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Relevance of parental cultural capital for adolescents' physical exercise and sport activity

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ABSTRACT

The aim of the present study was to develop and investigate a theory-based model of the direct and indirect relationships between socio-cultural factors and adolescents' physical exercise and sport activity (PESA). This survey involved 966 adolescents ($M_{age} = 14.80$, $SD = 0.75$; $n = 524$ female). The participants were recruited from Grade 9 classes from German secondary schools. Multilevel path analysis was used to investigate direct and indirect effects between variables. The path model indicates that the supposed direct relationship between parental educational level and adolescents' PESA which is commonly suggested and reported in several studies was completely mediated by parental PESA, parental occupational prestige, and adolescents' social resources.

KEYWORDS

Social space; social capital; sport activity

Physical exercise and sport activity (PESA) are essential for an adolescent's current and future health (Eime, Young, Harvey, Charity, & Payne, 2013). Hence, for example, the German Federal Ministry of Health recommends at least 60 min of medium to high intensity physical exercise daily for adolescents (Rütten & Pfeifer, 2016). Thus, it is not surprising that a plethora of interventions have been developed to encourage adolescents' participation in PESA (Sterdt, Liersch, & Walter, 2014). However, recent studies have shown substantial evidence of social disparities in adolescents' PESA (Gordon-Larsen, Nelson, Page, & Popkin, 2006; Stalsberg & Pedersen, 2010; Sterdt et al., 2014). These disparities are related to different socio-cultural factors like family income, parental occupational prestige, parental educational level (Stalsberg & Pedersen, 2010; Sterdt et al., 2014), and the affiliation with particular networks (Carroll-Scott et al., 2013). Moreover, complex interdependencies of socio-cultural factors might influence social disparities in adolescents' PESA (Baur, 1985; Stecher, 2001) and studies are needed that investigate these interdependencies in relation to PESA.

Previous empirical findings about social disparities in adolescents' PESA are primarily based on the reanalysis of comprehensive survey datasets. In these studies, variables and theoretical approaches were often adjusted post-hoc to the existing dataset.

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Accordingly, the empirical results are difficult to interpret and much of the research up to now has been descriptive in nature (e. g. Carroll-Scott et al., 2013; Frederick, Snellman, & Putnam, 2014; Gordon-Larsen et al., 2006). Furthermore, to date only a few studies have addressed the interdependencies of socio-cultural factors and have investigated probable mediated relationships in the context of adolescents' PESA on a theoretical basis (e.g. Hayoz, Klostermann, Schmid, Schlesinger, & Nagel, 2017; Van der Horst, Oenema, te Velde, & Brug, 2010). Previous studies mostly investigated the direct associations between specific socio-cultural factors and PESA (for an overview, see Stalsberg & Pedersen, 2010; Sterdt et al., 2014). Thus, knowledge about the interdependencies of socio-cultural factors in relation to PESA in adolescence is still scattered, and the hidden mechanisms are not yet sufficiently identified.

Therefore, the aims of the present study were: (1) to develop and investigate a theory-based model of the relationships between socio-cultural factors and adolescents' PESA in leisure time; and (2) to examine direct and indirect pathways between the socio-cultural factors and PESA. With these aims in mind, this study contributes to the research of social disparities in adolescents' PESA by adding new knowledge about the interdependencies of socio-cultural factors in relation to adolescents' PESA. Moreover, the investigation of the interdependent mechanisms of socio-cultural factors in the field of PESA have significant implications for the development of suitable and effective interventions for the improvement of adolescents' PESA.

Bourdieu's capital framework

A theoretical approach to explain social disparities was offered by Pierre Bourdieu. Bourdieu (1978, 1985, 1989) assumed that an individual lifestyle and corresponding behaviours are the result of socialisation processes and are dependent on an individual's position in the social space. He defines social space as a multi-dimensional system in which the position of an individual within a society is determined by the distribution structure of socially-recognised resources. According to Bourdieu (1986), these resources, which define positions and possibilities of the various actors in any field, are forms of capital. The composition and amount of capital determine the position of an individual in the social space. Individuals who occupy a similar position within the social space would have a similar capital distribution, comparable socialisation experiences, and conditions of existence, thus forming a convergent lifestyle. The probability of realising specific (e.g. sporting) behaviours and lifestyles depends on an individual's position in the social space (Bourdieu, 1978, 1984, 1985). Bourdieu (1978, 1986) assumed that lifestyles, behaviours, and belonging to particular networks in adolescence are influenced by socialisation within the family. For the adolescents' PESA both the lifestyle of their parents, as well as the amount and composition of capital within the family are important (Willekens & Lievens, 2014).

Bourdieu (1986) understood capital as "[…] a force inscribed in the objectivity of things so that everything is not equally possible or impossible" (p. 46). Therefore, the distribution of capital in its various forms represents the immanent structure of our society. Furthermore, the amount and composition of capital determine the possibility of participation in social processes and lifestyles by influencing the position in social

space. Bourdieu (1985, 1986) assumed that capital can occur in three basic forms: cultural, social, and economic capital.

