Generalised and Institutional Trust as Predictors of Psychosomatic Complaints in Swedish Adolescents: A Longitudinal Cohort Study

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Abstract

To investigate the cross-sectional and longitudinal relationships between generalised trust and institutional trust and psychosomatic symptoms during middle and late adolescence. Data came from the Swedish cohort study Futura01, based on survey responses from 3,691 ninth-grade students (approximately 15–16 years, t1), who were reassessed two years later (approximately 17–18 years, t2). Sociodemographic details from registries were linked to the survey data. Linear regression models were employed. Longitudinal analyses used both the first difference (FD) method and the lagged dependent variable (LDV) method. Adjustments were made for gender, family structure, parental education level, parental country of origin, and upper secondary school programme. Elevated generalised and institutional trust were cross-sectionally linked to reduced psychosomatic symptoms at both measurement points. The FD analyses revealed that rises in generalised and institutional trust from ages 15–16 to 17–18 were linked to concurrent reductions in psychosomatic symptoms. The LDV analyses indicated bidirectional temporal relationships between trust and psychosomatic symptoms. These results suggest that trust functions as a social determinant of psychosomatic symptoms among adolescents, while also showing that health status may influence trust levels.

Keywords: Generalised trust, Institutional trust, Psychosomatic symptoms, Health symptoms, Family background

Introduction

Trust represents a fundamental element of a cohesive and sustainable society [1–3], particularly because of its connections to health and wellbeing, which are central to sustainable development [4]. A key distinction exists between trust toward other individuals (often termed generalised, horizontal, social, or interpersonal trust) and trust toward public institutions (often termed institutional or vertical trust) [5]. At the individual level, these two forms of trust show empirical interconnections [6, 7]. Extensive research has established links between trust in others and diverse health outcomes in adults, where

lower trust corresponds to increased risks of illness [8–13] and death [14, 15]. One suggested pathway is that greater trust promotes social support and collective efforts, helping individuals manage stress more effectively [10, 15]. Reduced trust in others may itself act as a stressor, impacting health via psychosocial mechanisms [15]. Fewer investigations have specifically explored ties between trust in public institutions and health [16]. Evidence indicates that political trust (a component of institutional trust) correlates positively with self-rated health [17] and mental health [18], even after controlling for interpersonal trust. Diminished institutional trust, similar to low interpersonal trust, may serve as a stressor affecting health [18]. Yet, reverse causation has been proposed, whereby poorer health might reduce political trust [19].

Trust typically forms and evolves early in life [20, 21], influenced partly by parental socialisation [22] and also by settings like school [23, 24]. Though trust displays some instability during mid-adolescence, it generally

stabilises over time [25]. Several studies have explored connections between trust and self-reported health among youth. Tuominen and Haanpää [26] found a cross-sectional association between trust in others and greater life satisfaction in Finnish 12–13-year-olds. In a longitudinal analysis of young adults in Stockholm, Winzer *et al.* [27] showed that interpersonal trust predicted stable mental health, while community trust did not. Mmari *et al*. [28], in their cross-sectional examination of disadvantaged youth in Baltimore, identified no significant differences in self-rated health related to community or institutional trust. Furthermore, related concepts have been studied in relation to adolescent wellbeing and health, with higher social capital [29], general belonging [30], sense of unity [31], sense of community [32, 33], and connectedness [34, 35] associated with improved wellbeing and health. Overall, however, longitudinal research on distinct trust dimensions and health in adolescence remains limited.

Adolescence and the shift to adulthood involve substantial growth and transitions [36, 37]. This stage is often called "emerging adulthood," spanning the mid-teens to the mid- or late twenties [38]. It is considered a pivotal phase owing to considerable instability and numerous challenges [37, 39]. Although physical health is typically strong during this time, psychosomatic symptoms are frequent, particularly in girls [40]. Rates of psychosomatic symptoms also differ by sociodemographic factors beyond gender, such as family structure, affluence, and migration background [41]. These symptoms relate to perceived stress and can thus be viewed as stress-linked [41].

