, through this longitudinal approach, this study seeks to provide a deeper understanding of how citizens' satisfaction with COVID-19 communication and management influences institutional trust and vice versa during times of crisis.

Sweden represents an intriguing and crucial case for studying SWCCM and institutional trust due to its unique approach to how it dealt with crisis management, especially in the initial stages of the COVID-19 pandemic. The government's distinctive approach, placing emphasis on personal responsibility and adherence to recommendations, is expected to have exerted a significant influence on the government's crisis communication and management. Hence, by conducting this study within the context of Sweden, we provide insights into how communication and management strategies that emphasize personal responsibility and voluntary guidelines impact trust in institutions and shape public responses during a pandemic. Ultimately, this study endeavours to enhance our knowledge about crisis communication and management dynamics and its implications for fostering trust and promoting desired public behaviour in times of crisis.

2 | LITERATURE REVIEW

2.1 | Government communication, management and institutional trust during a public health crisis

Trust plays a fundamental role in fostering collective action and is a multifaceted phenomenon that has been explored through various frameworks in the literature on risk management and communication (Earle et al., 2010). Lee and Li (2021) delineate institutional trust into three dimensions: *integrity* (the belief that an institution performs fairly and justly and considers public expectations); *accountability* (the belief that an institution will deliver what it promises); and *competence* (the belief that the institution can deliver what it promises). The literature emphasizes the importance of both crisis communication and crisis management to ensure the maintenance of institutional trust (Benoit, 2015).

Regarding integrity, individuals have a widespread expectation that the received information and message is truthful, reliable and delivered by a competent and honest communicator who provides transparent, accurate, objective and comprehensive information (Abu-Akel et al., 2021; Cook et al., 2010; Crepaz & Arikan, 2021; Grimmelikhuijsen & Meijer, 2014; Grimmelikhuijsen, 2012; Renn & Levine, 1991, p. 179). In addition, Hyland-Wood et al. (2021) emphasize that to build and maintain trust, government communication needs to show not only credibility in terms of sources and expertize, but also empathy with people's hardships and concerns, and recognize that uncertainty is inevitable. As such, government communication has a central role by increasing public awareness of the nature and significance of risks in the hope of reducing the likelihood of a long-term crisis (Burton-Jeangros, 2019; Hampel, 2006). On the other hand, from the sender's perspective, it is anticipated that higher levels of trust in government institutions and government will enhance people's motivation to follow recommendations and make informed decisions to safeguard themselves and their communities (Devine et al., 2020). Findings show that during the COVID-19 pandemic, government communication had a direct positive association with vaccination intention (Su et al., 2022), public compliance with public health measures (Thanh & Tung, 2022), and, of particular interest to this study, trust in government (Vu, 2021). In this way, institutional trust can be perceived both as a catalyst and an outcome of effective communication.

Regarding accountability and competence, institutional trust can be viewed as a mutual understanding between citizens and the political system. According to psychological–democratic contract theory (Wroe, 2014), this understanding hinges on the management of citizens' expectations (Gidengil & Wass, 2023; Mattila & Rapeli, 2018; Wroe, 2014). When the government falls short of fulfilling these expectations, that is, by perceived mismanagement or poor communication strategies, it is seen as a violation of this implicit agreement. Following this line of thought, we can contend that a higher initial satisfaction with crisis communication and management

during COVID-19 may lead to elevated expectations. Should these expectations go unmet, or if there is a perceived decline in performance, this could result in greater disillusionment among initially satisfied individuals, contributing to a more pronounced erosion of trust.

Insufficient trust in government institutions can lead individuals to distance themselves from the healthcare system, resulting in neglect and noncompliance with guidelines, which can have severe consequences for public health (Gonçalves et al., 2021; Meyer et al., 2014). Trust in government institutions, on the contrary, has been associated with compliance with health measures in previous health crises, such as the 2009 H1N1 pandemic (Freimuth et al., 2014; Siegrist & Zingg, 2014), and the Ebola outbreak in West Africa from 2014 to 2016 (Blair et al., 2017). Studies examining the COVID-19 pandemic have yielded similar results showing that higher levels of trust in government are associated with greater adherence to health policies, including compliance with confinement or quarantine measures, vaccination intention, testing and restrictions on group gatherings (Bavel et al., 2020; Devine et al., 2020; Han et al., 2023; Johansson et al., 2021; Paredes et al., 2023).