Cultural capital can be distinguished into three subforms (Bourdieu, 1986): (1) *embodied cultural capital* as an internalised form of capital. This form of capital describes the consistent dispositions of the mind and body of an individual, for instance, values, skills, and knowledge; (2) *objectified cultural capital* as reified form, which includes the possession of cultural goods such as pictures, books, instruments, or sports equipment; and (3) *institutionalised cultural capital* which includes formal educational and academic qualifications. In all three subforms, the cultural capital can be used as a resource to expand the possibilities for social participation and an advantageous lifestyle (Bourdieu, 1986).

Social capital can be considered as the totality of all currently, and potentially, available resources which are associated with the affiliation with a stable network that is based on institutionalised social relations (Bourdieu, 1986). Bourdieu (1986) assumed that access to various resources, which are based on belonging to a network, can be defined by the probability of receiving particular resources (quality), and the amount of resources that are provided in this network (quantity). Therefore, the social capital may facilitate or enable transformation processes of other forms of capital, or make them possible by means of group membership.

Economic capital is directly convertible to money and manifests itself in material resources. With economic capital, certain services and goods can be acquired directly and without the investment of further capital. Cultural and social capital may be acquired by means of economic capital. In this case, additional effort in the sense of a further use of the other forms of capital would be necessary for the process of transformation (Bourdieu, 1986). For example, to access learning facilities like the Grande École or Harvard University you have to provide the tuition fees, as well as social relationships which are dependent on the affiliation with a network (Abel, 2008).

Each of these three basic forms of capital could also become effective through the mediation of *symbolic capital*. "Symbolic capital […] is nothing other than capital, in whatever form, when perceived by an agent endowed with categories of perception arising from the internalisation (embodiment) of the structure of its distribution, i.e. when it is known and recognised as self-evident" (Bourdieu, 1985, p. 204). Bourdieu (1985) pointed out that the effectiveness of symbolic capital is given through society and depends on real practices of communication and interaction. Occupational prestige as the recognition and the power associated with a particular profession, for instance, exists only through the acceptance by members of a society (Schinkel & Noordegraaf, 2011). While symbolic capital exists only in the eyes of other members of a society, economic, social, and cultural capital exist in their own modes (Bourdieu, 1985).

All forms of capital can be accumulated, inherited, reproduced, and with varying effort, transformed into another form of capital. Each form of capital can be considered as a resource that might be useful to improve the level of PESA in adolescents. The possibility "to select or adopt specific [sporting] (…) lifestyles emerge from the interplay between economic, social and cultural capital" (Abel, 2008, p. 3).

The relationship between Bourdieu's forms of capital and PESA in adolescence

Since both the lifestyle of parents and the amount and composition of capital within the family affect the adolescents' PESA (Willekens & Lievens, 2014), it seems to be necessary to describe the interdependent relationships between the forms of capital and lifestyle also on the parental level. Empirical findings suggest that the cultural capital affects the amount of other forms of capital by the determination of their development and accumulation in adulthood (Abel, 2008; Lee, Chung, & Park, 2016; Vollmer, Kaufmann, & Gieß-Stüber, 2018). For instance, a higher amount of cultural capital "may give access to a better-paid job, and shared [cultural] norms and values are necessary to enter certain social networks" (Kamphuis, Jansen, Mackenbach, & van Lenthe, 2015, p. 4).

Previous research has provided evidence that the institutionalised cultural capital indicated by an individual's educational level is directly related to their PESA in adulthood (Pinxten & Lievens, 2014; Vollmer et al., 2018). Moreover, the embodied cultural capital is a resource in the context of PESA in adulthood (Abel, 2007). Stalsberg and Pedersen (2010) suggested that knowledge about the improvement or maintenance of health and fitness through PESA, in combination with the desire to be fit and healthy, may lead to an increase in PESA. Furthermore, adults' preferences for PESA can become a consistent disposition and thereby an element of the accumulated embodied cultural capital (Stempel, 2005; Warde, 2006).

For adolescents, the parental cultural capital seems to be an important resource to evolve the appropriate preferences for practicing physical activities and sporting lifestyles (Abel, 2007, 2008; Bourdieu, 1978, 1984; Kamphuis et al., 2015). Regarding the association between cultural capital and PESA, the adolescents' behaviour follows patterns similar to those found among their parents (Finger, Mensink, Banzer, Lampert, & Tylleskär, 2014) and the effect of cultural capital on PESA on the parental level might be reproduced through processes of socialisation within the family (Abel, 2008; Hayoz et al., 2017; Mirowsky, 2017). Hence, we suggested that the parental institutionalised cultural capital is positively related to adolescents' PESA (H1). Further, the frequency of parental PESA as an indicator for parental embodied cultural capital is positively associated with the frequency of adolescents' PESA (Pugliese & Tinsley, 2007; Van der Horst et al., 2010). Accordingly, we expected that the path between parental institutionalised cultural capital and adolescents' PESA is mediated by parental embodied cultural capital (H2).