The purpose of this study was to explore the cross-sectional and longitudinal links between generalised trust (trust in other people) and institutional trust (trust in public institutions) and psychosomatic symptoms during middle and late adolescence.

Materials and Methods

Data source

Information was obtained from the Swedish longitudinal cohort Futura01, involving a country-wide selection of students in their final year of compulsory schooling (grade 9) during spring 2017 (aged around 15–16 years). From a randomly chosen pool of 500 schools in Sweden, one classroom per school was invited. A total of 343 schools joined the study, achieving a 69% participation rate at the school level [42]. Comparisons revealed no meaningful differences between involved and non-involved schools regarding mean academic performance, percentage of students with university-educated parents, or percentage with parents born abroad [42]. Baseline assessment (t1) took place in school settings in 2017 via paper questionnaires (n = 5,537; 82% response rate). The follow-up assessment (t2) occurred in 2019 (when most were in year two of upper secondary education; aged around 17–18 years) through online and mailed questionnaires (n = 4,141; corresponding to 75% retention from t1). Further details about procedures are published elsewhere [42]. Registry records on parents' educational attainment and birthplace were merged with survey responses by Statistics Sweden. The dataset analysed here was fully anonymised. The study sample consisted of cases with complete data across all relevant measures at both waves (n = 3,691; or 67% of the original t1 cohort). Approval was granted by the Swedish Ethical Review Authority (ref. 2021-06504-01; 2022-02781-02). Written informed consent was secured from all participants.

Measures

Psychosomatic symptoms were evaluated (at both t1 and t2) using the prompt: "During the past 6 months, how often have you had…" followed by three complaints: a) "headache," b) "stomach ache," and c) "difficulties falling asleep." Answer choices were "Every day," "A few times a week," "Once a week," "Some time a month," and "Less often or never." Reliability was reasonable considering the brief scale (Cronbach's alpha t1: 0.64; t2: 0.63). Only respondents answering all three were included. Responses were summed into a composite score ranging from 3–15, where elevated scores denoted more regular symptoms. This exact trio of items has appeared in prior investigations of psychosomatic issues [43–46].

Questions assessing generalised and institutional trust were drawn and adapted from the OECD social capital initiative and item repository [47] to suit adolescents. These measures were previously utilised in another report using Futura01 material [48].

Generalised trust was gauged (at t1 and t2) with the lead-in: "Considering society as a whole, mark the alternative that best agrees with how you feel," and five statements: a) "You can trust most people"; b) "You can never be too careful when you meet new people"; c) "Most people are trying to be helpful"; d) "Most people only care about themselves"; and e) "Most people are honest." Options

ranged from "Totally correct" to "Totally incorrect," scored 4 down to 1 (with b and d reversed). Reliability across the five was acceptable (Cronbach's alpha t1: 0.62; t2: 0.68). As noted in earlier work with this dataset [48], omitting item b raised reliability substantially (Cronbach's alpha t1: 0.72; t2: 0.74). Accordingly, averages were derived from items a, c, d, and e for those completing at least three, yielding a scale of 1–4 where higher figures reflected stronger generalised trust.

Institutional trust was captured (at t1 and t2) via the prompt: "How much do you normally trust…," covering a) "Government and parliament"; b) "The justice system (police and courts)"; c) "Teachers"; d) "News (TV, radio)"; and e) "Researchers and experts." Choices were "Very much," "Fairly much," "Not that much," and "Not at all," valued 4 to 1. The scale demonstrated good reliability (Cronbach's alpha t1 = 0.75; t2 = 0.73). Means were computed for those providing at least three responses, producing a 1–4 index with higher scores signalling greater institutional trust. The two trust dimensions correlated moderately (Pearson's r t1: 0.35; t2: 0.45).

Covariates were added to account for background characteristics.

Gender was extracted from national identification numbers, classified as boys or girls.

Family type was determined (at t1) from the item: "How do you live?" offering "Lives with mother and father"; "Lives with mother"; "Lives with father"; and "Lives about half of the time with mother and about half of the time with father (shared residence)." Categories were formed as living with two parents, single parent, alternating residence, or other/missing.

