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The education divide in Indonesia

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Household- and community-level factors of preschool participation in Indonesia: the moderating role of social capital[3]

Abstract

Preschool attendance has a wide range of beneficial effects on educational outcomes. Consequently, policy makers in many countries actively seek to increase preschool attendance rates, and Indonesia is no exception. At the same time, academic research has consistently shown that children from low-income households or poor communities are underrepresented in preschool. Drawing on social capital theory, we argue that high levels of household and community social capital not only lead to higher preschool enrollment rates, but also temper the negative effects of low socio-economic status on preschool attendance. Hypotheses on socio-economic status and social capital effects and their interaction were tested with Indonesian survey data, collected in 2009, on 43,879 children nested in 42,855 households in 14,774 villages. Multilevel logistic regression analyses indeed show the strong negative main effects of low socio-economic status. Preschool attendance is significantly lower for children from low-income, low-education households, and for children from poor or rural communities. Moreover, low levels of access to modern mass media significantly decrease preschool attendance. We found positive direct effects for two of the three social capital measures: household associations and community reciprocity; both increase preschool attendance. Household reciprocity tempers the negative effect of a low income on preschool enrollment. Our findings point towards the importance of social capital as a potential buffer for low-income households and communities. Policy implications are discussed.

3.1   Introduction

Studies show that preschool attendance is beneficial for school readiness and success, since it leads to greater chances of completing high school, holding a job, and having higher earnings (e.g. Schweinhart *et al.*, 2005 in US and Armecin *et al.*, 2006 in the Philippines). For Indonesia, it has also been shown that children who participate in preschool do better in school (Irwanto, Pandia, Widyawati, & Irwan, 2011), are more healthy, engaged, productive and successful (Hasan *et al.*, 2013). Preschool also helps to make a smooth transition from home to school and prepares children to adapt to a learning environment (Arnold, Bartlett, Gowani, & Merali, 2006). All these attributes enable children to adjust easily to any new environment. In addition, a cost-benefit analysis indicates that for every $1 invested in preschool in Indonesia, a return of $6 can be projected; if the intervention focuses on the poor, its yield would reach $7 (World Bank, 2005).

However, still more than half of the eligible children in Indonesia are not in preschool (World Bank, 2015). Since preschool is so important for children's future lives, this paper aims to provide a better understanding of the factors that influence preschool enrollment in Indonesia as a first step in improving preschool enrollment rates. Although both academic scholars as well as governments, including that of Indonesia, have studied determinants of school enrollment, such as parent's income and education (e.g. Hasan *et al.*, 2013; Self & Grabowski, 2008; Knight & Song, 2000), particular research on preschool enrollment is less frequent than studies on education in general. This paper therefore aims to contribute to the general knowledge about determinants of preschool enrollment.

Explanations of preschool enrollment relate to both household and community levels. Important policy-related conditions identified as having a strong impact on preschool enrollment at the household level are socio-economic status, determined by household income and educational attainment (Barnett & Yarosz, 2007), and access to contemporary values through media (Delamaza, 2014). These three household-level conditions (income, education, information) relate to influential schools of thought: economic and sociological theories of development pointing to the importance of economic capital, human capital and modernization. Furthermore, these determinants, along with urbanization, are also important at the community level (UNICEF, 2006; Alderman, 2006).

In addition to the factors mentioned above, differences in social capital have also been found to have an important direct effect on education (cf. Coleman, 1988). Coleman defined social capital based on two common attributes: the presence of some aspect of social structures, and the facilitating of certain actions within structures, by individual or collective agents (Coleman, 1988, p. S98). Coleman's research showed that, in the US, information channels facilitate obligations, expectations and social norms, whereby social capital within the family and in the community reduces the probability of dropping out of

high school. Furthermore, social capital has been accepted as an important positive factor in children's educational outcomes (Smith *et al.*, 1995; Teachman *et al.*, 1996). This also applies to preschool enrollment.

Next to these direct effects, social capital can also indirectly impact education related decisions, in two ways. Firstly, the social capital of a household can be an effective buffer against the negative effect of low income and low parental education on children's academic outcomes (White & Kaufman, 1997). Secondly, it may complement other forms of capital (Robison *et al.*, 2002). Social capital may thus contribute to (or hinder) the effectiveness of policies aiming to enhance preschool enrollment through economic means or information campaigns. A third aim of this paper is, therefore, to focus on the moderating role of social capital on preschool enrollment in Indonesia.

In order to assess how household-level and community-level factors, including social capital, affect preschool enrollment, it is important to analyze these various determinants in their context. We focus on three context dimensions: household social capital, village social capital, and village context, including average wealth, modernization and urbanization. This study therefore addresses the following research question:

To what extent and under which conditions can variations in preschool participation be explained by differences in household-level and community-level factors like SES, modernization and urbanization, and what is the moderating role of social capital?

We study the case of Indonesia, a country traditionally characterized by dense social networks and many community organizations (Lasagni & Lollo, 2011). Furthermore, although basic education participation in Indonesia is almost universal, preschool enrollment is low, with a gross enrollment rate of about 51 percent (World Bank, 2015). Using a representative sample of households and villages drawn from the national socio-economic survey (Susenas) 2009, we estimate the effect of SES, modernization, urbanization and social capital on children's preschool participation by means of a multilevel logistic regression model. This model enables us to analyze the hierarchical nature of our data simultaneously at household and community levels (Snijders & Bosker, 2012). In addition to these direct or main effects, we also analyze the interplay between these factors and important characteristics of the community context by adding relevant interaction terms to the model. The results may be helpful for developing context-specific policy interventions to accelerate preschool participation.

The contributions of this paper are threefold. First, we contribute detailed insight into the interplay of important determinants of preschool enrollment in Indonesia, thus informing policy makers working on measures to improve preschool enrollment rates in the country. Second, we augment the general knowledge about determinants of preschool enrollment by providing at various levels a contextual analysis of important explanations of preschool enrollment. Third, we focus in particular on the moderating role of social capital, thereby unraveling the potentially buffering or compensating effect of this important resource.

3.2 The preschool system in Indonesia

The formal school system in Indonesia comprises primary to higher education levels, as stated by Law No. 20 of 2003 of the National Education Systems, article 15. However, before enrolling in primary school, some children attend formal or non-formal preschools that aim to cultivate interests, reading passions, curiosity, creativity and problem solving (Yuniarti & Hakim, 2014).

Formal preschools, such as kindergartens (*Taman Kanak-Kanak/TK* and *Raudhatul Atfhal/RA*), concentrate more on learning and have more structured ways of teaching, whereas non-formal preschools, such as play groups (*Kelompok Bermain/KB*), emphasize learning through playing (Hasan *et al.*, 2013). Next to these two types, other types of preschools are Integrated Health Service Units (*Posyandu*), child care centers (*Taman Penitipan Anak/*TPA), early child education and development centers (ECED or *Program Anak Usia Dini/*PAUD) and toddler family groups (*Bina Keluarga Balita/*BKB), which are available in most communities for child development.

Officially, children between the ages of 4 and 6 will enroll in kindergartens and ECED posts. However, depending on variations in local conditions like availability and accessibility, some children aged 4 to 5 years may still attend playgroups; most children aged 6 years have already started the first grade of primary school (Jung & Hasan, 2014). In terms of the services provided, preschools are varied. For instance, child care centers (CCC) and ECED are available 5-6 times per week but ECED is open mainly from 8 to 11 in the morning, whereas the CCC provide services almost all day, from 8 a.m. to 4 p.m. Posyandu is open only once a week, whereas playgroups meet at least 3 days a week (Hasan *et al.*, 2013).

