



The longitudinal association between school bonding and delinquency among adolescents

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Abstract

The present study examined the long-term, transactional associations between school bonding and delinquency among Japanese adolescents. Two hundred seventy-one students were recruited in seventh grade (Time 1; M age = 12.72, SD = 0.45, 50% girls) and followed up until eighth grade. Data were collected at two time points (December of the seventh grade and eighth grade). The results of the cross-lagged panel model showed that higher delinquency was associated with lower school bonding. On the other hand, school bonding was not associated with a decrease in delinquency. When gender differences were examined, an association was found between higher delinquent tendencies and fewer school bonding for both genders. School bonding was not associated with a decrease in delinquency for both genders. At seventh grade, a negative correlation between school bonding and delinquency was found only for girls, but not for boys. The results, along with future implications, are discussed from cultural and developmental perspectives. This study provided valuable insight into the relationship between school ties and delinquency among adolescents from non-Western cultures such as the Japanese culture. Comparing the results of this study with those of other cultures may support the idea of cultural diversity.

Keywords School bonding · Delinquency · Adolescence · Culture

During the transition from childhood to adolescence, children spend more time with their peers at school and in the community and relatively less time at home with their parents. In Japan, school classes often end at 4:00 p.m., followed by about two hours of club activities. Many students attend cram school after their club activities and return home after 9:00 p.m. Although the amount

of time spent with peers in club activities and cram school increases, the amount of time spent with family decreases because of the short time between returning home and going to bed. Older children and adolescents are more likely than younger children to believe that peer groups and friendships are central to school life (Steinberg & Morris, 2001). These peer interactions are a source of positive development for youth, but they can also be a negative reinforcement for emotional and behavioral problems, such as delinquency.

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Delinquency

In Japan, juvenile delinquency has been gradually decreasing over the years due to the declining birth rate (Juvenile Division, Community Safety Bureau, National Police Agency, 2020), but delinquency is still frequently observed at home, school, and in the community. Juvenile delinquency includes a wide range of juveniles, from those who have actually committed crimes to those who are likely to commit crimes in the future (Japanese Ministry of Justice, 2019). According to the Japanese Ministry

of Justice (2019), there were 206,094 juvenile offenders in 2018 (0.2% of population under 18), a continuous decline from 202,417 in 2002.

Looking at the situation in Western countries, in the United Kingdom there were about 220,000 juveniles (10~17 years old) arrested annually in 2010, but by 2020 this number had dropped to about 58,000 Juveniles per year (Youth Justice Board / Ministry of Justice, 2021). However, they still represent 1% of the youth population. In Germany, approximately 24,000 juveniles (ages 14–18) are arrested annually, accounting for 0.8%, both figures higher than in Japan (Federal Ministry of the Interior, Building & Community, 2020). In terms of the nature of crime, Japan has fewer violent crimes, with 52 cases of murder, 273 cases of robbery, and 60 cases of arson, while the most common crime is theft, with approximately 15,000 cases. Since even the most common crime, theft, is extremely rare at 0.01% of the youth population, Japanese schools tend to recognize behaviors that are not arrested by the police, such as rule-breaking, lying, and making fun of others, as delinquent behavior. Therefore, this study will include problem behaviors in schools as delinquency and deal with delinquency in a broader scope.

In contemporary Japanese society, once a juvenile becomes a delinquent, he or she is likely to be significantly maladjusted to the environment, which may lead to deeper and more severe manifestations of social psychological and behavioral problems such as aggression, bullying, and drug use. It has been noted that juvenile delinquents are treated in a discriminatory manner by those around them (Nakagawa et al., 2019) and feel alienated (Miyashita, 2001), which, combined with the negative image of delinquency by surrounding adults, leads to a breakdown of trust (Sakakibara, 2023). Therefore, early prevention and intervention efforts for youth at risk of school-based delinquency need to be seriously considered.

School as a social and cultural context

Research has shown that delinquency may be manifested in the interaction between specific genetic variants and the environment (Moffitt, 2005). This environment includes relationships with familiar people (family members and peers), and a number of studies have used Hirschi's (1969) social control theory (e.g., Liljeberg et al., 2011; Peguero et al., 2011; Sabatine et al., 2017) to discuss the role of the environment in delinquency. According to Moffitt (1993), juvenile delinquents can be divided into two types, those who offend only during adolescence and those who offend throughout their lives. Environmental factors, especially peer groups and friendships

in the school context, are thought to be responsible for the former, while pathological causes or interactions with environmental factors are thought to be primarily responsible for the latter. For both types of delinquency, especially the limited type of adolescent delinquency, the peer groups and friendships formed in school may provide a negative socialization context for learning to be delinquent (Moffitt, 1993). It has also been documented that school, as a cultural or social context, is a developmentally critical environmental factor that can facilitate or hinder the development of delinquent behavior or other problem behaviors (Reaves et al., 2018).