Parental education relied on 2017 registry records of both parents' qualifications, grouped by the highest attained: upper secondary ≤2 years or lower; upper secondary ≥3 years; or post-secondary.

Parental country of birth used registry details to categorise: at least one parent Swedish-born; at least one European-born; or both born outside Europe.

Upper secondary programme was queried (at t2) as: "What orientation does your upper secondary school programme have?" with choices "Vocational," "Academic," and "Other." Cases selecting "Other," not enrolled in upper secondary, or missing were combined into a single group.

Statistical analysis

To investigate the relationships between generalised and institutional trust and psychosomatic symptoms, both cross-sectional and longitudinal ordinary least squares (OLS) regression models were employed. The primary predictors—generalised and institutional trust—were treated as continuous variables, while all covariates were categorical.

Cross-sectional links between the two trust dimensions and psychosomatic symptoms were assessed separately at t1 and t2 using linear regression, reporting unstandardised coefficients (b) along with 95% confidence intervals. For longitudinal examination, the first difference (FD) method was applied [49], where changes in trust levels (t2−t1) predicted changes in symptoms (t2−t1). This approach effectively controls for unobserved time-invariant factors [49]. In both cross-sectional and FD models, analyses progressed from crude versions (each trust type entered singly, adjusted only for gender), to Model 1 (generalised trust plus full covariates), Model 2 (institutional trust plus full covariates), and Model 3 (both trust types plus full covariates). Potential interactions between trust measures and covariates were tested using Wald tests to compare model fit; any significant interactions ($p < 0.05$) are noted in the tables.

To explore potential bidirectionality, lagged dependent variable (LDV) models were estimated [49]. First, symptoms at t2 were regressed on trust at t1, controlling for baseline symptoms at t1. Second, each trust dimension at t2 was regressed on symptoms at t1, controlling for the respective baseline trust at t1. For easier interpretation of effect sizes in LDV models, all continuous variables were z-standardised.

Given the clustered structure of the data (students within school classes at t1), robust standard errors were computed with clustering by t1 class (335 clusters total) via Stata's cluster option. Analyses were conducted using Stata version 17 [50].

Results and Discussion

Characteristics of the study sample are shown in **Table 1**. The sample included 44.7% boys and 55.3% girls. Regarding living arrangements, 70.4% resided with both parents in the same home, 13.7% with a single parent, 13.6% in alternating residences, and 2.3% in other arrangements or missing data. Parental education distribution was: 15.1% with highest level ≤2 years upper secondary or lower, 20.4% with ≥3 years upper

secondary, and 64.5% with tertiary qualifications. Most participants (85.0%) had at least one Swedish-born parent, 5.0% had at least one European-born parent, and 10.0% had both parents born outside Europe. At t2, 20.9% followed vocational tracks and 75.8% academic tracks, while 3.3% were in other categories, not enrolled,

or missing. Average psychosomatic symptom scores were 7.05 at t1 and 7.25 at t2, with a mean increase of 0.20. Generalised trust averaged 2.41 at t1 and 2.42 at t2 (mean change 0.01). Institutional trust averaged 2.82 at t1 and 2.80 at t2 (mean change −0.02).

Table 1. Descriptives n = 3,691. Futura01 survey, Sweden, 2017 and 2019.

	%	n
Gender		
Boys	44.7	1,651
Girls	55.3	2,040
Family type (t1)		
Living with two parents	70.4	2,598
Living with one parent	13.7	506
Alternating between parents	13.6	503
Other/missing	2.3	84
Parental education		
≤2 years secondary or less	15.1	557
≥3 years secondary	20.4	754
Tertiary education	64.5	2,380
Parental country of birth		
At least one parent born in Sweden	85.0	3,139
At least one parent born in Europe (outside Sweden)	5.0	183
Both parents born outside Europe	10.0	369
Upper secondary programme (t2)		
Vocational programme	20.9	772
Academic programme	75.8	2,796
Other programme/other activity/missing	3.3	123