The majority of both formal and non-formal preschools is privately run and managed (Hasan *et al.*, 2013). While non-formal preschools are almost free, formal preschool tuition fees vary from none to highly expensive fees, as in the case of an international preschool that costs more than IDR 200 million, or approximately $16,250, per year.[4]

Unlike the nine-year compulsory education system, preschools were not a policy priority of the government until the reform era started in 2001. Whereas the focus of the government in the first years of the reform era was on improving access to school for 7 to 12 year olds by increasing the numbers of primary schools, preschool participation rates of children aged 3-6 years remained low, at 30 percent in 2005 (CBS, 2005).

Since 2003, the government has been fully committed to providing preschools (early childhood education, ECE) and has emphasized this as a policy priority in the National Program for Indonesian Children and the Education for All National Plan Action (World Bank, 2006). To improve the access of poor children to preschools, the

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[4]https://www.jisedu.or.id/data/files/gallery/ContentGallery/FEE_SCHEDULE_FOR_2015__New_Stude nts_non_US_Embassy_IDR_NOVEMBER_2015_5Nov20153.pdf

government implemented the early childhood development project from 2006 until 2012. This project includes three main activities: (1) training of facilitators to promote community awareness of the importance of preschools and prepare proposals for block grants; (2) providing block grants of about $18,000 per village for three years to establish two centers (preschools); (3) training preschool teachers so as to provide two teachers per center (Hasan *et al.*, 2013). The project covered 738,000 children from 6,000 poor communities situated in 3,000 villages (Pradhan *et al.,* 2013).

Additionally, the government has financed a *national program* for community empowerment (*Program Nasional Pemberdayaan Masyarakat/*PNPM) that provides incentives to communities which exceed certain preschool enrollment thresholds. However, although the government of Indonesia has improved preschool services for poor rural communities through these programs, the coverage is still limited (Hasan *et al.,* 2013). Therefore, preschool fees and other costs may constrain low income families from sending their children to preschool (Smart, Sanson, Baxter, Edwards, & Hayes, 2008). This situation results in unequal access to preschool: affluent families can afford to pay for preschool, while children from low-income families, especially in rural areas, are less likely to attend preschool (UNESCO, 2007). Therefore, while basic education participation in Indonesia is almost universal, and in spite of implementing these efforts, preschool enrollment is still low, with a gross enrollment rate of about 51 percent (World Bank, 2015).

3.3   Theory and hypotheses

Social stratification theory assumes that social background characteristics are pivotal for individual outcomes. These social background characteristics are summarized in the concept of socio-economic status (SES), which refers to income, educational attainment and occupational prestige (Duncan, Featherman, & Duncan, 1972). Generally, it is assumed that the higher the SES, the better will be individual outcomes, such as preschool participation. For instance, a household's income will affect its spending capacity, including financing children's (pre)school attendance (McNeal, 1999). Likewise, heads of households with higher levels of education are expected to have higher education-related expectations for their children (Davis-Kean, 2005).

Next to SES, other factors are also influential, such as access to mass media. The argument is that access to mass media spreads modern values (Delamaza, 2014), which in turn increase parents' educational aspirations. This, in turn, may make parents more eager to send their children to (pre)school (Galab, Vennam, Komanduri, Benny, & Georgiadis, 2013). Furthermore, living in an urban area facilitates access to social services (Johansone, 2010), including preschools. Hence, children's preschool enrollment depends on parents' decisions, which are influenced by parents' social and economic status (SES), along with urbanization and access to modern values via mass media.

In the last three decades, more and more scholars have emphasized the importance of social capital, since it affects a wide array of educational outcomes, ranging from enrollment, attendance, attainment and educational achievement (e.g. Fasang, Anette, Mangino, & Bruckner, 2011; Muller, 2001; Grootaert, 1999; Smith *et al.*, 1995). There is continuous debate about how to think about social capital and how to properly measure diverse conceptualizations of social capital (cf. Sobel, 2002; Arrow, 1999).

Until now, quite diverse interpretations exist about the exact meaning of social capital, but there seems to be a consensus that it enables individuals and groups to achieve their objectives. As stated by Adam Smith, humans tend to pursue the same general goals, namely physical welfare, social approval, and status (Flap & Volker, 2013). Social capital helps to fulfill these needs. For instance, Coleman's idea (1988) of social capital emphasizes the structure of relations that help create commitments between social actors to attain their goals. Woolcock (1998) describes social capital as an instrument for sharing information, trust and reciprocity via social networks. Others (e.g. Fukuyama, 1999; Putnam, 2000) emphasize the sharing of informal values and norms that enable members of a group to cooperate so as to increase their productivity. Based on these specifications, in our paper we define social capital as the structure of relations that facilitate individuals to share information, that strengthen norms of reciprocity, and that foster trust in institutions and other citizens (Beard, 2005). We thus distinguish three types of social capital: association, trust and reciprocity, which we expect to have a positive effect on children's preschool attendance.

Social capital resides in relations between individuals (Lin, 2001; Astone, Nathanson, Schoen, & Kim, 1999), both in families and communities (McLanahan & Sandefur, 1994; Coleman, 1990). In this paper, we take into account households and local communities as distinct levels of analysis. The concept of community social capital refers to communities of place (geography) and communities of interest (Flora, 1997). We define communities in the geographical way as people in a village who interact with others both within the village and between villages. To comprehend under which conditions social capital affects preschool participation, we study not only direct effects of social capital, but also within- and between-level interaction effects, in order to analyze whether social capital can compensate for other resources that determine school enrollment.

3.3.1 *Socio-economic status (SES) factors*

First of all, the economic household production theory suggests that income is the basic resource that parents invest in children (Becker, 1991). Household income is thus an important determinant of children's preschool participation: the higher a household's income and educational level, the higher the likelihood that children will attend preschool (e.g. Duncan *et al.*, 1972). Studies show that preschool participation is an effective way to enhance children's chances of success in developing countries (Engle, Black, Behrman, de

Mello, Gertler, & Kapiri, 2007), but public spending on preschools is low. Therefore, preschools rely mainly on fees and parental contributions that may prevent low-income families from sending their children to preschool (Smart *et al.*, 2008).

For example, parents with limited financial resources need to spend a larger portion of their income for their basic needs while parents with more money tend to spend more money on non-basic needs, such as children's education. This increases their children's probability of attending preschool. Consequently, children's access to preschool varies significantly depending on their family's income level (Cascio & Schanzenbach, 2014). In Indonesia, children from the lowest income quintiles were found to be less likely to enroll in preschool, with only 16 percent enrolling, whereas children of the richest quintile of the country had a 40 percent probability of enrolling in preschool in 2011 (Hasan *et al.*, 2013).

Second, as can be argued from human capital theory, highly educated parents strongly prefer to increase their children's education because they recognize its importance (Becker, 1993). This implies that the educational attainment of parents affects their decisions to send children to school (cf. Manski, Sandefur, McLanahan, & Powers, 1992). These parents will also appreciate the importance of preschool participation as a vehicle of school readiness (Smart *et al.*, 2008). They are aware that sending their children to preschool may increase their cognitive and social development and benefit their future school trajectory. In the case of Indonesia, the evidence indicates that lower-educated parents tend to do less well in many aspects related to their children's early development, including preschool enrollment (Hasan *et al.*, 2013). Based on these mechanisms, we regard the household's income and education as the household SES, which may be vital for choices regarding preschool.