Symbolic capital such as occupational prestige is related to social expectations of a particular lifestyle and specific personal characteristics (Schinkel & Noordegraaf, 2011; Stalsberg & Pedersen, 2010). In order to preserve or reproduce parental symbolic capital it seems necessary for adolescents to meet these social expectations (Bourdieu, 1978, 1985, 1989; Bourdieu & Wacquant, 2013). Considering implicit endeavour to reproduce the symbolic capital, social expectations of personal characteristics which are related, for example, to the parental occupation context, are also transferred to their children (Stempel, 2006). Success in prestigious occupational positions is often associated with personal characteristics that are considered to be key characteristics of successful sport persons, for example, discipline, ambition, and perseverance (Dewenter & Giessing, 2015). Therefore, the field of PESA offers an appropriate area for

children to meet social expectations of personal characteristics, and what we know from research so far is that the parental occupational prestige is positively associated with adolescents' PESA (Gustafson & Rhodes, 2006; Ferreira et al., 2007; Finger et al., 2014). Given this association and the reported positive relation between educational level and occupational prestige (Treiman, 2013) as an indicator for symbolic capital, we assumed that parental symbolic capital mediates the relationship between parental institutionalised cultural capital and adolescents' PESA (H3).

Economic capital is a prerequisite for realising PESA because money is essential, for example, to attend exercise classes at fitness centres or to pay tuition fees in a football club. Economic capital can also be used to purchase sports equipment which then may serve as objectified cultural capital. In this way the economic capital determines the affiliation with a network with a common lifestyle through exercising in a certain sport activity with symbolised status (e.g. only wealthy people go skiing), which requires the possession of specific cultural goods (e.g. ski equipment; Abel, 2007, 2008). Indeed, empirical findings suggest that family economic capital is associated with PESA in adolescence (Stalsberg & Pedersen, 2010; Sterdt et al., 2014). Not surprisingly, previous research found that economic capital is also related to educational level (Abdullah, Doucouliagos, & Manning, 2015). Given this empirical evidence, we assumed that family economic capital mediates the relationship between parental institutionalised cultural capital and adolescents' PESA (H4).

In addition to the amount of parental capital, the social capital of the adolescents themselves seems to be important for their PESA. Bourdieu (1984) argued that the distinction of human individuals is associated with status-based social networks which in turn provide access to resources. Resources which are available in a certain group or network will promote the group members to form group-specific and convergent behaviours (Bourdieu, 1984; Veenstra, 2007). Furthermore, the aspiration to distinction leads to a collective (e.g. sporting) lifestyle (Abel, 2007; Veenstra, 2007). Previous studies have reported that the affiliation with particular networks and network support both act as indicators for social capital and are positively related to adolescents' PESA (Hohepa, Scragg, Schofield, Kolt, & Schaaf, 2007; Mendonça & Farias Júnior, 2015; Silva, Lott, Mota, & Welk, 2014). This suggests that adolescents' social capital might play an important mediating role in the context of their PESA. Three suggestions regarding this mediating role are therefore outlined in detail below.

First, we assume that the social capital of adolescents mediates the relationship between parental institutionalised cultural capital and adolescents' PESA (H5). This is because the social reputation which is associated with parental educational level may be helpful for adolescents to enter certain networks (Abel, 2007; Bourdieu, 1984, 1992). In this way the parental educational level can support the affiliation of adolescents with particular networks and increase their social capital (Mirowsky, 2017).

Second, we expected a sequential mediation for the relationship between parental institutionalised cultural capital and adolescents' PESA via parental symbolic capital and adolescents' social capital (H6). Taking the relation between educational level and occupational prestige (Treiman, 2013) into account, this expectation is primarily based on evidence which was found for the association between occupational prestige and social capital (Lin, 1999; Seibert, Kraimer, & Liden, 2001). In the case of the present

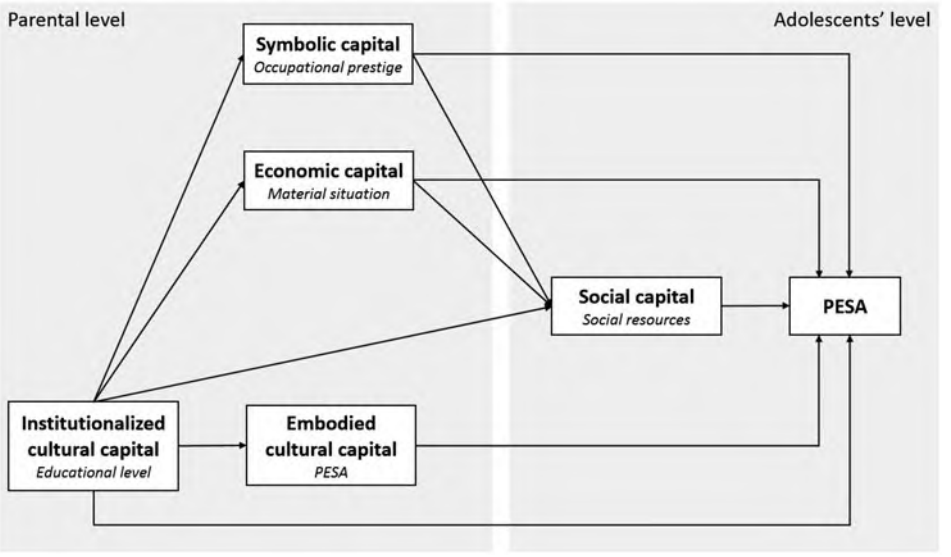

Figure 1. The theoretical model tested in the current study. This is a path diagram describing the hypothesised relationships between the forms of capital (words in *italics* represent the corresponding indicators) and adolescents' PESA, as well as the hypothesised mediated relationships.

study it can be suggested that specific norms and values, which are associated with the family prestige, resulted from socialisation processes within the family. These norms and values might be shared and thus form means of distinction that may be necessary for adolescents to gain access to certain networks (Bourdieu, 1984; Kamphuis et al., 2015).