Junior high school in Japan is a compulsory form of education, and most public junior high schools have a three-year system, which means that all students graduate in three years. Since the public junior high schools that students attend are determined by their address, students tend to know each other from elementary school. Classes consist of no more than 40 students of the same age, and students are divided into their classes to avoid gender and academic bias. Students are assigned to their class at the beginning of the school year and study all subjects with the same members. They learn classroom discipline, rules, and regulations by spending more time with their classmates, and they develop helping behaviors and cooperative skills because of this cultural background (Fukuzawa & LeTendre, 2001). Students are also strongly encouraged to participate in after-school club activities, spending much of their time outside of the classroom with their peers while pursuing the same interests and goals as their peers. In this way, Japanese students find their place and form friendships both in the classroom and through club activities. By participating in these academic and school activities, students are expected to develop a strong sense of belonging to their classes and peers, as well as an overall school bond (Brown & Evans, 2002; Charteris et al., 2021; Osterman, 2000). Taken together, this study examined whether school bonding as a preventive factor reduces delinquency across three grades in Japanese junior high schools.

Social control theory

One theory that explains the psychological mechanisms that lead to delinquency is social control theory (Hirschi, 1969). Hirschi (1969) believes that delinquency is controlled by “social ties or bonds” that keep individuals in a group from deviating from group membership and group norms. He believes that social bonds consist of four components: attachment, commitment, involvement, and belief. Attachment refers to emotional bonds

such as affection and respect for parents, teachers, and friends. Commitment refers to efforts toward long-term goals, such as efforts toward schoolwork and school events; involvement refers to participation in habitual activities, such as work and homework; and belief refers to the internalization of various values, including social conventions of the society to which one belongs. Beliefs also influence attitudes and opinions about the morality of laws (Hirschi, 1969). Based on social control theory, adolescents who acquire such social bonds are less likely to develop delinquency than those who do not (Costello & Laub, 2020).

Social control theory has been tested in previous research (Costello & Laub, 2020). For example, Sabatine et al. (2017) conducted a longitudinal study of 979 families in grades 6–9 to examine changes in student-school and student-parent bonds during school transitions and whether these social bonds reduced student delinquency. Results showed that student school-parent bonds were associated with lower levels of delinquency both concurrently and longitudinally, and that student-school bonds predicted lower levels of delinquency even after controlling for student-parent bonds in the model. In another study, Payne (2008) surveyed students in 310 schools and teachers in 403 schools to examine the relationship between community and school organization, student-school bonds, and student delinquency. The study found that school bonding (strong communal tendencies and a sense of belonging to the school) was a predictor of reduced delinquency. Overall, school bonding is considered a protective factor against delinquency.

School bonding may curb delinquency. However, delinquency may also affect school bonding: in a study by Liljeberg et al. (2011), delinquency was found to predict lower school attachment (sense of belonging to school) among middle school students. Hirschfield and Gasper (2011) also found that delinquency was associated with lower levels of cognitive school engagement (classroom/school participation and learning) among school-aged children. Because delinquency is an act of harming others, classroom and peer harmony can be severely disrupted by students who exhibit problem behaviors. Students who exhibit delinquent behavior may be viewed by their peers as a nuisance or a distraction and may ultimately be rejected by their peers or isolated from their peer group (Casper & Card, 2017). In particular, students who exhibit delinquent behavior may be exposed to peer victimization due to peer disapproval in Japanese classrooms, where school harmony is highly valued. Thus, it is plausible that delinquency may be a robust risk factor for peer association problems and reduce school connectedness.

School bonding, attachment, and connectedness

School bonding is a term adapted from Hirschi's (1969) social bonding in social control theory to the school setting. The components of social bonding are attachment, commitment, involvement, and belief, and according to Hirschi (1969), attachment to school allows one to be controlled and stay away from crime. Attachment is often the focus in school bonding. For example, Crosnoe et al. (2004) considered students' perceptions of teachers' caring and fairness as a bond with teachers and examined its relationship to academic achievement.

A concept similar to school bonding is school connectedness. School connectedness occurs when students experience feelings of caring and feel that they are part of the school (Osterman, 2000). Karcher and Lee (2002) state that school connectedness consists of three elements: connectedness to adults in the school setting, connectedness to peers, and connectedness to the school. A recent meta-analysis found that school connectedness, like school bonding, was effective in reducing violent behavior (Rose et al., 2024). School bonding and school connectedness have one thing in common: school connectedness discourages criminal and violent behavior.

There are other factors in school connectedness that are important for crime control besides connections with others. It is not a sense of connection to a particular other person, but a sense of connection, comfort, and belonging to the school itself, equivalent to what Karcher and Lee (2002) call connectedness to the school. Research on school attachment has also reported that attachment can be divided into two categories: attachment to the school experience and the school itself, and attachment to teachers (Cernkovich & Giordano, 1992; Murray & Greenberg, 2000, 2001; Obsuth et al., 2023). In other words, bonds in schools include bonds to the individual and to the school itself. In this study, school attachment was defined from school bonding theory as the connection with others, and school connectedness was defined as the connection with the school itself, and these two elements constituted school bonding. Then, this study will examine the relationship between school bonding and delinquency.