In summary, if a family is wealthier and better educated the children are far more likely to enroll in preschool than are children from families that are less wealthy and educated. Consequently, we predict that *the higher the household socio-economic status (wealth and educational attainment) the more likely that children in that household will attend preschool (H1).*

At the community-level, household earnings could also be an important reason for parents' decisions to dwell in a well-off neighborhood that may affect educational resources, such as access to (pre)school (Klein, 2011). Likewise, a higher average wealth of a community results in more resources in the community. Such resources stimulate people to increase their aspirations, also regarding preschool participation. As already mentioned, most preschools are privately managed and funded, based on school fees paid by the parents. Besides the preschool fee, preschools also receive contributions from their communities. Moreover, although many preschool teachers work voluntarily (Hasan *et al.*, 2013), preschools still need financial support for initial investments in buildings, infrastructures and operations. This implies that affluent communities have more opportunities to establish preschools, which may increase a child's chance of attending

preschool. Therefore, we predict that *living in a wealthier community increases children's likelihood of attending preschool (H2)*.

3.3.2 Modernization and urbanization

Modernization is the permanent continuation of the process that transforms societies from agricultural dominance to domination by trade and industry (Charlton & Andras, 2003). Modern societies are based upon growth and the expectation of growth. This includes economic growth but also cognitive growth, which means an increase in knowledge and aspirations, including (the value and importance of) children's education. One important element of modernity is the emergence and pervasiveness of the media (e.g. Fleras, 1994; Hoover, 1993), including government policies to increase access to radio and television, also in remote areas, in order to increase (ideological) unity and government influence (power) in the periphery (Gazali, d'Haenens, Hollander, Menayang, & Hidayat, 2003). Access to mass media contributes to modern cultural integration, which can also increase participation in education (Delamaza, 2014).

The media may influence parents' perception and valuation of preschool enrollment and lead to the creation of a social norm (Perkins & Berkowitz, 1986) that it is good to send children to preschool. When parents' preschool awareness increases in the central region of the country, the media then spread this awareness to the periphery as part of cultural integration. As a result, household access to media is expected to increase parents' likelihood of enrolling their children in preschool.

Furthermore, mass media serve to connect people at local levels to the global level and thereby help to enhance awareness and advance diffusion of new ideas (c.f. Servaes, 2008; McLuhan, 1964). This diffusion of modern values, such as eagerness to send children to preschool, may boost other parents' understanding of the importance of preschool participation. Therefore, living in a village with a high media access may influence a household's knowledge and aspirations, in turn increasing the household's eagerness to send their children to preschool. We therefore expect that *the greater the household and community access to mass media, the greater the chance that children will attend preschool (H3)*.

Like mass media, urbanization is also related to social and cultural changes in community life. Because the infrastructures in urban areas are generally better than in rural areas, access to communication via technology also tends to be better. These indirect and direct forms of communication can augment the flow of ideas and knowledge (Lucas, 2004). Another factor, urban transportation facilities, also enhances access to direct interaction among inhabitants (Johansson, Hasselberg, & Laflamme, 2010). Moreover, better transportation can solve the distance from homes to preschool locations, making it easier for parents to send their children to preschool even at a young age. Furthermore, the dense population of urban areas results in increased economies of scale. This in turn helps both government and communities to create public services (Buchmann &

Brakewood, 2000), including preschools. All these advantages of living in an urban area may therefore improve children's access to preschool. We therefore expect that *residing in urban communities is associated with an increased probability of children attending preschool (H4)*.

3.3.3 Social capital

Social capital in terms of informal networks is ubiquitous in Indonesian society. Besides community organizations sponsored by the government, such as neighborhood associations (*Rukun Tetangga/RT* and *Rukun Warga*/RW), state-led co-operations and community credit groups (*Koperasi Unit Desa*/KUD), other community-based organizations are abundant, such as informal rotating savings groups, traditional arts groups, sports groups, youth groups, farmers' groups, fishermen's groups and religious institutions (Miguel, Gertler, & Levine, 2006).

Theoretically, the benefits of social capital for preschool participation may flow to the household and community as follows. First, social capital facilitates information sharing, thereby advancing social interactions among household and community members. Social interaction enables individuals to learn about the behavior of others and may lead to imitation (Collier, 2002). Second, social capital can complement or take the place of legal mechanisms that provide financial support (Knack, 2002). For instance, people use money acquired from informal rotating savings groups, like *Arisan*, to handle emergency needs (Anggraeni, 2009) such as children's education. These informal financial support mechanisms can, if accessed, increase parents' likelihood of sending their children to preschool. Third, social capital enables individuals and groups to access other valued resources (Bourdieu, 1993). For instance, interaction between individuals may strengthen cohesion in the community, in turn generating collective action to acquire more educational resources, like preschool subsidies and block grants, to improve access to early education.

The social influence theory states that people adopt the behaviors of those they interact with (Friedkin, 1998). Involvement in community activities or engaging in an association facilitates interaction, enabling individuals to adopt new behaviors or adapt existing behaviors and aspirations. Social interaction also leads to deeper relationships, thus generating cohesiveness and trustworthiness and consequently reciprocity. In the case of preschool participation, parents may compare their own vision to that of others when deciding whether or not to send their children to preschool. If one household is eager to send their children to preschool, this may transmit knowledge and a perception of the importance of preschool, as well as status motivation; these are the result of group associations and other informal networks. Such knowledge and opinion transmission processes may affect other households, implying copying behavior (Collier, 2002).

Household involvement in group associations is thus a form of social capital that can facilitate the diffusion of information and may result in a household's adopting behavior such as sending their children to preschool. Moreover, social capital provides access to financial or other resources that may help parents to send their children to preschool. For example, regardless of family income, access to financial or other assistance in an emergency has shown to be related to school attendance (Hofferth, Boisjoly, & Duncan, 1998). Based on these arguments, we maintain that *the higher the household's social capital, the higher the children's likelihood of enrolling in preschool (H5)*.

Given that social capital is important for information diffusion, as argued above, social capital may also positively affect the diffusion of educational information within a community (Rogers, 1995). Living in communities with dense networks and associations, and high levels of trust and reciprocity, may accelerate diffusion of knowledge and innovation; this in turn can affect the level of educational promotion and psychosocial support (Stansfeld, 2006). Therefore, community social capital might increase parents' educational aspirations, which in turn can be expected to increase their probability of enrolling their children in preschool.

Community social capital may also generate cooperation at the community level, enabling members to work together in providing collective goods, such as rotating savings or credit associations (Collier, 2002). Free riding and opportunistic behavior are prevented by means of social sanctions enforced by the community. Such public goods enable parents to handle times of economic hardship by asking the community to help them send their children to preschool. In case parents need money for an emergency, such as the preschool registration fee, cooperative norms at the community level can help parents with lack of access to bank credit by providing solidarity, risk pooling and financial protection (Mladovsky, 2014).

Community social capital is also related to potential political strength, which can help attract educational resources to those communities (Van Damme & Miyamoto, 2010). Community social capital also enables community members to enforce norms supporting joint production that facilitates collective decision making (Collier, 2002). Collective decision making enables groups to improve their bargaining position *vis-a-vis* the government if they are trying to establish a preschool in their community. The ability to bring resources to the community and the capacity to take part in managing their preschool facilities may attract parents to enroll their children in preschool. Consequently, we predict that *the higher the community's social capital, the higher the probability of its children enrolling in preschool (H6)*.