Third, we assumed the relationship between parental institutionalised cultural capital and adolescents' PESA to be sequentially mediated via family economic capital and adolescents' social capital (H7). This assumption is based on the importance of family economic capital for adolescents' social capital (Kawachi, Kennedy, Lochner, & Prothrow-Stith, 1997; Uphoff, Pickett, Cabieses, Small, & Wright, 2013), as well as on the previously indicated relationship between parental educational level and family economic capital.

In summary, the theoretical hypotheses we sought to investigate in this study are depicted in Figure 1.

Methods

Study design and sample

The participants were recruited from secondary schools located in Freiburg, a city in Southern Germany. The recruitment was supported by the Regional Administrative Council. All Grade 9 classes (typical age range: 14–16) from all 23 public secondary schools of Freiburg were invited to participate in this study. Except for one school, all Grade 9 classes from the remaining 22 secondary schools (seven general schools, six intermediate schools, and nine higher schools) took part in the study. In all, the

sample consisted of 966 adolescents ($M_{age} = 14.80$, $SD = 0.75$; $n = 524$ female) from 47 Grade 9 classes.

We limited our study to adolescents because according to the adolescent-emergent model, adolescents begin to shape their own health-related behaviour and especially during the teenage years strong correlations between the amount of different forms of capital and PESA may be expected (Chen, Matthews, & Boyce, 2002). Furthermore, in adolescence it is usually no longer the parents who decide which leisure activities their children pursue (Cecchini, Fernandez-Rio, & Mendez-Gimenez, 2014). In Germany, after primary school, children have the possibility to choose between three secondary school types (general to higher) which reflect different educational levels. The highest Grade that may be achieved in general schools is Grade 9. The choice of the secondary school type is strongly influenced by the amount of parental capital (Drossel & Eickelmann, 2018). In order to cover a broad spectrum regarding the parental capital, we wanted to sample adolescents from all three secondary school types and therefore recruited Grade 9 classes which allowed us to include all school types.

Data collection proceeded from October 2016 to February 2017 by means of paper-and-pencil self-administered questionnaires. The data were collected by trained survey staff members. Prior to the study, parents (or guardians) gave their written consent for the participants to take part. The study was approved by the Ethics Commission of the Medical Faculty of the University of Freiburg. Participants were treated in agreement with the ethical guidelines of the American Psychological Association with respect to confidentiality and anonymity. The average length of time required for completion of the questionnaire was about 30 min.

Measures

Parental institutionalised cultural capital

To measure the parental institutionalised cultural capital, we used an index for their educational level (Kunter et al., 2002). We asked for (1) the highest level of general education and (2) the type of vocational training or higher education for each parent. Answers were coded with six final levels: 0 = *no school graduation and no vocational training*; 1 = *general secondary school without vocational training or vocational training but no school graduation*; 2 = *general secondary school with vocational training or intermediate secondary school without vocational training*; 3 = *intermediate secondary school with vocational training or high school graduation without vocational training and no university degree*; 4 = *high school graduation with vocational training*; and 5 = *high school graduation with university degree*. If questions were completed for both parents, we used only the highest educational level in the family to avoid distortions because of single parents (Finger et al., 2014).

Parental symbolic capital

Parental occupational prestige was used to measure the parental symbolic capital. Occupational prestige was operationalised by the reputation of the parents' occupation including their position (Züll, 2016). We asked the participants about their parents' occupations and their exact position in the company or institution in which they

worked. To classify the occupational prestige, we used the broadest aggregate level of major groups by the International Standard Classification of Occupations (ISCO-08) (International Labour Organization, 2012). Occupations were coded, following Baltisberger and Nagel (2016), into nine major occupation groups, assuming the lowest prestige for group 1 and the highest prestige for group 9: 1 = *elementary occupations*; 2 = *plant and machine operators and assemblers*; 3 = *craft and related trade workers*; 4 = *skilled agricultural, forestry and fishery workers*; 5 = *services and sales workers*; 6 = *clerical support workers*; 7 = *technicians and associate professionals*; 8 = *professionals;* and 9 = *managers*. The highest occupational prestige level of any of the parents was used to define the variable parental occupational prestige.

Family economic capital

Following Kunter et al. (2002), family economic capital was operationalised by the material situation in the parental home and measured by a ten-item scale. Participants were asked to indicate how many cost-intensive household items like computers/laptops, cars, etc. their family owned. For each of the ten household items responses were recorded from 1 = *zero to* 4 = *three or more.* For the internal consistency reliability, we obtained a Cronbach's alpha of $\alpha = .68$.