	s.d.	Mean	Max.	Min.	Kurtosis	Skewness
Psychosomatic complaints						
t1	2.75	7.05	15	3	2.55	0.52
t2	2.72	7.25	15	3	2.49	0.43
Change (t2−t1)	2.45	0.20	12	−10	3.86	0.04
Generalised trust						
t1	0.51	2.41	4	1	2.97	−0.18
t2	0.51	2.42	4	1	2.94	−0.19
Change (t2−t1)	0.52	0.01	1.75	−2.25	3.69	−0.07
Institutional trust						
t1	0.56	2.82	4	1	3.54	−0.50
t2	0.54	2.80	4	1	3.48	−0.45
Change (t2−t1)	0.55	−0.02	2.80	−3.00	4.58	−0.03

Comparisons revealed selective attrition and item non-response: the analytical sample slightly underrepresented boys, those not living with both parents, those with lower parental education, those with two foreign-born parents, and those not in academic programmes at t2. Cross-sectional findings for t1 **(Table 2)** demonstrated that

greater generalised and institutional trust corresponded to fewer psychosomatic symptoms across crude models and adjusted Models 1–2. In the mutual adjustment (Model 3), associations remained significant though modestly reduced (generalised trust: b = −0.83, 95% CI −1.00, −0.67; institutional trust: b = −0.85, 95% CI −1.00,

−0.71). In Model 3, girls exhibited higher symptom levels than boys, as did those in single-parent or shared-residence households compared to intact two-parent homes. No significant differences emerged by parental education. Adolescents with parents born in or outside Europe reported fewer symptoms than those with at least one Swedish-born parent. Unshown interaction tests identified stronger trust-symptom associations among girls (generalised trust × gender: p = 0.004; institutional trust × gender: p < 0.001). Patterns at t2 **(Table 3)** closely mirrored t1, except parental origin effects lost significance. Upper secondary track (included only at t2) showed lower symptoms among academic-track students in crude analysis, but not after adjustment.

Table 2. Results from cross-sectional linear regression analyses of psychosomatic complaints at t1 by generalised and institutional trust at t1 (age 15–16 years). n = 3,691. Futura01 survey, Sweden, 2017.

Predictor	Model 3 b	95% CI	Model 2 b	95% CI	Model 1 b	95% CI	Unadjusted b	95% CI
Generalised trust (t1)	−0.83***	−1.00, −0.67	—	—	−1.15***	−1.31, −0.99	−1.21***	−1.37, −1.05
Institutional trust (t1)	−0.85***	−1.00, −0.71	−1.11***	−1.25, −0.97	—	—	−1.18***	−1.32, −1.04
Sex								
Boys (reference)	0.00	—	0.00	—	0.00	—	0.00	—
Girls	1.63***	1.46, 1.79	1.71***	1.54, 1.87	1.56***	1.39, 1.73	1.69***	1.51, 1.87
Family structure (t1)								
Two-parent household	0.00	—	0.00	—	0.00	—	0.00	—
Single-parent household	0.84***	0.59, 1.08	0.93***	0.68, 1.17	0.89***	0.64, 1.14	1.12***	0.87, 1.36
Shared living arrangement	0.40**	0.14, 0.65	0.44**	0.19, 0.69	0.42**	0.16, 0.67	0.53***	0.28, 0.78
Other / missing information	0.55	−0.07, 1.18	0.62	0.00, 1.25	0.65*	0.03, 1.28	0.87**	0.24, 1.51
Parental education level								
≤2 years of secondary education or less	0.03	−0.24, 0.29	0.01	−0.26, 0.28	0.07	−0.21, 0.34	0.06	−0.22, 0.34
≥3 years of secondary education (reference)	0.00	—	0.00	—	0.00	—	0.00	—
Higher (tertiary) education	−0.13	−0.33, 0.07	−0.14	−0.34, 0.06	−0.25*	−0.46, −0.05	−0.42***	−0.63, −0.20
Parents' country of birth								
At least one parent born in Sweden (reference)	0.00	—	0.00	—	0.00	—	0.00	—
At least one parent born elsewhere in Europe	−0.55**	−0.93, −0.17	−0.43*	−0.81, −0.05	−0.51*	−0.90, −0.12	−0.22	−0.59, 0.16