It is, however, important to emphasize that the public's reception and reaction to public health information and messaging are significantly influenced by various factors such as their cultural and social identity, age, gender and access to resources (Daoust, 2023; Hyland-Wood et al., 2021). These factors shape the preferred methods of communication, perceptions of what or who constitutes a trustworthy authority, and crucially, the ability to act and respond to government directives (Cairney, 2016; Tangney, 2017).

In general, an already substantial body of literature indicates that crisis communication and management are closely linked to institutional trust, not least in the context of the COVID-19 pandemic. However, it is worth reiterating the specific focus of this study: there is a notable scarcity of research delving into individual developmental paths and the dynamic relationship between citizen satisfaction with communication and management and the evolution of institutional trust over time, especially within the context of a crisis. Taken together, following the previous research, we expect a positive relationship between SWCCM and trust in institutions, both initially and over time. Furthermore, we expect a unidirectional relationship, with SWCCM predicting trust rather than the other way around. More specifically, we aim to answer the following two research questions regarding the relation between SWCCM and trust:

(1) How is the relationship between SWCCM and trust in institutions in Sweden during the COVID-19 pandemic observed, considering both the initial phase and its progression over time?

(2) Is the relationship between SWCCM and trust in institutions during the COVID-19 pandemic in Sweden unidirectional (SWCCM predicting trust) or bidirectional (mutual influence between SWCCM and trust)?

2.2 | Government strategies and institutional trust in Sweden during the COVID-19 pandemic

The national response to the COVID-19 pandemic in Sweden differed from international practices as well as from other Nordic countries. While Denmark, Finland and Norway implemented strict measures, including varying degrees of closure and lockdowns for certain periods, the Swedish government relied on a strategy that predominantly emphasized personal responsibility among its citizens (Petridou, 2020; Rice, 2022).

The institutional system in Sweden is characterized by a decentralized and self-governing structure, with expertise, resources and manpower predominantly vested within agencies rather than centralized government offices. The government utilizes directives, budget allocations and informal interactions, affording agencies a degree of autonomy to operate independently in specific circumstances (Pierre, 2020). This strict division of labour was clearly reflected in the government's strategy to put the Public Health Agency (PHA) and the National Board of Health and Welfare (NBHW) in charge of issuing recommendations for regions, municipalities and citizens (Johansson & Vigsø, 2021). The prime minister and other cabinet ministers took the backseat while urging citizens to follow the advice of the pandemic experts. Daily televised press conferences from key agencies like the PHA and NBHW played a vital role in the crisis communication (Johansson & Vigsø, 2021; Pierre, 2020). Despite gradually adopting a more restrictive approach as the crisis progressed from the first wave in 2020 to subsequent waves in 2021–2022, the Swedish government and the PHA maintained a consistent strategy of 'flattening the curve' through voluntary guidelines, personal responsibility and solidarity.

The country's high level of social and political trust was essential for the government's expectation that individuals would voluntarily comply with the recommendations of the authorities. Like other Nordic countries, Sweden is generally characterized as a society with high levels of trust (Bengtsson & Brommesson, 2022). Recent surveys of the proportion of people who say they 'tend to trust' their national government place Sweden (61%) well above the European Union average (35%) and just ahead of Denmark (59%) and Finland (56%) (European Commission, 2022). Similar data from the Organisation for Economic Co-operation and Development (OECD), where the share of respondents who say that they 'trust the government' confirms this pattern, albeit with somewhat higher levels of trust in Norway, Finland and Denmark for most of the period since 2014 (Organisation for Economic Co-operation and Development [OECD], 2021).

Studies have shown that initially in the pandemic, there was a pronounced 'rally around the flag' effect, with support and trust levels rising significantly among Swedish citizens (Esaiasson et al., 2021). In line with these findings, the OECD surveys show a significant increase in trust in government at the onset of the COVID-19 crisis in Sweden (from 51% in 2019 to 67% in 2020), as well as in the other Nordic countries. However, initial rally effects tend to be of short duration, struggling to transition into sustained, enduring backing for political leaders and institutions

(Johansson et al., 2021; Kernell, 1978; Mueller, 1973). This was also evident in Sweden, and by the end of 2020, there was already a significant decline in government support in the Nordic countries, albeit still at somewhat higher levels than before the pandemic (Bengtsson & Brommesson, 2022; OECD, 2021).