3.3.4 The moderating role of social capital: compensating effects

Social capital explanations have, however, rarely considered possible moderating effects. We identified one study on adults that identified an interaction between SES and social capital on health (e.g. Song, 2009). For clarity we distinguish here between the complementing and compensating effects of social capital. Complementing effects are the cumulative effects of household and community social capital: each strengthens the other's effect, leading to a larger joint effect of social capital and thereby households that are better off (Song & Lin, 2009). Compensation effects are present when, for example, low-income households compensate for a lack of financial resources by means of social capital (Mladovsky, 2014).

We assume that social capital can compensate for other resources; if compensation works, low income and less educated households would rely more on social support and networks to meet the challenges of daily life, such as their children's education. For instance, low-income households may have fewer resources to invest but they can invest more time (Grootaert & Bastelaer, 2002). Conversely, heads of households with a higher income and education are more able to find and understand information by themselves, and may thus make less use of social capital less than their low-income and -education counterparts. Therefore, we expect *that a household's social capital compensates for the negative impact of (a) low income, (b) low educational attainment, and (c) limited access to media on preschool attendance (H7).*

We expect that the above factors may play a role in all circumstances, but that the features of the community context, such as average income, urbanization and access to mass media may also determine their level of importance. For example, in rural areas some dimensions of social capital may affect whether low-income households send their children to preschool because people in rural areas tend to be more linked to their geographical context, such as neighborhood associations. Another example is that parents' awareness of the value of preschool may also be influenced by mass media as an important source of information. Currently, the mass media play a crucial role in forming public opinion (Lindsey, 1994). Moreover, both print and electronic media are used to promote preschool as part of government programs. For instance, UNICEF findings (2006) indicate that several developing countries utilize radio and television to produce developmentally, culturally appropriate, and practical programs for and about early child development (ECD), in line with the spirit of ECD campaigns. As, for example, in the Maldives, such endeavors are directly linked to parents' change in attitude and behavior regarding ECD (UNICEF, 2004).

To take this contextualization into account, we also consider cross-level interaction effects (Snijders & Bosker, 2012). For instance, we examine a household's association with the average associations and reciprocity at the village-level, as well as with the degree of urbanization. Based on the social influence theory, we predict that living in communities with higher association and reciprocity may strengthen the effect of a

household's preschool participation (Friedkin, 1998). In addition, we assume that preschool enrollment may be lower in the countryside because rural areas have a general lack of preschools, as well as an inadequate infrastructure, which makes it more difficult for parents to send young children to preschool (Temple, 2008). On the other hand, households living in rural areas might have more time, which may increase their opportunity to accelerate collective action (Matta & Alavalapati, 2006). This collective action may empower households and communities to deal with government policy, including accessibility of preschools. Consequently, we predict that *community social capital compensates for the negative effects of household and community factors on preschool participation (H8).*

Figure 3.1 summarizes our conceptual framework.

Figure 3.1 Theoretical framework of the influence of social capital on preschool enrollment

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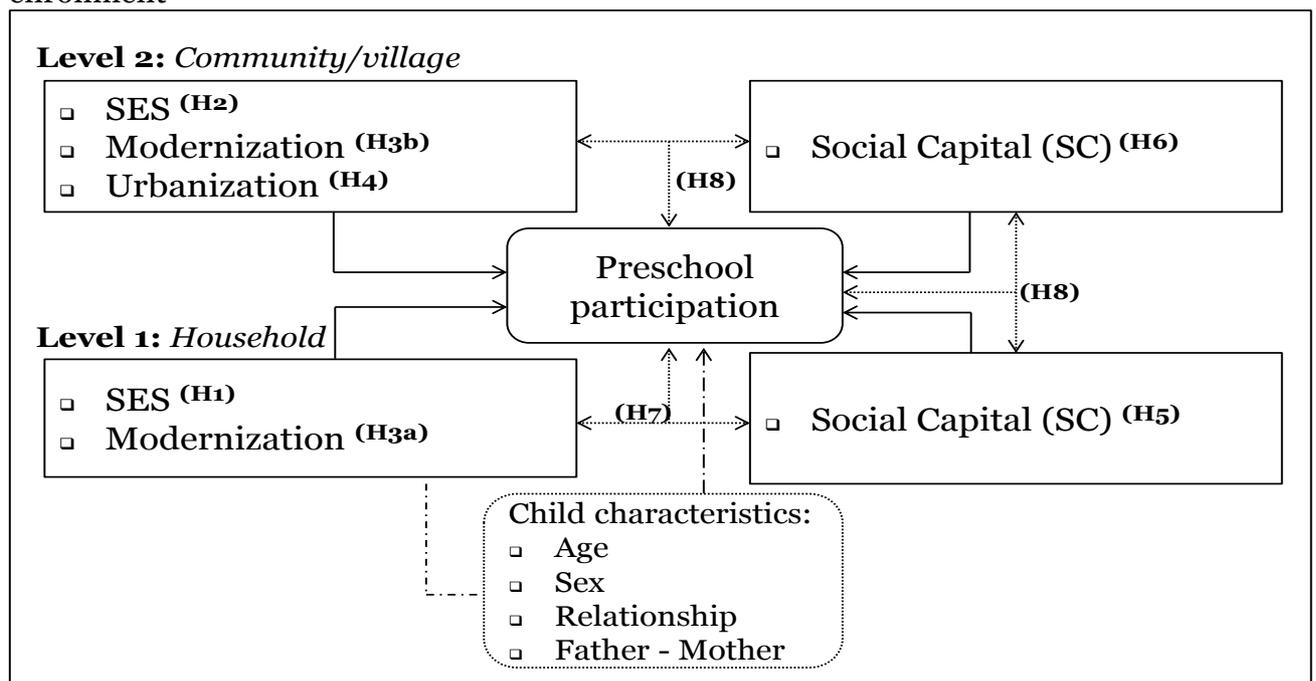
3.4 Data and method

3.4.1 Data collection

To find an answer to our research question, we utilize representative individual and household datasets from the national socio-economic survey (Susenas 2009). The Susenas is a representative survey conducted by Statistics Indonesia to gather basic social and economic information (the Core) from 1,155,566 individuals in 291,753 households with reference to eight indices: demography, health, education, labor, fertility and family planning, housing and consumption. The respondents are heads of households or other household members. In addition, the Susenas includes more detailed information on special interest topics, including social capital indices of 291,753 households (the Module). Both the Susenas Core and Module are conducted annually in July (Central Bureau of Statistics/CBS, 2009).

Based on these datasets, we construct variables from individual and household data. Then, to construct contextual variables at the community level, we aggregate the representative household data to the village level, using weights to ensure the representativeness of the CBS household population. We selected children aged 4-6 years, since this is the official preschool age (N=70,263). As the majority of 6 year olds (86.4%) were already enrolled in primary school, we focused on 4 and 5 year old children (N=46,525). To simplify the analysis, we omitted the children of these ages who already attended primary school. This reduced the sample by about 6 percent to 43,879 children in the age group of 4 to 5 years, nested in 42,855 households in 14,774 villages.

3.4.2 Data description

The variables are described by the level at which they are measured (child, household, village). Summary statistics are presented in Tables 3.1a, 3.1b and 3.1c.

Child

Preschool participation. Indicator of preschool attendance (0=no; 1=yes).

Gender. Indicator of gender (0=boy; 1=girl).