Parental embodied cultural capital

The parental embodied cultural capital was indicated by parental PESA (Stempel, 2005; Warde, 2006). Hence, the parental embodied cultural capital was measured with two items reflecting the frequency of parental PESA. One item referred to the PESA of the mother, the second to the father: "How often does your mother/father participate in physical exercise and sport activity?" (e.g. Anderssen & Wold, 1992; Fuchs & Hoffmeister, 1989). Answers were recorded on a five-point Likert scale: 1 = *never;* 2 = *rarely (approximately once a month);* 3 = *rather rarely (approximately twice a month)*; 4 = *rather often (approximately three times a month);* and 5 = *often (four times a month or more)*. As previously explained in the other measures, we only counted the highest score of parental PESA if the questions were completed for both parents.

Adolescents' social capital

Following Stocké, Blossfeld, Hoenig and Sixt (2011), we used a short version of the Resource Generator (Van der Gaag & Snijders, 2005) to measure adolescents' social capital. Fourteen items referred to four different aspects of individual resources: political and financial skills, prestige and education, personal skills, and personal support. The item stem was "Do you know someone who … " and sample items were "is active in a political party?" (political and financial skills), "has good contacts with media?" (prestige and education), "reads a professional journal?" (personal skills) and "can give advice in a conflict at school?" (personal support). Response options were: 1 = *No*; 2 = *Acquaintance*; 3 = *Friend;* and 4 = *Family member*. Multiple answers were allowed for this scale. We used the highest indicated value per item to form a sum score of social capital and received an ordinal alpha of $\alpha = .80$ for the internal consistency reliability.

Adolescents' physical exercise and sport activity

We used the German Physical Activity, Exercise, and Sport Questionnaire (BSA-F) by Fuchs, Klaperski, Gerber, and Seelig (2015) for the measurement of adolescents' PESA. First, participants were asked if they practice PESA in their leisure time. Second, those who indicated they are practicing PESA had to list a maximum of three exercise or sport activities they practiced during the last week. Furthermore, the participants indicated the frequency and duration of each episode in hours and minutes for each exercise or activity. We calculated a total index value for hours and minutes per week. If participants indicated they did not participate in any physical activity their value was set to 0.

Control variable

To avoid potential confounding effects, in our analysis we controlled for gender, which is known to be correlated with PESA, especially in adolescence (e.g. Sterdt et al., 2014). Gender was measured by a dummy variable, $0 = female$, $1 = male$.

Data analysis

As in most research conducted in school settings, our data have a hierarchical structure. It is important to consider this hierarchical structure (students in classes) in the analysis in order to avoid possible biased standard errors and liberal statistical tests (Raudenbush & Bryk, 2002). Multilevel path analysis was used as the primary means of data analysis in this study, with class as the clustering variable in order to examine effects at the individual (student) level and control for potential clustering effects. All analyses were carried out with the software Mplus 7.11 (Muthén & Muthén, 1998–2017).

Path analysis was selected in this study because the research questions involve analysing a theoretical model of the relations between the variables as well as examining the total, direct, and indirect effects between variables. We calculated total, direct, and indirect effects between study variables as displayed in Figure 1. To test the adequacy of the model we used the ratio of chi-square to degrees of freedom, the root mean square error of approximation (RMSEA), comparative fit index (CFI), and the standardised root mean square residuals (SRMR). A model was determined to have a good fit to the data if $\chi^2/df < 3$, $p \geq .05$, RMSEA $\leq .08$, CFI $\geq .95$, and SRMR $\leq .10$ (Kline, 2011). To test for indirect effects, the delta method was used (Muthén & Muthén, 1998–2017). For the total, direct, and indirect effects the standardised path coefficient β, standard errors (SE), p-values, and 95% confidence intervals (95% CI) are reported. The standardised path coefficients range from -1 to $+1$ and may be interpreted like standardised multiple regression coefficients.

Missing values

The number of missing values was generally low, ranging from 1.9% for parental PESA to 8.3% for parental occupational prestige. The only notable exception was the 14.3% of values missing for social resources. In the current methodological literature, there is a consensus that especially for multilevel analysis the full information maximum likelihood estimators should be preferred to removing cases listwise or pairwise (e.g. Peugh & Enders, 2004). The maximum likelihood algorithm uses the information from

the covariance matrices to estimate the missing values. We used the maximum likelihood estimation with robust standard errors (MLR) which are adjusted using a sandwich estimator. MLR-standard errors are robust to non-independence and non-normality of observations (Muthén & Muthén, 1998–2017).

Results

Table 1 reports descriptive values and bivariate correlations for all study variables. As expected, there was a significant correlation between gender and PESA at the individual level.

The estimated model (Figure 2) revealed a good fit to the data, $\chi^2 = 29.169$, $df = 4$, $p < .001$ (scaling correction factor for MLR = 0.940), CFI = .969, RMSEA = .082, 90% CI: [.056, .112], SRMR = .030. Because the chi-square test is sensitive to sample size

Table 1. Means, standard deviations, medians, ranges, and bivariate correlations for study variables.

Variable	Mean	SD	Median	Range	1	2	3	4	5	6	7
1. Gender	–	–	–	–	–	−.10**	−.03	−.05	.09*	−.03	.22**
2. Adolescents' social resources	41.02	6.87	–	–		–	.47**	.31**	.21**	.26**	.15**
3. Parental educational level	–	–	5.00	5.00			–	.48**	.10	.30**	.14**
4. Parental occupational prestige	–	–	8.00	8.00				–	.07	.21**	.13*
5. Material situation in the parental home	26.52	4.32	–	–					–	.14**	.11**
6. Parental PESA	4.11	1.30	–	–						–	.20**
7. Adolescents' PESA	5.68	4.59	–	–							–

Note: Bivariate correlations represent Spearman's rank correlation.
**$p \leq .01$; *$p \leq .05$ (two-tailed).