3 | METHOD AND DATA

3.1 | Panel participants and sampling

For this study, panel participants were recruited from a nationally representative sample of Sweden, encompassing individuals aged 20–80 years. The participants were selected from the Novus Sweden Panel, which comprises approximately 50,000 randomly selected panel members. The Novus Sweden Panel has been utilized in various research domains and empirical studies published in international journals (see, e.g., Dahlen et al., 2022; Kennedy et al., 2022; Svedsäter et al., 2021).

To gather data, an online questionnaire along with study information was emailed to a target sample of 2554 randomly selected panel members at three different time points, with an average interval of 12 months. The initial data collection (T1) took place in April to May 2020, followed by the second data collection (T2) in February to March 2021. The third data collection (T3) was collected in June 2022. For the purposes of analysis, only individuals who participated in the survey at a minimum of two time points were included, resulting in a final analytical sample of 1904 participants (46.9% males). At the first time point, the mean age of participants was 51.44 years (SD_{age} = 16.64). Finally, it is important to note that the data collected from this panel study are part of an ongoing research project titled 'Values in Crisis: A Crisis of Values? Moral Values and Social Orientations under the Imprint of the Corona Pandemic'. This research project was conducted across 15 countries, aiming to measure people's values and responses to the pandemic.

3.2 | Attrition analysis

Among the participants who participated at T1, 520 (20.4%) had dropped out at T2 and T3. To establish whether these participants differed from those who participated at T2 and T3, we applied logistic regression analysis, where the attrition (drop out = 1, retention = 0) was regressed on several demographic characteristics (i.e., gender and immigrant status) and on all the other variables included in this study. The results showed that age (Wald = 91.5, $p \leq .001$, Exp(B) = 0.97), and educational level (Wald = 6.51, $p \leq .05$, Exp(B) = 0.79) significantly predicted attrition (Nagelkerke, R^2 = .076). These results suggest that younger participants, and those with lower levels of education were more likely to drop out. To better understand these results, we converted the significant odds ratios for age (Cohen's d = 0.02) and educational level (Cohen's d = 0.13) into Cohen's d estimates. The results indicate that the effect sizes of two variables on attrition were

small (Cohen, 1988). In sum, based on these results we conclude that attrition had only a minimal impact on the findings.

3.3 | Measures

3.3.1 | SWCCM

In this study, we are interested in assessing citizens' overall satisfaction with the communication and management of COVID-19. To do this, respondents were asked about their satisfaction with the communication efforts and actions of various organisations that played a role in the Swedish crisis management during the pandemic. More specifically, the respondents were asked: 'How do you view the communication and activities of the following organisations regarding COVID-19?' This stem question was followed by five more targeted questions: (a) 'The community information has so far been about how we should act to avoid infection?'; (b) 'The politicians have handled the emerging situation regarding COVID-19?'; (c) 'The Public Health Agency (PHA) has handled the emerging situation regarding COVID-19?'; (d) 'The MSB (Swedish Agency for Social Protection and Preparedness) has handled the emerging situation regarding COVID-19?' and (e) 'the National Board of Health and Welfare has handled the emerging situation regarding COVID-19?'. The response scale of these questions ranged from 1 (*very bad*) to 4 (*very good*). We used these five items to estimate a latent construct of government communication and management at each time point. A series of exploratory factor analyses were conducted to investigate the underlying structure of this construct over time, using principal axis factoring and oblique rotation Promax. The results indicated a single factor at each time point, explaining between 70% and 73% of the variance in satisfaction with COVID-19 communication and management. Factor loadings ranged from 0.76 to 0.93 at the three time points. Overall, these results indicate a robust and stable factor structure, underlining the reliability of the construct and confirming its continued relevance over time. Cronbach's αs for the scale were .92, .93 and .93 across the three measurements.

3.3.2 | Institutional trust

Institutional trust is multifaceted, encompassing trust in both partisan institutions like parliament, political parties and government, as well as nonparty power institutions like the army, police, legal bodies and media (Rothstein & Stolle, 2008). Our study focuses on trust within the first group of institutions, as it is particularly relevant to satisfaction with government communication and management during the COVID-19 crisis. More specifically institutional trust was measured with the following question: 'Could you tell us how much confidence you have in our country's (a) political parties, (b) parliament, (c) government, (d) government agencies?' Responses to this question ranged on a Likert scale from 1 (*none at all*) to 4 (*a great deal*). We also conducted a series of exploratory factor analyses for this construct.

The results revealed a consistent single factor that explained 64%–66% of the variance in institutional trust at each time point. Factor loadings ranged from 0.74 to 0.87. Cronbach's αs for the scale were .88, .88 and .87 across the three time points.