Both parents born outside Europe	−0.40*	−0.71, −0.09	−0.30	−0.62, 0.01	−0.39*	−0.71, −0.07	−0.15	−0.47, 0.18

***p < 0.001, **p < 0.01, *p < 0.05.

a Includes one independent variable at a time, controlling for gender.

b Includes generalised trust and all covariates.

c Includes institutional trust and all covariates.

d Includes generalised and institutional trust and all covariates.

Table 3. Findings from cross-sectional ordinary least squares regression models examining psychosomatic symptoms at t2 predicted by generalised and institutional trust at t2 (age 17–18 years). n = 3,691. Futura01 cohort, Sweden, 2019.

Predictor	Model 3 b	95% CI	Model 2 b	95% CI	Model 1 b	95% CI	Crude b	95% CI
Generalised trust (t2)	−0.66***	−0.85, −0.46	—	—	−1.04***	−1.22, −0.86	−1.14***	−1.31, −0.97
Institutional trust (t2)	−0.89***	−1.06, −0.71	−1.15***	−1.32, −0.99	—	—	−1.24***	−1.40, −1.09
Sex								
Boys (reference)	0.00	—	0.00	—	0.00	—	0.00	—
Girls	1.62***	1.46, 1.78	1.66***	1.50, 1.82	1.56***	1.40, 1.72	1.62***	1.45, 1.79
Household composition (t1)								
Two-parent family	0.00	—	0.00	—	0.00	—	0.00	—
Single-parent family	0.70***	0.46, 0.94	0.78***	0.54, 1.02	0.75***	0.50, 0.99	1.03***	0.79, 1.27
Shared custody	0.38**	0.15, 0.60	0.43***	0.21, 0.66	0.40**	0.17, 0.63	0.52***	0.30, 0.75
Other arrangement / missing	0.25	−0.32, 0.81	0.35	−0.23, 0.92	0.26	−0.30, 0.83	0.58*	0.02, 1.14
Parental educational attainment								
≤2 years of secondary education or less	−0.02	−0.32, 0.28	−0.03	−0.33, 0.27	0.00	−0.31, 0.30	0.09	−0.22, 0.39
≥3 years of secondary education (reference)	0.00	—	0.00	—	0.00	—	0.00	—
University/tertiary education	−0.09	−0.31, 0.12	−0.12	−0.33, 0.09	−0.17	−0.39, 0.04	−0.41***	−0.63, −0.19
Parents' country of origin								
At least one parent born in Sweden (reference)	0.00	—	0.00	—	0.00	—	0.00	—
At least one parent born in another European country	−0.14	−0.51, 0.24	−0.04	−0.42, 0.33	−0.08	−0.46, 0.31	0.20	−0.18, 0.58
Both parents born outside Europe	−0.17	−0.48, 0.14	−0.03	−0.34, 0.28	−0.13	−0.43, 0.18	0.20	−0.10, 0.50
Upper secondary track (t2)								
Vocational programme (reference)	0.00	—	0.00	—	0.00	—	0.00	—

Academic programme	0.00	−0.21, 0.22	0.01	−0.20, 0.23	−0.16	−0.38, 0.06	−0.39***	−0.60, −0.17
Other programme / other activity / missing	0.38	−0.11, 0.87	0.36	−0.14, 0.86	0.45	−0.05, 0.95	0.52	−0.01, 1.05

***p < 0.001 **p < 0.01 *p < 0.05.

a Features each predictor separately, adjusted for gender.
b Incorporates generalised trust alongside full covariates.
c Incorporates institutional trust alongside full covariates.
d Incorporates both generalised and institutional trust alongside full covariates.