The transactional associations between school bonding and delinquency

Even within the same East Asian region, the relationship between school bonding and delinquency varies. According to a study by Lin (1989) comparing Japan and China, in Japan, relationships with friends were associated with delinquency for both boys and girls. In China, on the other

hand, attachment to father and attachment to friends were associated with delinquency for high school boys, while attachment to school was associated with delinquency for high school girls. In a recent study, Chan and Chui (2015) examined the association between social bonding and delinquency among various levels of juvenile delinquents aged 10 to 20 in Hong Kong and Macau. Their findings showed that parental bonding, commitment to education, involvement in organizational activities, and belief in the legal system were all associated with non-violent delinquency. Similarly, social bonding was suggested to include parental bonding in addition to school bonding, and according to Sabatine et al. (2017), parental bonding suppressed delinquency when school bonding was high. This suggests that school bonding affects the relationship between parental bonding and delinquency, and school bonding also plays an important role in suppressing delinquency through parental bonding. However, there are few empirical studies using social control theory in Japan, and no study has examined the effects of school bonds and parental bonds on delinquency like Sabatine et al. (2017). Therefore, it is desirable to conduct basic empirical research on social control theory in Japan, and then develop a study that can be compared with Sabatine et al. (2017).

In a study of middle school students, Payne (2008) found that at the individual level, attachment, commitment, and beliefs inhibited delinquency. The researcher also showed that boys were more likely to be delinquent than girls, and whites were more likely to be delinquent than non-whites. According to the study, in schools with strong organizational diversity, student bonding is not necessary to curb delinquency, but in schools with weak organizational diversity, student bonding is important to curb delinquency. Schools with strong organizational diversity are those in which teachers and students support each other, have common goals and norms, and cooperate and involve each other. In the Japanese educational system and culture, teachers and students have a strong sense of common goals and norms, but there is no ethnic diversity in the population. Assuming that Japanese junior high schools are schools with weak organizational diversity, it is predicted that student bonding alone can help students reduce delinquency.

While many studies have shown that school bonding inhibits delinquency, the opposite may be true. Demanet and Van Houtte (2012) found that the risk of school misconduct increased as the level of attachment between students became stronger. This makes sense given that peer groups and friendships are central to school life during adolescence. Within peer groups, students may have the opportunity to learn something new out of curiosity, whether it is positive or negative. If they have strong bonds with each other, they may be more likely to behave in ways that their

peers do, perhaps because of peer pressure. However, it is important to note that the relationship between peer attachment and increased delinquency occurred when students did not feel a sense of belonging to school or support from teachers (Demanet & Van Houtte, 2012). This suggests that when students have a strong sense of belonging and norms and feel supported by their school, peer bonding is expected to have a preventive effect on delinquency.

Gender differences

School bonding is higher for girls than for boys, but declines for both boys and girls in middle school (Simons-Morton et al., 1999). School attachment has been shown to suppress delinquency in boys but not in girls (Liljeberg et al., 2011). In contrast, delinquency suppressed school attachment in girls (Liljeberg et al., 2011). It has been documented that belonging to delinquent peers is a stronger predictor of delinquent behavior for boys than for girls (Piquero et al., 2005). This suggests that peer affiliation may be a more robust risk factor for the development of delinquency in boys than in girls. A recent review of adolescent behavior problems suggests that there are two competing hypotheses: that boys are more vulnerable to risky behavior, in part because of greater peer pressure, or that there is no gender difference in vulnerability (McCoy et al., 2019). The authors of the review discuss whether gender differences may emerge depending on the measurement and assessment of risky behavior, which may be gender biased.

Other studies have shown that school attachment is a stronger predictor of delinquency in boys than in girls (Cernkovich & Giordano, 1992; Rosenbaum & Lasley, 1990), suggesting that there may be gender differences in the relationship between school bonding and delinquency. A study comparing models with and without gender differences in the association between friendships and delinquency among Japanese youth found that the model with gender differences was a better fit (Obokata & Muto, 2005). On the other hand, some have reported no gender differences in the impact of school bonding on delinquency (Sabatine et al., 2017). Overall, however, the evidence on gender differences in delinquency is mixed, but the literature generally suggests that the effect of delinquency on adjustment is stronger for boys.

The present study

Many studies have reported that school bonding plays a developmentally crucial role in delinquency. However, studies on the relationship between school bonding and

delinquency in non-Western cultures, especially in Japan, are scarce. If the preventive effect of school bonding on delinquency is recognized in Japan, the role of psychology in adolescent education will become more important. As suggested by Kawabata et al. (2024), the study of behavioral and psychological problems (e.g., aggression, victimization, and internalizing problems) in non-Western cultures can extend the literature of existing studies, which have mostly been conducted in Western cultures, to broader populations around the world. It also aids in our efforts to replicate existing findings on risk and protective factors (e.g., school bonding) for adolescent psychopathology (e.g., delinquency) and make them accessible to those involved in intervention and prevention for at-risk youth across cultures.

The purpose of this study was to examine the bidirectional relationship between school bonding and delinquency in Japanese junior high schools over two school years. School bonding and delinquency are expected to influence each other, with high delinquency predicting low school bonding and high school bonding predicting low delinquency. With respect to gender differences, the effect of delinquency on adjustment is expected to be stronger for boys than for girls, although findings on gender differences in delinquency are mixed.

Method

Participants

Data were collected at two time points (G7 winter and G8 winter). Data were drawn from a research project on bullying, cognitive bias, and mental health issues among Japanese junior high school students. Participants were recruited from nine classrooms and two public junior high schools in a large Midwestern city in Japan. There were 271 first grade participants who were followed through 8th grade (Time 1: M age = 12.72, SD = 0.45, 136 boys and 135 girls, boys M age = 12.68, SD = 0.47, girls M age = 12.75, SD = 0.44, Time 2: M age = 13.66, SD = 0.48, 137 boys and 138 girls, boys M age = 13.60, SD = 0.49, girls M age = 13.72, SD = 0.45).