3.3.3 | Control variables

To account for the possible effects of important sociodemographic factors, we include several conventional control variables in our analyses: age, gender (1 = female, 0 = male), educational level, income and immigrant status (0 = outside the Nordic countries, 1 = born in the Nordic countries). The scale for education ranged from 0 (no formal education) to 3 (university education). Income was measured by a question asking respondents about the after-tax income of their household members. The scale ranged from less than 200,000 to over 900,000 SEK per year.

3.4 | Analytical strategy

To examine the relationship between SWCCM and institutional trust, we conducted a two-step longitudinal analysis. In the first step, we examined the development of SWCCM and institutional trust across time using Longitudinal Growth Modelling (also called Latent Growth Curve Modelling). More specifically, the individual trajectories of our two main variables were specified as the function of a latent intercept and a latent slope based on the three time points. An intercept can be interpreted as individuals' starting level and a slope as individuals' level of change across time. However, in this study, we used latent growth models that went beyond analysing individual differences in the growth patterns of a single observed measure. This means that the models captured growth trends in latent constructs estimated from the common variance of multiple observed measures of SWCCM and institutional trust. These models, known as Multiple Indicator Growth Models (MIGM) (McArdle, 1988), consist of a measurement model and a growth model. The measurement model focuses on scaling latent variables to measure growth and exploring longitudinal measurement invariance for intercept and loading parameters. The growth model focuses on within-individual changes in the latent variable across measurement occasions. As the MIGM integrates multiple observed variables into one latent construct, they are regarded to be a more comprehensive approach to modelling individual differences in growth compared to traditional growth models (Cheung & Rensvold, 1999). These models were estimated using Mplus v.8.6. Following requirements of these type of models, we hold the intercepts and factor loadings of the factor indicators equal over time (Muthén & Muthén, 1998–2017). In so doing, we ensured that the latent variables are measured on the same metric across measurement occasions, eliminating potential biases resulting from a lack of measurement invariance and allowing differences in latent means and variance to reflect individual differences in latent scores.

In the second step, we estimated a multivariate longitudinal growth model (also called the Parallel Process Growth Model) by combining the two MIGM's of SWCCM and institutional trust into one single model. This model allowed for examining the longitudinal link between our two variables. More specifically, in this model, the intercept and slope of SWCCM predicted the intercept and slope of institutional trust. In addition, the intercept of institutional trust predicted the slop of SWCCM. Furthermore, we controlled for main effects of respondents' age, gender, education level, income and immigrant status.

To statistically evaluate our models, we used the following goodness-of-fit indices (see Kline, 2010): χ^2, the Comparative Fit Index (CFI), the Root Mean Square Error of Approximation (RMSEA) and the Standardized Root Mean Squared Residual (SRMR). In general, these fit indices are estimates of how well a theoretical model fits the observed data. Thus, a good model fit implies that the data are consistent with the assumptions of a hypothesized model. According to recommendations, a good fit to the data is indicated by a nonsignificant χ^2, CFI equal to or greater than 0.95, RMSEA equal to or less than 0.05 and SRMR equal to or lower than 0.08 (Hu & Bentler, 1999).

Finally, to address missing data, we used Full Information Maximum Likelihood (FIML) estimation to test our models. FIML estimation uses all available data from each subject and provides more reliable standard errors than methods such as listwise deletion, pairwise deletion or mean imputation (Little & Rubin, 2002). The extent of missing data was examined using the covariance coverage matrix in Mplus. The minimum acceptable covariance coverage value that provides robust estimates in Mplus is 10% (Muthén & Muthén, 1998–2017). In our study, the coverage exceeded this threshold and ranged from 54% to 100%.

4 | RESULTS

4.1 | Descriptives

Table 1 shows the means and standard deviations of this study's two main variables for the three time points. To test for differences between the time points, a repeated-measures analysis was performed in which the factor Time represented the changes across the three times. Significant differences were found across time within both variables. Post-hoc Bonferroni tests show that SWCCM significantly decreased from T1 to T2 but increased from T2 to T3

TABLE 1 Means and standard deviations: Satisfaction with government COVID-19 communication and management (SWCCM), and Institutional Trust.

	Time 1	Time 2	Time 3
SWCCM	3.16[a] (0.73)	2.67[b] (0.80)	2.85[c] (0.74)
Institutional trust	2.74[d] (0.66)	2.60[e] (0.66)	2.62[e] (0.63)

Note: Different superscripts (a, b, c, d, e) show significant (p < .05) differences across time. Numbers in each cell refer to means and standard deviations (in parentheses).