Findings from the first difference (FD) models, where shifts in psychosomatic symptoms (t2−t1) were regressed on shifts in generalised trust (t2−t1) and institutional trust (t2−t1), appear in **Table 4**. Unadjusted results and Models 1–2 (each trust dimension entered alone) indicated that rises in trust corresponded to reductions in symptoms. In Model 3, with mutual adjustment for changes in both trust forms, significant negative relationships persisted (change in generalised trust: b = −0.29, 95% CI −0.45, −0.12; change in institutional trust: b = −0.44, 95% CI −0.61, −0.27). Covariate effects in Model 3 revealed no differences in symptom change by gender, family structure, or parental education. However, greater symptom increases occurred among adolescents with one parent born outside Europe versus those with at least one Swedish-born parent. A significant difference also emerged between vocational and academic upper secondary tracks, with unreported follow-up showing symptom rises confined to the academic group. No significant interactions involved trust changes and covariates.

Table 4. Findings from regression models of symptom change (t2−t1) predicted by changes in generalised trust (t2−t1) and institutional trust (t2−t1) (from age 15–16 to 17–18 years). n = 3,691. Futura01 cohort, Sweden, 2017 and 2019.

Predictor	Model 3 b	95% CI	Model 2 b	95% CI	Model 1 b	95% CI	Crude b	95% CI
Change in generalised trust (t2–t1)	−0.29**	−0.45, −0.12	—	—	−0.39***	−0.55, −0.23	−0.39***	−0.56, −0.23
Change in institutional trust (t2–t1)	−0.44***	−0.61, −0.27	−0.50***	−0.66, −0.34	—	—	−0.51***	−0.68, −0.35
Sex								
Boys (reference)	0.00	—	0.00	—	0.00	—	0.00	—
Girls	−0.07	−0.23, 0.09	−0.08	−0.24, 0.08	−0.07	−0.24, 0.09	−0.07	−0.23, 0.10
Family structure at baseline (t1)								
Two-parent household	0.00	—	0.00	—	0.00	—	0.00	—
Single-parent household	−0.10	−0.34, 0.13	−0.10	−0.33, 0.14	−0.09	−0.33, 0.14	−0.09	−0.33, 0.15
Shared residence	0.02	−0.22, 0.25	0.03	−0.21, 0.26	0.02	−0.21, 0.26	−0.01	−0.24, 0.23
Other arrangement / missing	−0.26	−0.86, 0.34	−0.24	−0.85, 0.36	−0.29	−0.88, 0.31	−0.30	−0.90, 0.31
Parental educational level								
≤2 years of secondary education or less	−0.02	−0.33, 0.29	−0.02	−0.33, 0.30	−0.03	−0.34, 0.29	0.02	−0.30, 0.34
≥3 years of secondary	0.00	—	0.00	—	0.00	—	0.00	—

education (reference)							
Tertiary education	−0.04	−0.26, 0.19	−0.05	−0.27, 0.18	−0.04	−0.27, 0.19	0.01	−0.21, 0.23
Parents' country of birth							
At least one parent born in Sweden (reference)	0.00	—	0.00	—	0.00	—	0.00	—
At least one parent born in Europe	0.40*	0.03, 0.78	0.41*	0.03, 0.78	0.41*	0.04, 0.79	0.42*	0.05, 0.78
Both parents born outside Europe	0.28	−0.02, 0.58	0.31*	0.01, 0.61	0.30	−0.01, 0.61	0.35*	0.05, 0.66
Upper secondary educational track (t2)							
Vocational programme (reference)	0.00	—	0.00	—	0.00	—	0.00	—
Academic programme	0.25*	0.05, 0.45	0.24*	0.04, 0.44	0.26*	0.06, 0.47	0.25*	0.06, 0.45
Other programme / other activity / missing	−0.16	−0.68, 0.36	−0.16	−0.68, 0.37	−0.14	−0.69, 0.40	−0.14	−0.69, 0.41

***p < 0.001, **p < 0.01, *p < 0.05.

a Features each predictor separately, adjusted for gender.
b Incorporates change in generalised trust plus full covariates.
c Incorporates change in institutional trust plus full covariates.
d Incorporates changes in both trust dimensions plus full covariates.