The survey was conducted in two junior high schools in a large city (one of the top ten cities in Japan in terms of urban population). The schools and the classes themselves were of a typical size in Japan. Class sizes in Japan range from 30 to 40 students, and the classes in this study had approximately 30 students. Based on information published by the Japanese government, the social formative status of the school district was predicted to be slightly below average. The crime rate of the school district is relatively higher than that of other regions in the same prefecture. More detailed

information on the sample background has been reported elsewhere (Kawabata et al., 2024).

Measures

Delinquency

To assess participants' delinquency, we used the Japanese version of the Youth Self-Report from the Achenbach System of Empirically Based Assessment (Achenbach, 2019). Among the extensive items, we were able to use four items that reflect common school problems (e.g., rule-breaking behavior, lying, etc.) among Japanese youth. Other items indicating juvenile offenses such as arson, vandalism, theft, and drug use were not used due to cultural constraints. Students rated their behavior on a 3-point Likert scale ranging from 0 (*not at all applicable*) to 2 (*very applicable*). Scores for each item were summed to obtain a mean. The construct was reliable for both genders at two time points ($\alpha \geq 0.63$). Results of the longitudinal confirmatory factor analysis indicated that the four-item, single-factor model of delinquency was generally acceptable across the two time points ($\chi^2 = 34.212$, $df = 15$, $p = .003$, $CFI = 0.950$, $TLI = 0.880$, $RMSEA = 0.068$). The reliability and validity of this measure appear to be good in a sample of Japanese adolescents (Funabiki & Murai, 2017).

School attachment

Six items from the Perceptions of Acceptance Scale developed by Suzuki and Ogawa (2008) were used to assess participants' attachment to school. A three-point Likert scale (0 = *not all applicable*, 1 = *somewhat applicable*, and 2 = *very applicable*), which was standardized with other scales, was used. Sample items included "I feel accepted by others." The scores for the item "I feel connected to others" were summed to obtain a mean. This construct was highly reliable ($\alpha \geq 0.87$) for both males and females at the two time points and has been widely used in previous studies with adolescents. A one-factor model for school attachment was found to be adequate in a longitudinal confirmatory factor analysis ($\chi^2 = 95.008$, $df = 47$, $p = .000$, $CFI = 0.970$, $TLI = 0.950$, $RMSEA = 0.060$).

School connectedness

The Furuichi and Tamaki's (1994) scale was used to assess participants' connection to school. Similar to other measures, a three-point Likert scale was used (0 = *all not applicable*, 1 = *somewhat applicable*, and 2 = *very applicable*). As an example of an item, the scores for the items "I like going to school" and "I feel bored without school" were

summed to obtain the mean. This construct is highly reliable ($\alpha \geq 0.91$) for both males and females at the two time points and has widely been used in previous studies with Japanese samples. A longitudinal confirmatory factor analysis indicated that a one-factor model for school connectedness was appropriate ($\chi^2 = 95.008$, $df = 47$, $p = .000$, $CFI = 0.970$, $TLI = 0.950$, $RMSEA = 0.060$).

Procedures

Before conducting this study, several steps were taken for informed consent. First, the researcher discussed with the city's school board and selected appropriate public secondary schools for the study. We then went to that public junior high school and met with the principals to fully explain the significance of the study, the handling of personal information, the voluntary nature of participation, and confidentiality, and to obtain their approval. Subsequently, with the principal's permission, a similar explanation was given to the student's parents, and after obtaining their consent, the survey was administered to the student. During the administration session, the teachers fully explained to the students the significance of the study, the handling of personal information, the voluntary nature of participation, and confidentiality, based on materials prepared by the researcher in the classroom. This study was conducted with the approval of the Institutional Review Board of the authors' university.

Data analysis plan

First, a bivariate correlation analysis was performed to ascertain the relationships between the variables. Next, the relationship between school bonding and delinquency, which is the objective of this study, was examined using a structural analysis of covariance. Then, a simultaneous covariance structure analysis of the two populations (boys and girls in this study) was conducted to see if there were differences in the path coefficients of the model between boys and girls.

A Missing Completely At Random test was also performed. All variables were found to be missing at random in the range of 4.3–6.0% (delinquency: $\chi^2 = 9.471$, $p = .488$, school attachment: $\chi^2 = 16.262$, $p = .700$, school connectedness: $\chi^2 = 18.666$, $p = .178$).

Results

Correlations

Correlation analysis between the main variables was conducted using SPSS 25.0 (Table 1). Moderate positive

Table 1 Correlations among study variables

	Delinquency (Time1)	Delinquency (Time2)	School attachment (Time1)	School attachment (Time2)	School connectedness (Time1)	School connectedness (Time2)	α	N	M	SD	Skewness	Kurtosis
Delinquency(Time1)	—						.63	264	0.42	0.39	1.00	0.80
Delinquency(Time2)	.52 ***	—					.68	262	0.41	0.39	0.93	0.52
School attachment(Time1)	-.17 **	-.17 **	—				.87	263	1.25	0.49	-0.36	-0.17
School attachment(Time2)	-.30 ***	-.24 ***	.63 ***	—			.88	263	1.40	0.49	-0.49	-0.36
School connectedness(Time1)	-.18 **	-.19 **	.59 ***	.49 ***	—		.91	265	1.20	0.58	-0.35	-0.77
School connectedness(Time2)	-.20 **	-.16 **	.37 ***	.59 ***	.61 ***	—	.91	262	1.20	0.57	-0.30	-0.78