TABLE 2 Intercorrelations among study variables.

		2	3	4	5	6	7	8	9	10	11
1	SWCCM T1	0.71***	0.72***	0.62***	0.56***	0.54***	0.20***	0.09***	0.07**	0.03	0.07**
2	SWCCM T2	-	0.75***	0.59***	0.65***	0.58***	0.20***	0.06**	0.05*	0.00	0.09***
3	SWCCM T3		-	0.59***	0.58***	0.60***	0.14***	0.06*	0.03	0.02	0.11***
4	Institutional trust T1			-	0.77***	0.76***	0.14***	0.02	0.16***	0.10***	0.00
5	Institutional trust T2				-	0.76***	0.13***	0.02	0.17***	0.08***	0.01
6	Institutional trust T3					-	0.09**	0.04	0.14***	0.09**	0.04
7	Gender (1 = female)						-	−0.07**	0.06*	−0.11***	−0.01
8	Age							-	−0.04	−0.06**	0.06*
9	Education								-	0.22***	−0.08***
10	Income									-	0.03
11	Immigrant status[a]										-

Abbreviation: SWCCM, Satisfaction with government COVID-19 communication and management.

*$p < .05$; **$p < .01$; ***$p < .001$.

[a]Immigrant status (1 = Sweden/other Nordic countries).

(F (2, 1173) = 444.66, $p < .001$). In the same way, institutional trust significantly decreased from T1 to T2 but remained stable from T2 to T3 (F (2, 1239) = 76.04, $p < .001$). These descriptive findings may be interpreted in the context of the evolution of the pandemic and the government's policy response in Sweden. As previously highlighted, daily televized press briefings by the main agencies played an important role in crisis communication (Johansson & Vigsø, 2021; Pierre, 2020) and may, therefore, also explain the trend in SWCCM observed in our study. Conversely, the decline in trust may be linked to the gradual implementation of stricter policies as the crisis progressed from the first wave in 2020 to subsequent waves in 2021–2022. Simultaneously, the increase in mortality rates during this period could have also influenced this trend.

The intercorrelations of the study variables are reported in Table 2. There are moderately high correlations both within and between the two main variables. For instance, the correlation between SWCCM across the time measurements ranged from $r = .72$ to $r = .75$, indicating high stability across time. Moreover, there were substantial positive correlations between SWCCM and institutional trust across the time points. For example, the correlations between the two variables were $r = .62$ at the first time point, $r = .59$ at the second and $r = .60$ at the third time point. The correlations between the other variables align with the expected direction. For instance, higher education correlated with higher income, and older age with lower income.

4.2 | How do SWCCM and institutional trust develop over time?

To examine the individual developmental trajectories, we examined the univariate MIGM for SWCCM and institutional trust separately.

The univariate longitudinal growth model for SWCCM provided a good fit to the data. As shown in Table 3, there was significant variability in the intercept and slope. These indicate that individuals differed in their latent SWCCM score at the first time point, and also in their growth trajectories. Also, the slope of this growth model was significant and positive (slope = 0.153, $p < .001$), suggesting that, on average, positive attitudes towards COVID-19 communication and management increased over time. Based on the guidelines proposed by Cohen (1988), this observed change can be considered small in magnitude.

Additionally, the univariate longitudinal growth model for institutional trust provided a good fit to the data. There was significant variability in the intercept, but the variability of the slope was found to be nonsignificant, suggesting that, on average, there was no substantial variability within individuals in their rate of change over time. However, the slope mean for institutional trust was significant and negative, indicating that, on average, individuals' trust in institutions slightly decreased over time (slope = −0.053, $p < .001$). Overall, there was considerable variability in the main variables, both initially (as shown by the intercept variances) and over time (as shown by the slope means and variances).

4.3 | Does SWCCM drive the development of institutional trust?

To examine the longitudinal links between SWCCM and institutional trust, the two separate MIGM's were integrated into a single parallel process model. The results of this combined model are presented in Table 4. Examining the intercepts, the findings indicate a significant and positive association between the intercept of SWCCM and the intercept of institutional trust ($\beta = .84$, $p < .001$). This suggests that

TABLE 3 Unstandardized growth factors of the different univariate multiple latent growth models.