To clarify potential causality directions between trust and symptoms, additional lagged dependent variable (LDV) regressions were conducted using z-standardised trust and symptom scores. Outcomes are displayed in **Table 5**. First, predicting symptoms at t2: elevated generalised trust at t1 linked to reduced symptoms at t2 ($b = -0.05$, 95% CI -0.08, -0.02), as did institutional trust at t1 ($b = -0.04$, 95% CI -0.06, -0.01). Baseline symptoms strongly predicted later symptoms. In reverse models predicting trust at t2: higher symptoms at t1 associated with lower generalised trust at t2 ($b = -0.07$, 95% CI -0.11, -0.04) and lower institutional trust at t2 ($b = -0.09$, 95% CI -0.12, -0.06).

Table 5. Findings from lagged regression models examining standardised trust and standardised psychosomatic symptoms across time points. Futura01 cohort, Sweden, 2017 and 2019.

Outcome Variable	Predictor	95% CI	b
Psychosomatic complaints (t2)	Generalised trust (t1)	−0.08, −0.02	−0.05***
	Psychosomatic complaints (t1)	0.51, 0.57	0.54***
Psychosomatic complaints (t2)	Institutional trust (t1)	−0.06, −0.01	−0.04*
	Psychosomatic complaints (t1)	0.52, 0.57	0.55***
Generalised trust (t2)	Psychosomatic complaints (t1)	−0.11, −0.04	−0.07***
	Generalised trust (t1)	0.41, 0.47	0.44***
Institutional trust (t2)	Psychosomatic complaints (t1)	−0.12, −0.06	−0.09***
	Institutional trust (t1)	0.39, 0.46	0.43***

***p < 0.001, **p < 0.01, *p < 0.05.

All models controlled for gender, family structure, parental education, parental origin, and upper secondary track. n = 3,691.

The present investigation explored cross-sectional and longitudinal links between generalised and institutional trust and psychosomatic symptoms in a nationwide Swedish adolescent cohort. Assessments occurred during the last year of compulsory education (age 15–16) and in the second year of upper secondary education (age 17–18).

Every analytic approach yielded consistent evidence of connections between trust and symptoms. Cross-sectional models revealed inverse relationships at both ages: adolescents reporting higher trust exhibited fewer symptoms. Longitudinal FD models [49] demonstrated that trust gains over the two-year interval coincided with symptom declines. Although trust levels varied across subgroups, the scarcity of significant interactions suggests these relationships held broadly, except for stronger cross-sectional effects among girls versus boys. Across cross-sectional and change-based analyses, both trust types maintained independent ties to symptoms, aligning with previous work on youth [26] and adults [8–15]. Prior literature has suggested a possible reverse influence, with health shaping trust [19]. Since FD models cannot establish temporality, LDV analyses [49] were added. These confirmed that baseline trust predicted later symptoms (controlling prior symptoms), yet baseline symptoms also predicted later trust, indicating bidirectional pathways.

Overall, the results suggest that the connections between trust and psychosomatic symptoms operate in a **bidirectional** manner, making explanations for links in either direction appropriate. Potential pathways underlying the relationship between generalised trust and psychosomatic symptoms could involve ideas that higher generalised trust fosters greater social support, aiding health outcomes [10], while reduced trust acts as a source of stress [15]. This view is consistent with results from a mixed-methods investigation on generalised trust in upper secondary school students in Stockholm [51]. In the study's qualitative component, students wrote letters discussing generalised trust, and exploratory content analysis revealed they viewed it as boosting personal well-being, facilitating friendships, promoting a sense of security, preventing missed chances, and supporting individual growth. In contrast, mistrust toward others was portrayed as exhausting, anxiety-inducing, and linked to weaker interpersonal connections [51]. Regarding the pathway from psychosomatic symptoms to subsequent trust levels, a possible explanation is that

health issues tied to stress generate irritation, leading to broader pessimistic views of individuals and societal institutions [19]. Moreover, poor health might restrict participation in social interactions and broader civic involvement [19], potentially lowering trust.