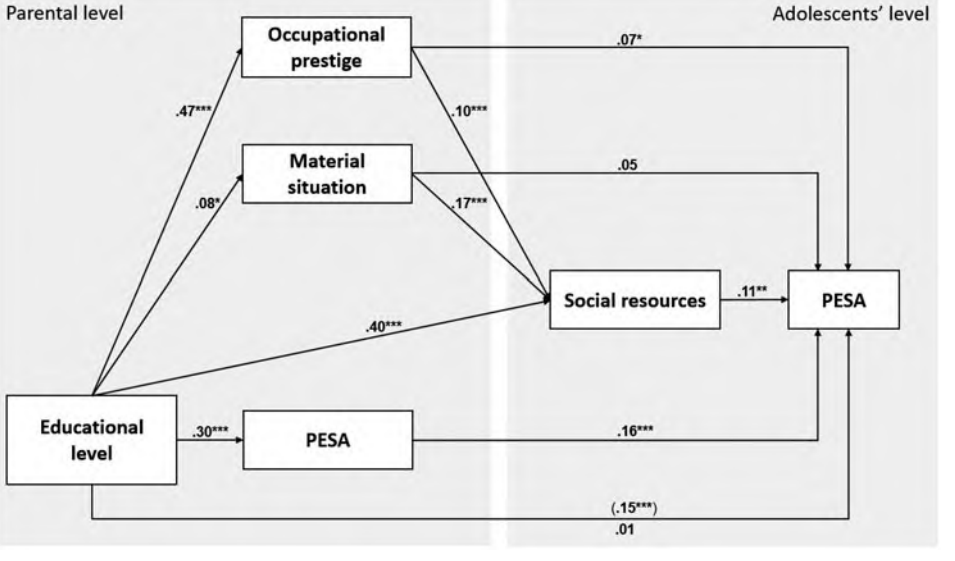

Figure 2. Path model. Numbers represent standardised path coefficients for direct and, in parentheses, total effects. Effects are examined at the individual level and controlled for gender. ***$p \leq .001$. **$p \leq .01$. *$p \leq .05$.

Table 2. Proportion of variance explained for the model on the individual level.

Variable	R^2	*SE*	*p* Value
Adolescents' social resources	.25	.04	<.001
Parental occupational prestige	.22	.04	<.001
Material situation in the parental home	.01	.01	.042
Parental PESA	.09	.02	<.001
Adolescents' PESA	.06	.02	<.001

Note: Two-tailed *p* values are reported. Gender is controlled for in every regression.

(Bollen, 1989), the higher chi-square value is not unexpected given our large sample size. The results of the path model are displayed in Table 2. Gender explained 5% of the variance in adolescents' PESA. The direct effect of gender on PESA was $\beta = .23$, $p < .001$, 95% CI: [1.43, 2.83]. Controlling for gender, the hypothesised path model explained 6% of the variance in adolescents' PESA. Standardised path coefficients for direct effects are depicted in Figure 2 and standardised path coefficients, standard errors, *p*-values, and 95% confidence intervals of the direct, indirect, and total effects are reported in Table 3. Except for the path from material situation in the parental home to adolescents' PESA, which was non-significant, results for direct effects and total effects were as expected.

As predicted in H1, the total effect of parental educational level on adolescents' PESA was significant. Additionally, we found indirect effects of parental educational level on adolescents' PESA mediated by parental PESA (H2) and by adolescents' social resources (H5). However, the indirect effect of parental educational level on adolescents' PESA mediated by parental occupational prestige was only significant at the 10% level (H3). Furthermore, we did not find a significant indirect effect of parental educational level on adolescents' PESA mediated by material situation in the parental home (H4).

The results (Table 3) indicated that the indirect effect of parental educational level on adolescents' PESA was sequentially mediated via parental occupational prestige and adolescents' social resources (H6). Contrary to our expectation, the sequential mediation via material situation in the parental home and adolescents' social resources was not significant (H7).

As reported in Table 3, the total indirect effect of parental educational level on adolescents' PESA was significant, but no significant direct effect of parental educational level on adolescents' PESA emerged when estimating the whole model. Therefore, it can be assumed that the total effect was completely mediated.

Discussion

The purpose of this study was to investigate the interdependent relationships and mediated associations of socio-structural factors and their effects on social disparities in adolescents' PESA in leisure time. In order to reflect empirical findings and conceptualise presumable interdependencies of the socio-structural factors in the context of adolescents' PESA, we used the theoretical approach offered by Pierre Bourdieu (1985, 1989). Bourdieu (1978, 1984) suggested that PESA is a social practice that corresponds

Table 3. Total, direct and indirect effects of the path model.