Age. Indicator of child's age (0=4 years; 1=5 years).

Relationship to head of household. Indicator of head of household's relationship (0=non-child; 1=child).

Paternal orphan. This means that the child's biological father is deceased or missing (0=no; 1=yes).

Maternal orphan. This means that the child's biological mother is deceased or missing (0=no; 1=yes).

Table 3.1a Child-level variables and preschool participation (N=43,879)

Variables		Total (%)	Attended preschool (%)
Relationship			
	Non-child	13.0	36.0
	Child	87.0	30.1
Gender			
	Boy	51.9	29.6
	Girl	48.1	32.2
Age			
	4 years	54.0	22.9
	5 years	46.0	40.2
Paternal orphan			
	No	92.8	30.7
	Yes	7.2	33.3
Maternal orphan			
	No	95.7	30.9
	Yes	4.3	30.7

Household

Wealth. Household expenditure per capita adjusted by the poverty line of each municipality and classified in five quintiles (20 percent), the lowest being "1", low "2", medium "3", high "4" and highest "5".

Head of household's education. Four categories are distinguished: (1) below primary (21.7%), (2) completed primary (30.8%), (3) completed junior secondary (17.1%), and (4) senior secondary and higher (30.4%).

Access to mass media. Indicator of access to media (0=no access; 1=having at least access to print or electronic media, such as books, magazines, radio, television and newspapers).

Dimensions of Social Capital

Associations. Sum score of the number of groups for social and community activities that the head of the household is involved in.

Trust. Mean score of three questions on whether respondents entrust the financial management to the: (1) neighborhood administration, (2) management of the community

group, and (3) village office/head; with six alternatives: (0 'do not know', 1 'do not care', 2' not confident', 3 'less confident', 4 'confident', and 5 'very confident').

Reciprocity. Mean of two questions, one on ease of borrowing money from the neighborhood for emergency needs such as for school, the other on readiness to lend money to a neighbor for emergency needs such as for school. Both questions are coded from 0 to 5, with 0 standing for 'do not know', 1 for 'very difficult', 2 for 'difficult', 3 for 'rather difficult', 4 for 'easy' and 5 for 'very easy'.

Table 3.1b Household-level variables and preschool participation [(N=42,855)]

| Variables | | Total | Attended preschool (%) | | |
Education	Wealth		No access	Access media	Overall
Below primary (21.7%)					
	Lowest	33.8	9.8	19.3	15.7
	Low	24.4	14.2	23.5	21.4
	Medium	19.6	14.5	24.5	22.7
	High	14.8	15.7	28.5	27.0
	Highest	7.3	9.9	31.6	29.3
Primary school (30.8%)					
	Lowest	24.1	11.9	22.9	20.3
	Low	24.4	16.5	25.7	24.3
	Medium	22.0	17.6	29.3	28.1
	High	18.7	16.3	31.8	30.5
	Highest	10.8	21.7	38.0	37.1
Junior secondary					
	Lowest	17.2	13.2	24.3	21.9
	Low	20.2	15.1	27.8	26.3
	Medium	22.6	13.4	32.2	30.8
	High	22.9	18.2	34.9	34.0
	Highest	17.0	37.9	41.5	41.4
Senior high school or					
	Lowest	7.7	13.6	24.1	22.5
	Low	12.3	18.9	32.5	31.4
	Medium	16.7	17.0	35.3	34.6
	High	23.4	27.0	43.0	42.6
	Highest	39.9	31.7	53.8	53.6
Total (100%)					
	Lowest	20.0	11.1	22.2	19.1
	Low	20.0	15.7	26.9	25.2
	Medium	20.0	15.7	30.6	29.1
	High	20.0	17.9	36.1	34.9
	Highest	20.0	21.9	47.8	47.1

Table 3.1b shows that there are clear patterns in the relation between household education, income, access to mass media and preschool attendance. If the education level and income of the head of the household are high and he or she has access to mass media, preschool participation tends to consistently increase.

The relations between household education, income, access to mass media and household social capital have different patterns. Table 3.1c reveals that when the education level and income of the head of a household are high, as well as his/her access to mass media, this tends to slightly increase his/her associations.

Table 3.1c Household-level variables and social capital (N=42,855)

Variables		Mean of		
Education background	**Wealth**	**Association**	**Trust**	**Reciprocity**
Below primary (21.7%)				
	Lowest	1.24	3.55	2.87
	Low	1.35	3.56	2.98
	Medium	1.38	3.55	3.07
	High	1.39	3.52	3.07
	Highest	1.39	3.44	3.08
Primary school (30.8%)				
	Lowest	1.43	3.56	2.92
	Low	1.50	3.57	3.05
	Medium	1.56	3.59	3.04
	High	1.54	3.54	3.09
	Highest	1.61	3.49	3.09
Junior secondary (17.1%)				
	Lowest	1.45	3.53	2.98
	Low	1.51	3.53	2.99
	Medium	1.59	3.55	3.04
	High	1.59	3.48	3.02
	Highest	1.60	3.46	3.00
Senior high school/higher (30.4%)				
	Lowest	1.49	3.47	2.94
	Low	1.59	3.50	3.01
	Medium	1.66	3.49	2.96
	High	1.69	3.50	2.95
	Highest	1.76	3.42	2.81
Access to mass-media				
	No	1.23	3.51	2.83
	Yes	1.58	3.52	3.00

Meanwhile, household trust remains level to off and tends to decrease by increased household income. Likewise, a higher household income in combination with a primary and lower than primary educational background increases household reciprocity but this reciprocity tends to decrease for a head of household with a senior high school or higher educational background.

We construct village-level social capital dimensions by aggregating the full sample of household-level social capital. Table 3.2a shows means and correlations of the three social capital dimensions and access to mass media at the household-level, as well as average income (wealth), social capital dimensions and access to mass media at the village-level.

In Table 3.2a, the means at the household and village levels are almost similar. Moreover, reciprocity at the village level are greater than those at the household level. On the other hand, correlations between association and access to mass media at the village level are smaller than correlations at the household level. This means that the effects of community trust are stronger than those of household trust for community association and reciprocity. On the other hand, the effect of a head of household's access to mass media explains more with regard to household associations than does community access to mass media.

Table 3.2a Mean, standard deviation, correlations of household & village-level variables

Variables	Household level		Village level		1	2	3	4
	Mean	**Std.**	**Mean**	**Std.**	**Village level** $^{(N=14,774)}$			
Household level (N=42,855)								
1. Association	1.53	0.94	1.63	0.90		.112**	.122**	.076**
2. Trust	3.52	0.92	3.54	0.51	.099**		.263**	-.001
3. Reciprocity	2.98	1.11	2.97	0.67	.125**	.151**		.053**
4. Access to mass media	0.88	0.33	0.87	0.19	.122**	0.004	.050**	

Notes:
- *Village-level variables are computed by averaging household variables.*
- *Correlations above the diagonal are at village-level and below at household-level.*
- ** P<0.05; ** P<0.01 (2-tailed).*

Community/village

Average wealth. Logarithm of average household expenditure per capita adjusted by municipality poverty.

Access to mass media. Mean percentage of households having access to mass media.

Urbanization. Indicator variable based on CBS classification at the community level (0 = rural area; 1 = urban area).