** $p < .01$, *** $p < .001$

correlations were found between the two time points for the same variables [delinquency ($rs=0.52, ps<0.001$), school attachment ($rs=0.63, ps<0.001$), and school connectedness ($rs=0.61, ps<0.001$)]. Similarly, moderate positive correlations between Time1 School attachment and Time1 School connectedness ($rs=0.59, ps<0.001$), Time2 School attachment and Time1 School connectedness ($rs=0.49, ps<0.001$), and Time2 School attachment and Time2 School connectedness were shown ($rs=0.59, ps<0.001$). A weak positive correlation was found between Time1 School attachment and Time2 School connectedness ($rs=0.37, ps<0.001$).

On the other hand, there was a weak negative correlation between Time1 Delinquency and School bonding [Time1 School attachment ($rs=-0.17, ps<0.01$), Time2 School attachment ($rs=-0.30, ps<0.001$), Time1 School connectedness ($rs=-0.18, ps<0.01$), and Time2 School connectedness ($rs=-0.20, ps<0.01$)]. Time2 Delinquency and School bonding [Time1 School attachment ($rs=-0.17, ps<0.01$), Time2 School attachment ($rs=-0.24, ps<0.001$), Time1 School connectedness ($rs=-0.19, ps<0.01$), and Time2 School connectedness ($rs=-0.16, ps<0.01$)] also showed weak negative correlations.

The association between school bonding and delinquency

A structural equation model (SEM) analysis with full information maximum likelihood estimation using AMOS 25.0 was conducted to assess the stability of school bonding and delinquency and the two-way association between these

variables. The SEM analysis tested a hypothesized model with school bonding as the latent variable, school attachment and connection from time 1 to time 2, and delinquency as the observed variable. The hypothesized model was tested from time 1 to time 2 with school bonding as the latent variable and delinquency as the observed variable. For example, we evaluated the stability of school bonding and delinquency (e.g., paths between school bonding at Time 1 and delinquency at Time 2) and the cross-lag paths between school bonding and delinquency (e.g., paths from school bonding at Time 1 to delinquency at Time 2 and from delinquency at Time 1 to school bonding at Time 2 paths) were evaluated. The model freely estimated the time covariance between school bonding and delinquency and the covariance over time between the same items. We followed Hu and Bentler’s (1999) guidelines [comparative goodness of fit index (CFI) and Tucker-Lewis index (TLI)>0.95 and root mean square error of approximation (RMSEA)<0.06] for the goodness of fit of the model.

The results showed that the model fit was adequate ($\chi^2=2.198, df=4, p=.699, CFI=1.000, TLI=1.018, RMSEA=0.000$, see Fig. 1). Time 1 school bonding increased Time2 school bonding ($\beta=0.69, p<.001$), Time1 delinquency increased Time 2 delinquency ($\beta=0.49, p<.001$), and Time1 delinquency decreased Time 2 school bonding ($\beta = -0.15, p<.01$). On the other hand, Time1 school bonding was not associated with a decrease in Time2 delinquency ($\beta = -0.08, ns$).

A similar model was used to examine differences by gender. Results indicated that the model fit was adequate ($\chi^2=17.777, df=8, p=.023, CFI=0.981, TLI=0.898$,