	Intercept			Slope			Variance		Model fit indices				
	Mean estimate	Variance Estimate (SE)	p Value	Mean Estimate (SE)	p Value	Variance Estimate (SE)	p Value		χ^2	df	RMSEA (95% CI)	SRMR	CFI
SWCCM	0	0.400	p < .001	0.153	p < .001	0.031	p < .01		144.094	58	0.028 (0.022–0.034)	0.027	0.996
Institutional trust	0	0.194	p < .001	−0.053	p < .001	0.000	p < .940		202.726	42	0.045 (0.039–0.51)	0.031	0.990

Note: In a multiple-indicator growth model, the mean of the intercept growth factor is fixed at zero (Muthén & Muthén, 1998–2017).

Abbreviations: CFI, Comparative Fit Index; CI, confidence interval; RMSEA, Root Mean Square Error of Approximation; SRMR, Standardized Root Mean Squared Residual; SWCCM, Satisfaction with government COVID-19 communication and management.

TABLE 4 Standardized parameter estimates for bivariate LGMs.

Effect	Standardized parameter estimates		
	Estimate	SE	p
Regressions			
SWCCM-intercept → Trust-intercept	0.84	0.015	<.001
SWCCM-intercept → Trust-slope	−0.29	0.099	.004
SWCCM-slope → Trust-slope	0.98	0.034	<.001
Trust-intercept → SWCCM-slope	0.01	0.206	.981
Gender → SWCCM-intercept	0.22	0.027	<.001
Gender → SWCCM-slope	−0.02	0.074	.817
Gender → Trust-intercept	−0.04	0.023	.090
Gender → Trust-slope	0.04	0.074	.817
Age → SWCCM-intercept	0.15	0.027	<.001
Age → SWCCM-slope	−0.19	0.072	.007
Age → Trust-intercept	−0.07	0.022	<.01
Age → Trust-slope	0.31	0.096	<.01
Education → SWCCM-intercept	0.087	0.028	<.01
Education → SWCCM-slope	−0.08	0.076	.309
Education → Trust-intercept	0.11	0.022	<.001
Education → Trust-slope	0.02	0.093	.792
Income → SWCCM-intercept	0.07	0.028	.019
Income → SWCCM-slope	−0.05	0.072	.460
Income → Trust-intercept	0.04	0.022	.081
Income → Trust-slope	−0.001	0.092	.964
Immigrant status → SWCCM-intercept	0.08	0.027	<.01
Immigrant status → SWCCM-slope	0.07	0.073	.317
Immigrant status → Trust-intercept	−0.04	0.022	.003
Immigrant status → Trust-slope	−0.06	0.095	.527

Note: Standardized maximum likelihood parameter estimates of linear latent growth model (LGM) for two parallel processes for satisfaction with government COVID-19 communication and management (SWCCM) and institutional trust. Correlations among control variables are omitted for the sake of brevity and because these estimates correspond to the correlation coefficients reported in Table 2.
The Model provided a good fit to the data: (χ^2 = 1948.418, df = 394; p < .05; CFI = 0.955; SRMR = 0.069; RMSEA = 0.048 [90% CI = 0.046–0.050]).

Abbreviations: CFI, Comparative Fit Index; CI, confidence interval; RMSEA, Root Mean Square Error of Approximation; SRMR, Standardized Root Mean Squared Residual.

individuals who at the starting point reported higher levels of satisfaction with COVID-19 communication and management also exhibited higher levels of institutional trust. Furthermore, the slope of SWCCM significantly and positively predicted the slope of institutional trust ($β$ = .98, p < .001). This implies that changes in SWCCM over time were related to corresponding changes in institutional trust. Specifically, as individuals experienced an increase in SWCCM, they also reported an increase in trust towards various institutions.

When examining the cross-lagged relations, we observed that the intercept of SWCCM negatively predicted the slope of institutional trust ($β$ = −.29, p < .01). This implies that a higher initial value of SWCCM was associated with a decrease in the rate of change (slope) of institutional trust over time. In other words, individuals who started with higher satisfaction with COVID-19 communication and management experienced a more pronounced decrease in their trust in institutions compared to those with lower initial satisfaction levels. This indicates that higher initial satisfaction appeared to magnify the downward trend in institutional trust. In contrast, the intercept of institutional trust did not significantly predict the slope of government communication. Taken together, these findings indicate a unidirectional relationship between SWCCM and institutional trust, suggesting that SWCCM has a stronger influence on changes in institutional trust over time compared to the reverse direction.