Hypothesis	Path	ß	*SE*	*p* Value	95% CI	Results
	Total effect					
H1	Parental educational level → Adolescents' PESA	.15	.04	<.001	.076, .218	Supported
	Direct Effects					
	Parental educational level → adolescents' PESA	.01	.05	.750	−.073, .102	
	Parental educational level → Parental occupational prestige	.47	.05	<.001	.379, .559	
	Parental educational level → Adolescents' social resources	.40	.04	<.001	.330, .475	
	Parental educational Level → Material situation in the parental home	.08	.04	.030	.008, .160	
	Parental educational level → Parental PESA	.30	.04	<.001	.229, .371	
	Parental PESA → Adolescents' PESA	.16	.03	<.001	.096, .218	
	Parental occupational prestige → Adolescents' social resources	.10	.03	.001	.039, .153	
	Parental occupational prestige → Adolescents' PESA	.07	.03	.047	.001, .134	
	Material situation in the parental home → Adolescents' social resources	.17	.04	<.001	.097, .237	
	Material situation in the parental home → Adolescents' PESA	.05	.04	.163	−.020, .120	
	Adolescents' social resources → Adolescents' PESA	.11	.04	.008	.028, .187	
	Indirect effects					
H2	Parental educational Level → Parental PESA → Adolescents' PESA	.05	.01	<.001	.025, 069	Supported
H3	Parental educational level → Parental occupational prestige → Adolescents' PESA	.03	.02	.065	−.002, .065	Not supported
H4	Parental educational level → Material situation in the parental home → Adolescents' PESA	<.01	<.01	.219	−.003, .011	Not supported
H5	Parental educational level → Adolescents' social resources → Adolescents' PESA	.04	.02	.013	.009, .078	Supported
H6	Parental educational level → Parental occupational prestige → Adolescents' social resources → Adolescents' PESA	.01	<.01	.014	.001, .009	Supported
H7	Parental educational level → Material situation in the parental home → Adolescents' social resources → Adolescents' PESA	<.01	<.01	.090	.000, .003	Not supported
	Total indirect effect					
	Parental educational level → Adolescents' PESA	.14	.02	<.001	.088, .178	

Note: Two-tailed *p*-values are reported. Effects are examined at the individual level and controlled for gender.

narrowly with the position in the social space, which is determined by the individual composition and amount of different forms of capital. Thus, we investigated the hypothesised relationships between cultural, economic, social, and symbolic capital and adolescents' PESA in leisure time. At the individual level, the multilevel path analysis allowed us to test the hypothesised direct and indirect relationships among the study variables. First, our findings indicate that with the exception of the relationship between family economic capital and adolescents' PESA, each of the hypothesised direct pathways in our model was significant.

Second, as hypothesised, we found an indirect effect of parental institutionalised cultural capital on adolescents' PESA via parental embodied cultural capital. We thus assume that the parental accumulation and amount of embodied cultural capital is influenced by their institutionalised cultural capital through enculturation processes in the context of their educational experience (Warde, 2006). The parental lifestyle as a means of distinction will be reproduced and, therefore, the parental embodied cultural capital is associated with the adolescents' PESA. Hence, the parental embodied cultural capital mediates the relationship between parental institutionalised cultural capital and adolescents' PESA by socialisation processes within the family. These findings are in accordance with those of Hayoz et al. (2017), who reported that the sports related lifestyle within the family was an agent of socialisation which mediates the relationship between parental educational level and adolescents' PESA.

Third, the results of the present study indicated positive relationships between parental institutionalised cultural capital and family economic capital and between family economic capital and adolescents' social capital. However, our findings cannot confirm the direct effect of family economic capital on adolescents' PESA and the mediating role of family economic capital as hypothesised. One possible explanation for these nonsignificant findings is that due to the progression of physical activities in recent years and the current comprehensive differentiation of affordable PESA offers, material resources might no longer be relevant for the amount of PESA (Haut & Emrich, 2011). This would be consistent with previous findings which showed that the family economic capital has no independent effect on the level of adolescents' PESA (Finger et al., 2014). Indeed, it is plausible to conclude that material resources currently have no effect on the extent of the PESA in adolescence but they might still be related to the type of PESA (Haut & Emrich, 2011).

Fourth, our findings showed that the parental institutionalised cultural capital is directly associated with the parental symbolic capital and the adolescents' social capital, which were both positively related to adolescents' PESA. However, our findings cannot completely confirm the hypothesised mediating role of parental symbolic capital because parental symbolic capital on its own did not mediate the relationship between parental institutionalised cultural capital and adolescents' PESA. One possible explanation for this nonsignificant finding is that the relationship between the parental symbolic capital and adolescents' PESA is partially mediated via the adolescents' social capital. That would mean that the parental symbolic capital becomes more effective in the context of adolescents' PESA via its effect on social capital. This assumption is supported by our results for the sequential mediation via parental

symbolic capital and adolescents' social capital. Although the mediation was only significant at the 10% level in our analysis, our results nevertheless point towards the fact that the parental symbolic capital mediates the relationship between parental institutionalised cultural capital and adolescents' PESA on its own.

Fifth, this study revealed that the adolescents' social capital mediates the relationship between parental institutionalised cultural capital and adolescents' PESA. This mediation can be explained by increasing chances of affiliation with particular networks. The parental institutionalised cultural capital which "functions as the formal mode of social recognition" (Abel, 2007, p. 54) can be seen as a requirement to belonging to particular networks for themselves as well as for their children. These networks may provide resources that are useful or necessary to practice PESA and to form specific lifestyles (Abel, 2007).