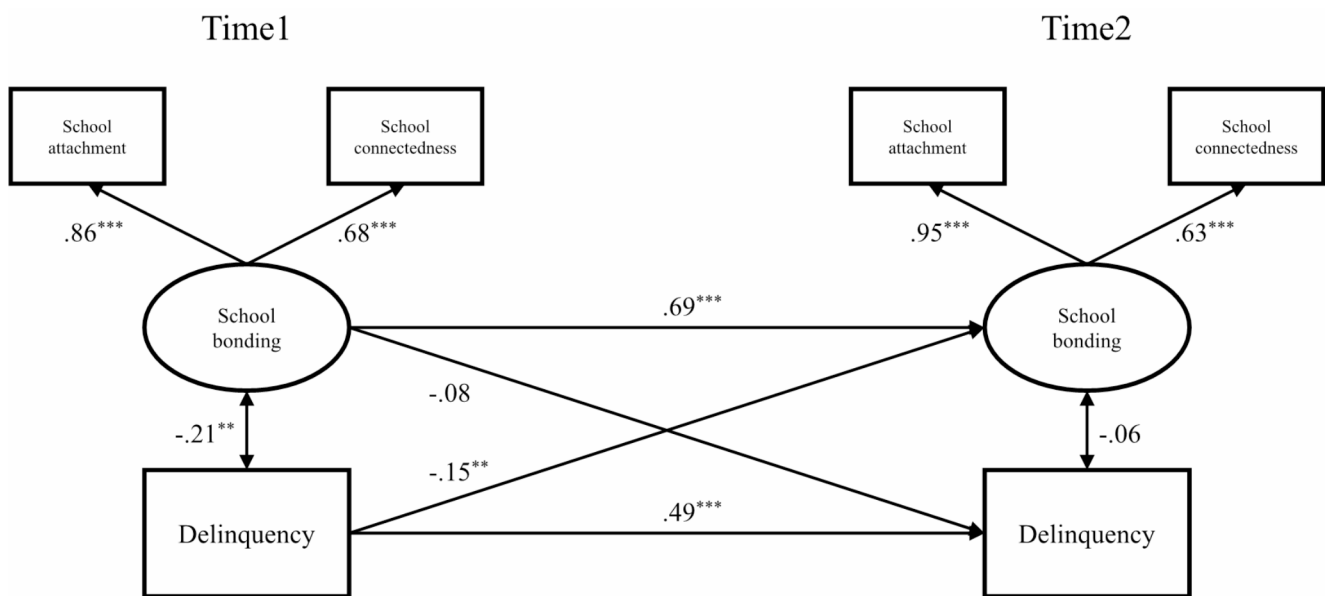


Fig. 1 The longitudinal association between school bonding and delinquency for a total sample. Note: $^{**}p<.01, ^{***}p<.001. \chi^2=2.198; df=4; p=.699; CFI=1.000; TLI=1.018; RMSEA=.000$

RMSEA=0.067, see Fig. 2). For both boys and girls, Time 1 school bonding increased Time 2 school bonding (boys: $\beta=0.63, p<.001$; girls: $\beta=0.76, p<.001$) and Time 1 delinquency increased Time 2 delinquency (boys: $\beta=0.45, p<.001$; girls: $\beta=0.52, p<.001$). Time 1 delinquency was associated with a decrease in Time 2 school bonding for both boys and girls (boys: $\beta = -0.17, p<.05$; girls: $\beta = -0.16, p<.10$). School bonding at Time 1 was not associated with a decrease in delinquency at Time 2, and there were no gender differences (boys: $\beta = -0.08, ns$; girls: $\beta = -0.11, ns$). On the other hand, there was a moderate positive correlation between Time 1 school bonding and Time 1 delinquency for girls ($r = -.40, p<.001$), but not for boys ($r = -.08, ns$).

Discussion

School bonding and delinquency

The purpose of this study was to examine the longitudinal association between school bonding and delinquency in Japanese junior high schools across two grade levels. It was hypothesized that delinquency would be transactionally related to school bonding, with high delinquency predicting low school bonding and low school bonding predicting high delinquency. The analysis revealed that despite the change in class composition during the transition from 7th to 8th grade, more delinquency in Time 1 (7th grade) predicted lower school bonding in Time 2 (8th grade) for boys and girls, thus supporting half of the hypotheses. This result is

in line with Liljeberg et al.'s (2011) report that delinquency predicts lack of engagement in school, one of the school bonds. This suggests that delinquent behavior affects school bonding beyond the classroom to the entire grade level and school.

Delinquent behavior is conspicuous and is perceived as a classroom or school-wide problem. It is possible that students who are perceived as delinquent by their peers may be viewed as “troublemakers” by other students in different grades. It is also possible that students who misbehave often get into trouble with their peers and, as a result, may be rejected, disliked, or victimized by their peers (Reijntjes et al., 2011). As a result, these attitudes of the students around them may not change as grades and class composition change, and students who misbehave may become less accepted and uncomfortable around them even over the course of an academic year. Those who experience rejection and victimization from their peers may feel lonely and sad and may even develop internalization problems such as anxiety and depression (Casper & Card, 2017). It is then conceivable that these students may feel that they do not belong in school as they are separated from their peers and isolated from their peer group and friendships. These considerations will be clarified by further empirical research on the mechanisms involved in delinquency, peer rejection, internalization problems, and school bonding.

In the current model, high school bonding at Time 1 (7th grade) did not predict lower delinquency at Time 2 (8th grade) and did not support half of the hypotheses, but this does not indicate that school bonding and delinquency are completely unrelated. Correlational analyses revealed