Moreover, the findings pertaining to the impact of control variables on the initial levels and changes in SWCCM and institutional trust reveal some interesting patterns. Specifically, respondents' age, education level and immigrant status emerged as significant predictors of the initial levels of SWCCM and institutional trust. Higher age and education were associated with greater SWCCM and higher levels of trust in institutions. Conversely, individuals born in Nordic countries demonstrated higher SWCCM but lower levels of trust. Income positively and significantly predicted satisfaction with SWCCM, although it did not have a significant impact on trust in institutions. Additionally, a higher age at the first measurement occasion was linked to a slower increase in SWCCM over time. Overall, in the parallel process model analysis, the findings revealed a significant relationship between SWCCM and institutional trust, both at the initial level and over time. Moreover, the results indicate a unidirectional influence, with SWCCM having a direct impact on the development of institutional trust. The control variables included in the analysis had minimal impact on the trajectories of the main study variables.

5 | CONCLUSION AND DISCUSSION

This study aimed to examine the developmental trajectories of SWCCM and institutional trust over time, and to provide insights into the role of SWCCM in fostering trust during a global health crisis. Using unique 3-year panel data collected at various stages of the COVID-19 pandemic in Sweden, several interesting findings emerged. *First*, SWCCM increased over time, while trust in

institutions slightly decreased, in line with previous studies on the rally-round-the-flag effect, showing that support for government institutions and political leaders tend to increase during times of crises. However, the initial rally effects are typically short-lived, struggling to evolve into enduring, long-term support for political leaders and institutions and Sweden was no exception (Johansson & Hopmann, & Shehata, 2021; Kernell, 1978; Mueller, 1973). The decline in institutional trust can be attributed to several factors. For example, Johansson et al. (2021) found that respondents' perceptions of the crisis's impact on Sweden and their political ideology (measured as left-right self-placement) were key drivers behind the decrease in overall satisfaction with the government's performance. The simultaneous increase in SWCCM during the pandemic may partially be attributed to the decentralized and autonomous nature of the institutional system in Sweden, where expertise, resources and manpower are primarily located within agencies rather than central government offices, allowing agencies to operate independently in specific situations. Additionally, daily televised press conferences by key agencies such as the NBHW and the PHA played a vital role in the crisis communication. In summary, the nature of the Swedish political system and the perceived effective crisis communication of the responsible agencies probably contributed to the increasing satisfaction with government communication and management during the COVID-19 pandemic (Johansson & Vigsø, 2021; Pierre, 2020).

Second, our study finds that SWCCM is related to institutional trust both cross-sectionally and longitudinally. This finding contributes to research linking information disclosure to political trust (Crepaz & Arikan, 2021; Grimmelikhuijsen, 2012), as well as to studies highlighting the importance of information provided by institutions (cf. Cook et al., 2010; Grimmelikhuijsen & Meijer, 2014). Our study shows that citizens' *satisfaction* with communication and management of COVID-19 by various institutions is also crucial for their level of *institutional* trust. To our knowledge, this study is the first to show that changes in SWCCM were associated with corresponding changes in institutional trust over time during the pandemic. Thus, as individuals experienced increasing SWCCM, their trust in different institutions also increased.

Finally, the results confirm a unidirectional relationship between the key study variables. Initial levels of SWCCM predicted the rate of change in institutional trust, suggesting that higher initial SWCCM levels may contribute to a faster decline in trust over time. One way to understand this unexpected finding is to look at the mechanisms behind the gap between expectations and performance. According to the psychological–democratic contract theory (Wroe, 2014), political trust can be understood as a mutual agreement between citizens and the political system. This agreement is based on the management of citizens' expectations. Citizens have certain expectations about the benefits and services they expect from the government. When the government fails to meet these expectations, it is perceived as a breach of this unspoken contract. Following this line of reasoning, we can argue that higher initial satisfaction with crisis communication

and management during COVID-19 could lead to higher expectations. If these expectations are not met, or if there is a perceived decline in performance, this may lead to greater disappointment for initially satisfied individuals, leading to a sharper decline in trust. In addition, individuals who were initially satisfied may have placed greater trust in the institution because of their positive early experiences, making the subsequent decline in trust more significant for them. Overall, this emphasizes the importance of managing expectations and maintaining high communication standards to mitigate the potential rapid decline in trust.