Table 3.2b Mean, standard deviation and correlations between village-level variables in rural and urban villages [(N=14,774)]

Village	(N=4,547)		(N=10,227)		1	2	3	4	5
	Mean	Std.	Mean	Std.					
1. Average household wealth (log)	6.02	0.15	5.88	0.13		.046**	-.047**	.070**	**.350****
2. Association	1.60	0.76	1.64	0.96	-.057**		**.087****	**.101****	.090**
3. Trust	3.42	0.54	3.60	0.49	-.150**	**.176****		**.215****	.072**
4. Reciprocity	2.75	0.66	3.07	0.65	-.197**	**.177****	**.282****		.171**
5. Access to mass-media (%)	0.96	0.07	0.83	0.21	**.256****	.089**	-.049**	-.091**	

Notes:
- *Village-level variables are computed by averaging household variables.*
- *Correlations above the diagonal are for rural villages and below for urban villages.*
- * P<0.05; ** P<0.01 (2-tailed).*

Table 3.2b shows that average income and access to mass media are higher in urban villages than in the countryside. However, means of association, trust and reciprocity are higher in rural villages than in urban areas.

3.4.3 Analytical procedure

We use multilevel logistic regression analyses (see *e.g.* Snijders & Bosker, 2012; Hox, 2010) to test each of the hypotheses related to the research question. Multilevel analysis allows us to take into account the hierarchical nature of our data, with children belonging to households and households grouped into villages, and to test the effect of child, household and village level variables on preschool enrollment.

A sequence of models is estimated, using a forward selection strategy, starting with adding the child-level characteristics to the so-called null or empty model (without explanatory variables, except for intercept and variances at household and village levels). This is followed by household-level variables: wealth, education and access to mass media. In the next model the household social capital measures are added to test the contribution of these central variables to our research question. In the fourth step the contextual effects of wealth, access to mass media, urbanization and social capital at the

village level are added. Finally, to examine whether model parameters are constant across household and community and to test hypotheses 7 and 8, we add within-level and cross-level interactions and retain the significant effects. The resulting model is presented as the final model.

All models were initially estimated using *Iterative generalized least squares* (IGLS) and *Markov chain Monte Carlo* (MCMC) estimation with burn-in length 20,000 and chain length 50,000, with the final model rerun having 50,000 burn-in and 100,000 chain iterations. We also employed both orthogonal parameterization and hierarchical centering to reduce the amount of autocorrelation (Browne, Charlton, Kelly, & Pillinger, 2014; Snijders & Bosker, 2012).

The regression parameters of all models are presented on the logit scale in the tables. They are interpreted as relative increase in the odds of preschool enrollment for a child given his/her characteristics and the characteristics of the household and village s/he lives in. The odd is the ratio of the probability of preschool enrollment over 1 minus this probability (the probability of non-enrollment). Note that an increase in odds implies an increase in probability[5].

3.5   Results

We started the analysis with the estimation of a null model (Model Null in Table 3.3) with intercept variances at the household and village levels. From the null model, the estimated average probability of preschool enrollment is equal to 0.24. The household variance is quite low whereas the village variance is large, implying a wide range of village preschool participation probabilities, estimated to be in the (0.01; 0.89) interval, and by contrast a very small range of household preschool probabilities (0.23; 0.25), for an average village.

Children's characteristics are added in a first step. Model 1 in Table 3.3 shows that 5 year olds, girls, or children who live in households whose head is not their biological father have significant relatively increased odds of going to preschool, by 247, 18, and 33 percent respectively. On the other hand, being a maternal orphan significantly diminishes the odds that children will enroll in preschool, by a relative 24 percent.

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[5] The relative increase is based on the odds factor, defined as exp(b), where b is a regression coefficient, leading to the expression for relative increase in odds factor equal to (exp(b)-1)*100 (*see, e.g.* Pampel, 2000).

Table 3.3 Multilevel logistic regression models of child preschool participation

Preschool participation	Model Null		Model 1		Model 2	
	Est. (β)	S.E.	Est. (β)	S.E.	Est. (β)	S.E.
Fixed Part						
Intercepts	-1.131	0.022	-1.886	0.034	-3.689	0.074
Child-level characteristics (N=43,879)						
Relation (1= not biological)			0.288 ***	0.047	0.553 ***	0.048
Gender (1= girl)			0.169 ***	0.029	0.174 ***	0.029
Age (1= 5 years)			1.244 ***	0.031	1.302 ***	0.031
Paternal orphan: Yes (1) vs No (0)			0.049	0.066	0.162 *	0.067
Maternal orphan: Yes (1) vs No (0)			-0.277 **	0.084	-0.332 ***	0.084
Household-level variables (N=42,855)						
Wealth quintiles: *Lowest (ref.)*						
Low					0.321 ***	0.050
Medium					0.530 ***	0.051
High					0.817 ***	0.052
Highest					1.318 ***	0.055
Head of household's education: *Below primary (ref.)*						
Primary school					0.273 ***	0.045
Junior secondary					0.478 ***	0.051
Senior high school or higher					0.843 ***	0.048
Acces to mass-media					0.781 ***	0.057
Random Part						
Village-level variance	2.784	0.100	3.158	0.115	2.637	0.100
Household-level variance	0.001	0.001	0.002	0.001	0.001	0.000
*-2*loglikelihood:*						
DIC:	47,082		44,893		43,552	
pD:	7,296		7,422		6,780	

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

Taking into account the household's SES and access to mass media, Model 2 in Table 3.3 reveals that a household's income and level of educational attainment significantly increase the odds of children's attending preschool as expected: the higher the education and the higher the income, the greater the (relative increase in) odds of preschool attendance. These results therefore fully support the first hypothesis that the likelihood of preschool attendance increases with the household's income and educational attainment (SES).

After including the household's SES, the regression coefficients of the child-level characteristics slightly change but the directions and significances remain stable, except for the coefficient of paternal orphan, indicating a small relative increase in odds of 18 percent. The results remain similar in terms of directions after taking into account the household's social capital (Model 3) and after including village-level variables, such as average income, access to mass media, urbanization and social capital (Model 4).

Table 3.4 Multilevel logistic regression models of preschool participation with interactions

Preschool participation	Model 3		Model 4		Model 5 continued	
	Est. (β)	S.E.	Est. (β)	S.E.	Est. (β)	S.E.
Fixed Part						
Intercepts	-3.611	0.074	-3.260	0.081	-3.269	0.081
Child-level characteristics (N=43,879)						
Relation	0.530 ***	0.048	0.442 ***	0.048	0.438 ***	0.048
Gender	0.173 ***	0.029	0.170 ***	0.029	0.170 ***	0.029
Age	1.304 ***	0.031	1.311 ***	0.031	1.311 ***	0.031
Paternal orphan: Yes (1) vs No (0)	0.182 **	0.067	0.184 **	0.067	0.187 **	0.067
Maternal orphan: Yes (1) vs No (0)	-0.329 ***	0.084	-0.292 ***	0.085	-0.290 ***	0.085
Household-level variables (N=42,855)						
Wealth quintiles: *Lowest (ref.)*						
Low	0.311 ***	0.050	0.245 ***	0.051	0.246 ***	0.051
Medium	0.511 ***	0.051	0.405 ***	0.052	0.408 ***	0.052
High	0.794 ***	0.052	0.651 ***	0.054	0.658 ***	0.054
Highest	1.280 ***	0.055	1.088 ***	0.059	1.093 ***	0.059
Head of household's education: *Below primary (ref.)*						
Primary school	0.250 ***	0.045	0.201 ***	0.045	0.199 ***	0.045
Junior secondary	0.452 ***	0.051	0.356 ***	0.051	0.355 ***	0.051
Senior high school or higher	0.798 ***	0.048	0.638 ***	0.049	0.626 ***	0.049
Acces to mass-media	0.739 ***	0.058	0.282 ***	0.063	0.279 ***	0.062
Social capital dimensions						
Group association	0.171 ***	0.017	0.172 ***	0.020	0.171 ***	0.020
Trust	-0.024	0.017	-0.025	0.018	-0.019	0.038
Reciprocity	0.004	0.014	0.012	0.016	0.104 **	0.036
Village-level variables (N=14,774)						
Mean household wealth (log)			0.080	0.164	0.031	0.163
Access to mass-media (%)			2.085 ***	0.148	2.057 ***	0.145
Urbanization (1=urban, 0=rural)			0.642 ***	0.049	0.616 ***	0.049
Social capital dimensions						
[Community] Association			0.028	0.026	-0.026	0.030
[Community] Trust			0.083	0.044	0.082	0.045
[Community] Reciprocity			0.075 *	0.036	0.153 ***	0.043
Random Part						
Village-level variance	2.608	0.101	2.518	0.099	2.505	0.100
Household-level variance	0.001	0.000	0.002	0.001	0.001	0.000
*-2*loglikelihood:*						
DIC:	43,495		43,018		42,989	
pD:	6,743.9		6,542.3		6,523.8	