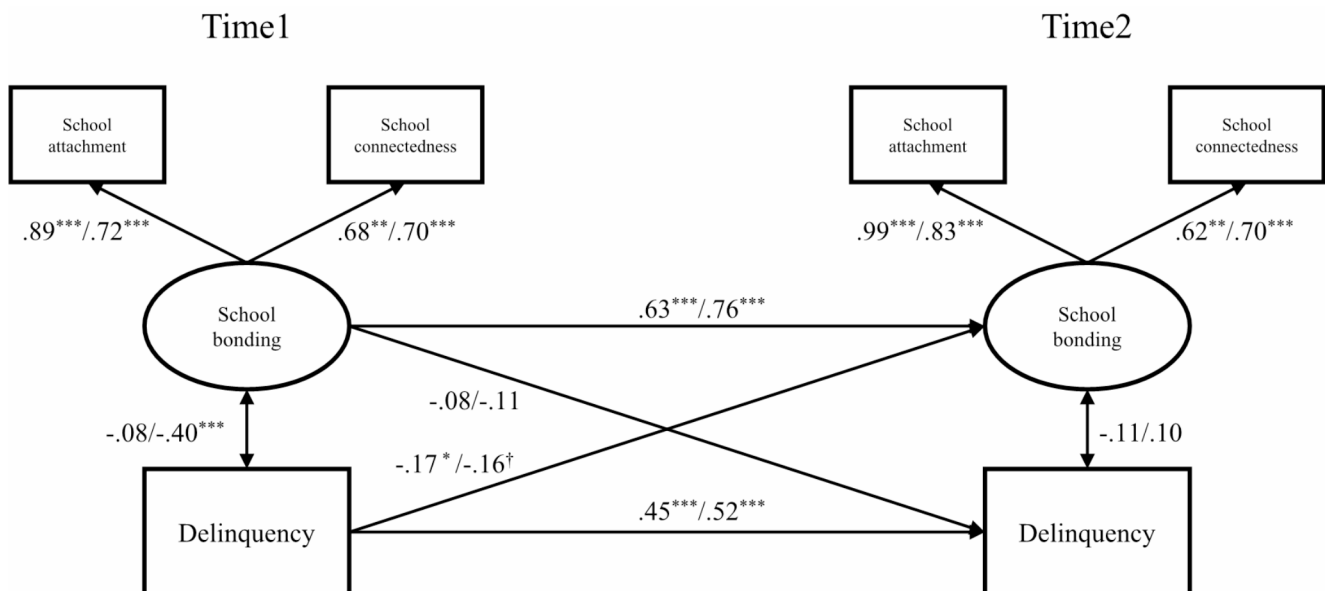


Fig. 2 The longitudinal association between school bonding and delinquency for boys and girls. Note: † $p<.10$, * $p<.05$, ** $p<.01$, *** $p<.001$. $\chi^2 = 1.777$; $df = 8$; $p = .023$; CFI = .981; TLI = .898; RMSEA = .057.

The coefficients left are for boys ($n = 136$), and the coefficients right are for girls ($n = 135$)

a negative relationship between school bonding (school attachment and school connectedness) and delinquency. It is possible that the effect of school bonding on delinquency is washed out when the stability of school bonding and delinquency and the path from delinquency to school bonding are considered. Since school bonding and delinquency are correlated, it seems that the present model could be improved by including another factor. Juvenile delinquents tend to seek out students with similar delinquent tendencies as themselves and form peer groups (Nakagawa, 2010; Pateroster, 1988). Although they tend to behave in the same way as other group members, partly due to peer norms and pressures, school bonding as a preventive factor may be a stronger factor that inhibits delinquency when they interact with the group of members with low delinquent tendencies. In contrast, if they continue to interact with delinquent peers, school bonding may not be effective in reducing delinquency within the high delinquency group. Therefore, it would be beneficial to examine the role of school bonding on delinquency at the peer group level, not just at the individual level.

Considerations for gender differences

The study also explored differences in the relationship between school bonding and delinquency between boys and girls. Results showed that for both genders, high delinquency at Time 1 (7th grade) predicted low school bonding at Time 2 (8th grade), and high school bonding did not predict low delinquency at Time 2 (8th grade). This was at variance with the findings of Cernkovich and Giordano (1992) and Rosenbaum and Lasley (1990), who found that school bonds were a stronger predictor of delinquency in boys than in girls. On the other hand, the relationship between school bonding at Time 1 (7th grade) and delinquency at Time 1 (7th grade) was significantly negative only for girls. This result is similar to Liljeberg et al.'s (2011) finding that delinquency predicts lack of attachment to school for girls only.

In Japanese junior high schools, students are strongly taught to follow rules/school regulations. Especially in the first year of junior high school, teachers may strictly instruct students to understand the difference between elementary school and junior high school (Tomiie & Miyamae, 2009; Usui, 2012). In addition, hierarchical relationships are strictly enforced in Japanese junior high schools, and first-year junior high school students are often tightened by their seniors in various activities (Tomiie & Miyamae, 2009). Especially for female students, seniors strictly instruct them on everything from attitude and behavior to external details such as clothing and hairstyles. Students with high delinquency tendencies often do not follow such rules, which separate them from other students. They may be scolded by

both teachers and seniors and find school to be an uncomfortable place. Those students who feel uncomfortable at school tend to gather outside of school to strengthen their bonds, which can lead to even higher delinquent tendencies.

Considerations for cultural differences

In the case of public junior high schools, the school district is defined by the community, which attracts students with a variety of ideas. Some students may study hard to go on to higher level high schools, while others may not take classes seriously and may become delinquents. Although the classes are composed of a diverse group of students, the composition of the friend groups that spend their school days together may not be diverse, and there may be biases based on purpose and interest between the groups. For example, students who want to enter a higher ranked high school and students who do not take classes seriously may form different peer groups according to their own goals, even if they are in the same class. Therefore, students who want to enter a high-level high school are more likely to be with students who wish to enter a high-level high school, while students who do not take their classes seriously are more likely to be with students who do not take their classes seriously. If peer groups are formed with the same level of normative awareness and delinquent tendencies (acceptance or rejection of delinquent behavior), they will behave according to the norms of that group. As a result, the impact of school bonding may be different for each peer group. Taken together, it is conceivable that the effect of school bonding may depend on the characteristics of the peer groups to which students belong, which should be investigated in future research.

In Japan, as perhaps in other countries, elementary and secondary education is compulsory, but high school and beyond is voluntary. This means that students can go on to high school, university, or junior college if they wish to pursue more advanced or higher education. In Japan, however, many parents expect their child to attend at least high school. Perhaps this is because parents are concerned about their children's lifetime earnings and public reputation, and believe that obtaining a high school diploma is in their children's best interest. This trend is also common in South Korea (Park & Kim, 2018). In Japan, discipline and exam competition are required from kindergarten to university entrance exams, whereas in the United States, kindergarten, elementary school, and high school are followed by a relatively child-centered and carefree period (Hofstede, 1986). This stress caused by exam competition is characteristic of East Asia. Overall, this academic stress in the school context, which was not assessed in the present study, may be considerable for junior high school students in Japan, in part because of pressure from their parents and teachers. It may

then be one of the social factors that increases delinquency and other problem behaviors in Japan.