In conclusion, this study sheds light on the dynamic relationship between SWCCM and trust over time. These findings emphasize the critical role of consistent and effective SWCCM in maintaining or bolstering trust in institutions over time. Maintaining a high level of trust is particularly important as it has been demonstrated to be associated with adherence to health policies, including compliance with confinement or quarantine measures, testing and restrictions on group gatherings (Bavel et al., 2020; Han et al., 2023).

This study has several limitations and strengths that warrant attention. One potential limitation concerns the generalizability of the results. The study was conducted in the specific context of Sweden, and it is important to consider its unique circumstances and specific crisis management strategies when interpreting the results. Further research is needed to investigate the extent to which these findings can be applied beyond this case. However, as highlighted at the outset, the Swedish approach, characterized by an emphasis on personal responsibility and adherence to recommendations rather than strict regulations, provides an important case study that contributes to our understanding of effective communication and trust-building strategies during this global health crises.

Another potential limitation relates to the measurement of SWCCM. The used measure captures both satisfaction with communication by various agencies, and satisfaction with these agencies' activities. It could be argued that individuals may be satisfied with the communication but not with the activities, or vice versa. However, it is important to note that the broad response scale of this measure allows respondents to indicate their overall satisfaction with both the communication and the activities conducted during the pandemic. In addition, this measure provides a broad perspective on respondents' attitudes towards a range of institutions and agencies, which is an advantage over using single-item measures that focus solely on one institution. Furthermore, as indicated by the reported Cronbach's α values and the results of the factor analyses, the internal consistency of this construct is high, and the included items represent a single factor. We have, moreover, conducted an additional robustness test in which we ran the longitudinal analysis after removing the first item, that is, the item measuring community information. The results of this analysis remained consistent with our earlier findings, confirming the robustness of the scale and the stability of its measures even without the first item. However, future studies may consider using separate measures to capture satisfaction with communication and activities separately, allowing for a more nuanced analysis of their respective effects on institutional trust.

A final limitation might pertain to the inclusion of additional pertinent control and other variables associated with our two primary study variables. As mentioned above, we have considered the possible effects of important sociodemographic factors such as age, gender, educational level and income. However, certain variables not accessible in our data set have not been taken into account. One such variable is compliance with health measures during the crisis. As mentioned earlier, trust has been linked to compliance with health measures in past health crises, such as the 2009 H1N1 pandemic (Freimuth et al., 2014; Siegrist & Zingg, 2014) and the Ebola outbreak (Blair et al., 2017). However, in this study, our focus was not on the role of trust and its consequences for compliance with health interventions, but rather on the impact of communication and management on trust. Nevertheless, future studies should simultaneously focus on both the drivers of trust and the consequences of trust.

Nevertheless, the current study has several strengths. By using a longitudinal design, we were able to examine how institutional trust and crisis communication and management evolve and interact over time. As a result, we gained a deeper understanding of the dynamic relationship between the study variables by examining the temporal patterns, trends, effects and trajectories of these variables. These findings may have significant implications for both academic research and practical policymaking by providing a comprehensive view of the evolving relationship between institutional trust, crisis communication and management. For example, our findings reveal a one-way relationship between the two key study variables, suggesting that initial satisfaction with communication and management may contribute to a rapid decline in trust over time. This information can help policymakers refine their strategies for effectively managing crises and maintaining public trust. It also underscores the need for additional measures beyond transparent crisis communication and effective management to maintain public trust in government institutions, especially among certain segments of society. Thus, these findings highlight the need for a multifaceted approach to maintaining institutional trust in government during crises and over time.

In addition, the timing of the study, in the midst of a global pandemic that required rapid action and widespread dissemination of information by governments around the world, gives it added strength. In this particular context, the study provides an indirect assessment of the effectiveness of communication and management in times of crisis, when maintaining public trust is paramount.

In sum, the strengths of this study, rooted in its longitudinal design and unique contextual setting in Sweden during a global pandemic, provide new understandings on the dynamics of institutional trust, crisis communication and crisis management. The findings resonate with academic research, and have implications for practical policymaking, highlighting the need for nuanced, adaptive strategies to maintain public trust during crises and beyond. At the same time, our findings call for further studies to better understand

the mechanisms behind the relationship between the two variables under study.

CONFLICT OF INTEREST STATEMENT

The authors declare no conflict of interest.

DATA AVAILABILITY STATEMENT

Data available on request due to privacy/ethical restrictions.

ORCID

Ali Abdelzadeh 🄳 http://orcid.org/0000-0002-4294-2042
Thomas Sedelius 🄳 http://orcid.org/0000-0001-6594-5804

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