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

The second hypothesis predicted that living in wealthier communities would increase children's likelihood of attending preschool. The data show that residing in a more upscale community is not significantly associated with a higher chance of children attending preschool. Therefore, after taking into account household wealth, no evidence is found for an additional effect of community wealth.

The third set of hypotheses suggested that children from households with access to mass media and in a community with higher access to mass media are more likely to attend preschool. After controlling for SES, the results of Model 4 in Table 3.4 lend support to this set of hypotheses. Media access leads to a relative increase in odds, of 33 percent. Next, living in a community with higher access to media significantly increases children's odds of enrolling in preschool by more than seven times. Consequently, these results are in line with our expectations.

Hypothesis 4 predicted that residing in urban communities is associated with an increase in children's probability of attending preschool. Results show that residing in urbanized communities significantly increases the odds of children's chances of enrolling in preschool, by 90 percent. This result is fully in line with our hypothesis.

Now we turn to the central hypotheses on social capital. The fifth set of hypotheses predicted that the higher the household's social capital, the higher the likelihood that children will attend preschool. Results in Model 4 in Table 3.4 show that the higher the degree of household associations, the higher the children's odds of attending preschool (a significant relative increase in odds of 19 percent). On the other hand, a household's trust and reciprocity do not significantly affect children's probability of attending preschool. Our findings thus only partly support the hypothesis that household social capital increases preschool enrollment: of the three social capital indicators, only the degree of associations was found to have an effect.

The sixth hypothesis postulated a positive relationship between community social capital and preschool enrollment. Model 4 in Table 3.4 shows that residing in communities with higher reciprocity significantly increases children's odds of attending preschool by 8 percent. Meanwhile, living in higher community association and trust are not found to affect the likelihood of children attending preschool. Consequently, the results lend partial support to H6.

To gain more insight into what these analyses mean in terms of probabilities, we now turn to 'scenarios' of preschool participation in which the probability of preschool attendance is calculated for a child with a set of characteristics (at all levels). As the best scenario for the effect of SES on a low SES household, Table 3.5 shows 48 scenarios of the 'best-off' (i.e. with highest probability) and 'worst-off' (lowest probability) of children and households in urban and rural villages in Table 3.5.

Table 3.5 Scenarios of child preschool participation (based on model 4)

Child-level	Village level					Village level			
	Urban	Urban + reciprocity	Rural	Rural + reciprocity		Urban	Urban + reciprocity	Rural	Rural + reciprocity

Best-off: *Non-child, girl, 5 years, child with both biological parents*

Child-level	Urban	Urban + reciprocity	Rural	Rural + reciprocity		Urban	Urban + reciprocity	Rural	Rural + reciprocity
A1	0.79	0.80	0.66	0.68	**B1**	0.33	0.35	0.21	0.22
A2	0.51	0.53	0.35	0.37	**B2**	0.44	0.46	0.29	0.31
A3	0.82	0.83	0.70	0.71	**B3**	0.37	0.39	0.24	0.25

Worse-off: *Child, boy, 4 years, not living with biological mother*

Child-level	Urban	Urban + reciprocity	Rural	Rural + reciprocity		Urban	Urban + reciprocity	Rural	Rural + reciprocity
C1	0.29	0.30	0.18	0.19	**D1**	0.05	0.05	0.03	0.03
C2	0.10	0.11	0.06	0.06	**D2**	0.08	0.08	0.04	0.05
C3	0.33	0.34	0.20	0.21	**D3**	0.06	0.07	0.03	0.04

Notes:
1) Opposite in head of household's education and income
   - A1 & C1 = Head's household with the highest income, senior high school or higher education and access to mass-media.
   - A2 & C2 = Head's household with low income, primary education and access to mass-media.
2) Opposite in head of household's education and income adding with associations
   - A3 & C3 = Head's household with the highest income, senior high school/higher education, access to mass-media and higher association (above mean).
   - B1 & D1 = Head's household with the lowest income, below primary senior high school or higher education and no access to mass-media.
3) Low vs lowest income and primary vs below education by adding with associations
   - B2 & D2 = Head's household with the low income, primary education background and no access to mass-media.
   - B3 & D3 = Head's household with the lowest income, below primary education, no access to mass-media and higher association (above mean).

Based on these scenarios, household SES and access to mass media are important determinants of children's probability of attending preschool, as indicated in comparisons between values of quadrants A-C and quadrants B-D. Moreover, children's individual characteristics: gender, age, and parental status, are factors contributing vitally to children's probability of attending preschool; this is shown in the difference between percentages of quadrants A-B and C-D. Likewise, living in urban villages increases the probability of children attending preschool, with a minor effect of village reciprocity.

Interaction effects

We assume that the relations between social capital dimensions (association, trust and reciprocity norms) and preschool participation depend on other household and community-level characteristics. The seventh set of hypotheses stated that household social capital compensates for the negative impact on preschool attendance of: (a) low income, (b) low educational attainment, and (c) limited access to media.

Table 4 shows that with the exception of household reciprocity (which has a small positive effect with a relative increase in odds of 11 percent), there are no substantial differences between Model 4 in Table 3.4 and Model 5 in Table 3.6 with interaction effects for SES, media access and urbanization. Likewise, at the community level, the size of the reciprocity effect considerably increases.

Table 3.6 Multilevel logistic regression with interaction effects

Preschool participation	Model 5 continued	
	Est. (β)	S.E.
Household-level interaction effects		
Trust * head of household's education		
[Trust *] Primary school	0.004	0.047
[Trust *] Junior secondary	0.109 *	0.053
[Trust *] Senior high school or higher	-0.065	0.045
Reciprocity * wealth		
[Reciprocity *] Low	-0.088	0.047
[Reciprocity *] Medium	-0.082	0.046
[Reciprocity *] High	-0.076	0.045
[Reciprocity *] Highest	-0.163 ***	0.044
Cross-level Interaction effects		
Association * Trust	0.077 *	0.034
Village-level Interaction effects		
Association * Urbanization	0.227 ***	0.056
Reciprocity * Urbanization	-0.248 ***	0.067

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

Model 5 in Table 3.6 also shows that household reciprocity significantly reduces the effect of low household wealth on the probability of children enrolling in preschool. The results imply that, to some extent, reciprocity is able to compensate for a lack of financial resources, which partially supports our expectation. Reciprocity as a dimension of social capital increases the likelihood that the poorest households will send their children to

preschool. In addition, a higher group association rate at the household level strengthens the effect of community trust on children's chances of enrolling. These interaction effects, although not large, partially support the seventh hypothesis.