Sixth, our data suggests that symbolic capital and adolescents' social capital sequentially mediate the relationship between parental institutionalised cultural capital and adolescents' PESA. For the direct association between parental symbolic capital and adolescents' social capital, it can be assumed that a similar mechanism becomes effective as in the association between parental institutionalised cultural capital and adolescents' social capital. The difference in parental symbolic capital is that instead of a formal mode of social recognition, a non-formal mode of social recognition becomes effective, which in turn increases the chances of belonging to particular networks. This is because symbolic capital depends on real practices of communication and interaction between individuals and is given by informal acceptance through the actors in a society (Bourdieu, 1985). Thus, the social mechanism of the relationship between parental institutionalised cultural capital and adolescents' PESA mediated via symbolic capital and adolescents' social capital can be explained by the following example: A higher educational level increases the chance for a high-level job which in turn is associated with more social recognition (Abel, 2007). The social recognition from a high-level job of their parents may enhance the chance for the children to access particular networks, which in turn provide necessary or useful resources to take part in specific sport activities. Both the affiliation with the networks as well as the PESA and the associated lifestyles can be regarded as serving the purpose of distinction in order to reproduce the position in social space (Abel, 2007, 2008).

Conclusion

Our findings suggest that the relationship between the amount of parental capital and the social disparities in adolescents' PESA is affected by the interdependencies of the forms of capital that parents provide. The results of this study showed that the supposed direct association between parental institutionalised cultural capital and adolescents' PESA, which is commonly reported in several studies (e.g. Ferreira et al., 2007; Finger et al., 2014; Sterdt et al., 2014; Hayoz et al., 2017), is completely mediated. This finding is remarkable and suggests that the use of Bourdieu's Capital Framework offers an additional explanatory power in the context of adolescents' PESA. Thus, it becomes evident that the parental institutionalised cultural capital has an effect on the accumulation and the amount of other forms of capital, both on the

parental and the adolescents' level. In this way, the parental institutionalised cultural capital is directly related to parental sports-related lifestyle and indirectly related to adolescents' PESA. In particular, the adolescents' social capital is a substantial mediator for the relationship between parental institutionalised cultural capital and adolescents' PESA. Additionally, beside the parents, "friends are the key social influencers of" PESA in adolescence (Hohepa et al., 2007, p. 8). This fact promises concrete options for practical applications. For example, specific programmes which are focussed on and sensitive to certain target groups and their positions in the social space could be developed. The aim of such programmes should be to connect different networks and groups via PESA. The connection between the different networks may lead to an increase in adolescents' PESA regardless of the parental institutionalised cultural capital and thus may counteract the reproduction of social disparities in the PESA of young people.

There are several strengths in the present study, including the theory-led procedure to develop and investigate the path model. As far as we know, our study is the first to examine the mediated associations between the parental institutionalised cultural capital and adolescents' PESA by means of Bourdieu's capital framework. Thus, and in contrast to other studies which have often been descriptive in nature, it was possible to interpret and explain the hidden mechanisms in relation to the identified relationships. Therefore, this study contributes to a more differentiated understanding of the relationships between socio-structural factors and social disparities of adolescents' PESA.

Limitations and future research

Despite the fact that our model is based on empirical evidence and theoretical assumptions, the cross-sectional design of the study is not capable of establishing a causal inference. Although a previous study has shown similar direct and indirect relationships in adulthood (Vollmer et al., 2018), a longitudinal study would be necessary to investigate how the features of the model vary over time.

In order to clarify our nonsignificant findings, further research should investigate the mediating role of the symbolic capital in relation to the effect of parental symbolic capital on adolescents' social capital. Future research may address the problem by using additional indicators, for example title of nobility, certain car models and brands, or specific clothing styles (Bourdieu & Wacquant, 2013) to measure parental symbolic capital. Furthermore, some of our findings are not consistent with existing research. Specifically, in contrast to other studies (e.g. Ferreira et al., 2007; Sterdt et al., 2014) we did not find a significant relationship between the family economic capital and the adolescents' PESA. Considering the inconsistent empirical evidence, further studies are needed which examine the independent effects as well as the mediating role of family economic capital in the context of adolescents' PESA. Moreover, given the results of Finger et al. (2014), who also could not find a significant independent effect of family economic capital on PESA for German adolescents, it seems to be necessary to investigate whether this is a phenomenon specific to Germany. The wide range of cost-

neutral sports offers, and associated support structures within German communities might play an important role in this case (Becker, Bindel, & Heinisch, 2018).

To get more differentiated insight into the social heritage process of PESA, it would be beneficial if further research also examined the relationship between types of parental and adolescents' PESA against the background of Bourdieu's capital framework. Additionally, in regard to previous inconsistent findings (Pugliese & Tinsley, 2007; Sterdt et al., 2014) it would be advisable to investigate gender aspects as an influence of parental PESA on adolescents' PESA in more detail. Finally, given the substantial role of social capital for adolescents' PESA, future analyses could consider both peer socialisation and peer support (Hohepa et al., 2007) by paying more attention to the social environment (e.g. types of sports organisations and types of school).

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No potential conflict of interest was reported by the authors.

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