The observation in this research that institutional trust showed a negative link with psychosomatic symptoms, even after controlling for generalised trust, echoes earlier work in adult populations [17, 18]. A plausible explanation is that diminished institutional trust, like low generalised trust, functions as a stressor [18]. Additionally, reduced political trust has been associated with an external locus of control, specifically doubting one's ability to affect personal health [16]. Such an external control orientation is related to conditions like depression [52]. However, it remains unclear whether the external locus of control mediates the proposed path from institutional trust to psychosomatic symptoms or serves as a confounder instead. Future investigations should explore in greater depth the processes connecting generalised and institutional trust to adolescent health. It would also be valuable to assess bidirectional trust-health relationships with data spanning more than two waves.

Although the analysis employed the FD approach to evaluate links between shifts in trust and shifts in psychosomatic symptoms, another noteworthy pattern is the considerable consistency in both trust measures and symptoms across the periods from ages 15–16 to 17–18. Means and standard deviations reveal minimal average shifts at the aggregate level. For trust stability, this might reflect that generalised and institutional trust largely develops prior to mid-adolescence, aligning with research indicating trust forms early in development [20, 21]. That said, averages mask notable individual variations in changes for both symptoms and trust across waves, evident in the range of change scores. The pattern of rising psychosomatic symptoms with age matches certain cross-sectional research in similar cohorts, showing elevated symptoms in 17–18-year-olds compared to 15–16-year-olds [53, 54] (though some reports found lower symptoms in the older cohort, e.g., [55]).

A key strength of this investigation lies in its extensive longitudinal dataset, drawing survey responses from a nationwide Swedish adolescent sample plus register-based parental details. Applying the FD technique to panel data is advantageous, since modeling changes in outcomes against changes in predictors helps mitigate unobserved confounding [49]. Supplementary LDV models further bolstered evidence that trust predicts psychosomatic symptoms, despite bidirectional findings

in reverse models. Limitations exist, however. Although generalised and institutional trust indicators drew from OECD-recommended items [47], the scales lack formal validation (though piloted in prior work [48]). The psychosomatic measure relies on just three items with modest reliability, emphasizing somatic aspects (headache and stomach ache) alongside one psychological item (sleep onset difficulties). Upcoming research ought to distinguish links with separate somatic and psychological symptom scales. Changes in survey delivery mode between t1 and t2 might have influenced responses, such as heightened social desirability in school settings. Yet cross-sectional results at each wave were highly comparable. Multi-stage non-response could undermine sample representativeness; roughly two-thirds of approached schools joined the baseline [42], with individual-level dropout showing some selection bias that may curb external validity. Given Sweden's relatively elevated generalised and institutional trust [56], applicability to other countries could be constrained. Replication in diverse national contexts for adolescent trust and psychosomatic symptoms is thus recommended.

Considering the evident connections between trust and psychosomatic symptoms in teenagers, alongside the critical role trust plays in a cohesive and socially resilient society, a key issue emerges: how to foster trust among youth. Earlier research has highlighted schools as a vital setting, where an environment marked by transparency, equity, empathy, and minimal conflict can strengthen trust [23]. Additionally, incidents of bullying victimization in school have been associated with reductions in students' social trust [24]. Thus, a positive interpersonal climate appears advantageous not just for pupils' personal development and scholastic success, but also for building trust.

To summarise, the research revealed negative cross-sectional relationships between both generalised and institutional trust and psychosomatic symptoms in adolescents across two waves (ages 15–16 and 17–18 years). Using the FD method in longitudinal examinations, rises in generalised and institutional trust from ages 15–16 to 17–18 years corresponded with reductions in psychosomatic symptoms. The LDV method offered evidence supporting the idea that elevated trust could contribute to reduced psychosomatic symptoms. Reverse LDV examinations further indicated that psychosomatic symptoms predicted subsequent declines in trust. Collectively, these results point to bidirectional relationships between trust and psychosomatic symptoms among adolescents. Both trust and robust health and wellness are, moreover, fundamental elements of a socially viable society.

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