Cultural and educational implications

This study found that the higher the level of delinquency in junior high school, the lower the level of school bonding, such as school attachment and school connectedness. Although the number of delinquents in Japan is gradually decreasing, there are still many students who continue to engage in delinquent behavior (Japanese Ministry of Justice, 2019). Students who lose their place in school may form groups with students similar to themselves (e.g., aggressive or problematic students), associate with antisocial organizations, and engage in criminal activities such as illegal drug use, unwanted sexual behavior, and prostitution (Lenzi et al., 2015; Merrin et al., 2015). As a result, they may feel more out of place at school and more connected to students who are similar to them. To prevent this, groups of students involved in delinquent activities should be provided with life guidance and a person who can steer these students in the right direction when they are in trouble or need immediate help.

One way to facilitate students' guidance-seeking behavior is for teachers to interact with students not only during class, but also during lunch. In Japanese elementary schools, a variety of teachers, including homeroom teachers, non-homeroom teachers, and even principals, make an effort to communicate with students during lunch. In junior high schools, however, this practice is less common. In middle schools, teachers and students do not often meet during lunch. Given the psychological distance that this lack of interaction can create between students and teachers, it is extremely important to provide opportunities for students and teachers to talk freely with each other. This practice can prevent potential future problems and strengthen students' bonds to the school. We believe that such interactions with students will bring teachers closer to their students, gain their trust, and make it easier for them to identify and address any problems they may be facing.

The result of this study was that school bonding had no effect on delinquency. However, that does not mean that the association between school bonding and delinquency has been ruled out. The results of the correlation analysis indicate that they are related. The school setting is an easy place to implement interventions to promote adolescent bonding (Bond et al., 2007). For school bonding to be more effective, stronger student-student and student-teacher relationships need to be formed. For example, a student would submit a notebook to the teacher describing his or her experience at school that day, and the teacher would return it with comments. It would normally be better to have a dialogue,

but as mentioned earlier, teachers in Japanese schools are extremely busy. Therefore, it would be better to share daily experiences with teachers in the form of an exchange diary and have them accept it, thus creating an emotional connection and a sense of acceptance.

Another recent change in Japan's junior high school system is an effort to shift club activity advisors from teachers to people with experience in local sports and arts activities (Japan Sports Agency & Agency for Cultural Affairs, Government of Japan, 2022). This is expected to strengthen students' school bond by allowing them to be supervised by a variety of adults other than teachers. Efforts should be made to continue refining bonding in Japanese school settings without giving up on it.

Limitations and future research

Due to regional characteristics and school quality (excluding private schools), the results of this study cannot be generalized to all students in Japan. In addition, since all measures were rated only by students, there may be some self-report bias in student responses. It is desirable to collect data from other informants such as peers, teachers, and parents. This will provide more objective information.

Another methodological issue is the removal of several items related to delinquency due to cultural constraints. It is extremely rare for Japanese junior high school students to commit arson, suggesting that delinquent behavior in Japan is less intense than delinquent behavior in the Western world. In addition, when surveys are conducted in Japanese junior high schools, such radical survey items are often rejected. In this study as well, the principal of the school cooperating with the survey requested that the items be removed from the survey, and they were removed from the survey items. Future research could take a multi-informant approach (collecting data from parents, peers, and teachers), if possible, and use a variety of methods (observation, interviews) to investigate delinquency and school bonding among middle school students.

Similarly, at the school's request, the items for each scale were scored using a 3-point Likert system. This limits the range of responses that students can rate. In future research, using a scale with a wider range of responses would allow for a more detailed understanding of student thinking and behavior. Finally, because this study is correlational, albeit longitudinal, it is not possible to infer causal relationships from the findings.

In the future, based on the results of this study, it is desirable to conduct a multilevel analysis study that includes not only the individual level but also the peer group level. This would reveal differences in the effects of social control theories depending on the characteristics of the peer group.

This attempt would also be an extension of Payne's (2008) multilevel analysis study at the individual and school levels. In addition, to test the effects of school bonding, a comparative study could be conducted in several schools with similar levels of delinquency, with a group in which school bonding interventions strengthen student-student and student-teacher bonds, and a group in which no school bonding interventions are used. Since this study only obtained subjective response data and did not ensure objectivity, future research should increase objectivity by obtaining response data from surrounding adults (teachers and parents).

Conclusion

The purpose of this study was to examine the bidirectional relationship between school bonding and delinquency across two grades in Japanese junior high schools. Results showed that for both boys and girls, delinquency in 7th grade predicted school bonding in 8th grade, and school bonding in 7th grade did not predict delinquency in 8th grade. However, since a correlation was found between school bonding and delinquency, future multilevel analyses should include not only the individual level but also the peer group level. In addition, to further increase the level of school bonding, it will be necessary to assign personnel (e.g. consulting teachers, school counselors) who can immediately help students when they are in trouble and to strengthen the connections between students and between students and teachers.

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Declarations

Conflict of interest There are no benefits associated with this article.

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