The final hypothesis expressed the expectation that the characteristics of community social capital compensate for the negative effects of other household and community factors on preschool participation. Model 5 in Table 3.6 shows that reciprocity has a higher effect in rural areas than in urban areas on children's odds of enrolling in preschool. On the other hand, living in a community with more associations significantly increases the effect of urbanization on these odds.

Even though there is no effect of community trust, these findings indicate that community reciprocity is able to compensate for children living in rural villages, which partially supports our expectation that community social capital can compensate for the effect of negative household and community factors on preschool participation.

Based on computations on Model 5, we compare the most contrasting cases as reflected in scenario A3 (the best possible scenario) and D1 (the worst possible scenario) for further clarification in Table 3.5. Scenario A3 in Table 3.5 shows that the probability of preschool attendance is highest (83%) for children, who:

☞ have a position in a household as a non-child (mostly grandchildren), are girls, 5 years old and not orphans;

☞ come from households with the highest household incomes, parents who graduated at least from senior high school, access to mass media, and high association membership;

☞ come from a community in an urban area and with strong reciprocity.

On the other hand, scenario D1 in Table 3.5 shows that the probability of preschool attendance is lowest (a striking 3% only) for children who:

⇨ have a position as a child of the head of household, are boys, 4 years old, and are maternal orphans;

⇨ come from households with the lowest income, with parents lacking a primary education background, and with no access to mass media

⇨ come from a community in a rural area.

Furthermore, reciprocity has an impact on children's probability of attending preschool. As can be seen from the comparison of scenarios in Table 3.5, the probability of attending preschool is 33 percent in scenario B1 for children who are non-child, girl, 5 years and not orphan, who however originate from a household with the lowest income, parents with a below primary education background and no access to mass media, low household association and weak reciprocity. In scenario B3 this probability is 39 percent for children who have similar individual and household characteristics, but who come from a family with a higher household association and live in a village with stronger reciprocity.

A summary of the results of those eight hypotheses is provided below in Table 3.7.

Table 3.7 Overview of the hypotheses and findings of our analyses

No.	Hypotheses	Results
1	The higher the household socio-economic status (wealth and educational attainment) the more likely that children in that household will attend preschool (H1).	√
2	Living in a wealthier community increases children's likelihood of attending preschool (H2).	X
3	The greater the household access to mass media and the higher the community access to media, the more likely that children in that household will attend preschool (H3).	√
4	Residing in urban communities is associated with an increased probability of children attending preschool (H4).	√
5	The higher the household's social capital, the higher the likelihood of children attending preschool (H5).	√
6	The higher the community's social capital, the higher the probability of children enrolling in preschool (H6).	√
7	Household social capital compensates for negative impact of (a) low income, (b) low educational attainment, and (c) limited access to media on preschool attendance (H7).	√
8	The characteristics of community social capital compensate for negative effect of household and community factors on preschool participation. (H8).	√

Notes:
√ = The findings are in line with the hypothesis.
X = The hypothesis is rejected by the findings.

3.6   Discussion and conclusion

In this paper, we sought to answer the question to what extent and under which conditions variations in preschool participation can be explained by differences in household- and community-level factors -- such as SES, modernization and urbanization – and how these factors may be moderated by social capital. Using a multilevel approach, we found that preschool participation is lower for children from low-SES backgrounds, having no access to mass media, and living in rural communities. Our results revealed that, compared to other explanatory variables, the effects of SES and access to mass media are stronger, indicating that social stratification is prominently linked to preschool participation in Indonesia; this is in line with previous findings (Lustig, 2015).

Furthermore, both household associations and living in a community with high reciprocity significantly increase preschool participation. In line with our expectation, social capital to some extent compensates for the negative effect of other factors: household reciprocity compensates for the effect of a low household income and community reciprocity compensates for the negative effect of living in a rural community. Thus, children from the lowest income households, but with higher social capital and living in a community rich in social capital, show attendance rates comparable to those of better-off households with lower social capital. People use the reciprocity of social capital when they need it, i.e. when they lack financial resources. These findings support the theory that social capital is related to instrumental goals that can compensate for a lack of resources, thereby augmenting the social capital literature (Flap & Volker, 2013).

Four unexpected findings deserve further discussion. *First*, residing in a better-off community is not significantly associated with a higher chance of children attending preschool. Perhaps this is a kind of compositional effect and related to the location where one lives, i.e. in an urban or rural area. When excluding the urban variable in our model, the effect of average income becomes positively significant (*not presented; available upon request*). The higher population density in urban areas is associated with larger income inequalities (Glaeser & Redlick, 2008), meaning that there are greater differences between rich and poor in urban areas. But since, on average, urban areas are wealthier, this can explain the insignificant effect. On the other hand, in terms of socioeconomic status, people who dwell in a rural area are more homogenous (Nachtigal, 1982); they are either poor or rich. The gap between rich and poor in rural areas is thus not as great as in urban areas.

Second, trust and reciprocity are not significantly linked to children's probability of attending preschool. A household's trust is negatively correlated with its income and educational background, which implies that higher income and education are associated with lower trust. However, the fact that household income and education have a strong effect on children's preschool enrollment may absorb the effect of lower household trust. Household reciprocity was also found to be stronger in households with a lower educational background (Table 2b). But the strong effect of parental education on

children's preschool enrollment moderates the effect of this reciprocity in households with a lower educational background.

Third, living in communities with greater group associations and trust is not associated with children's probability of enrolling in preschool. These unexpected results are not easy to interpret. Maybe living in communities with higher group associations and stronger trust may facilitate parents' sharing of information, knowledge and expectations, which in turn may increase parents' awareness of the importance of preschool attendance. However, this may in itself not be sufficient to help low-income parents to send their children to preschool, as they may also need financial support.

Fourth, our interaction analysis at the community level leads to contradicting results. Living in an urbanized area significantly amplifies the effect of the community's level of group association on children's likelihood of enrolling in preschool, but residing in urbanized areas also significantly reduces the effects of community reciprocity on children's likelihood of enrolling in preschool. The negative interaction effect of living in urban areas with community reciprocity indicates that social and financial supports are more ubiquitous (and needed) in rural areas (Nachtigal, 1982). The positive effect of residing in urbanized communities with community association rates on children's chance of preschool participation is difficult to interpret. The challenge to sending children to preschool in urban villages could relate to preschool distance, which is easier to solve by collaborating to rent a vehicle for their transportation. Community associations could help to accelerate such collective action in urban villages. On the other hand, living in rural areas means that preschools are often not available, a problem not easily solved by collective action through group association.

All in all, we are aware that the survey data we used are cross-sectional and cannot provide strong empirical evidence for the mechanisms at play. We have to leave this for future work. We also realize that we cannot interpret our estimates as a causal impact of household- and community-level factors on preschool participation. However, although our analysis was constrained by these limitations, the results do suggest some policy implications.

First, our results show that SES remains an important determinant of children's preschool participation, indicating that preschool accessibility is a serious problem in Indonesia. It is difficult and time-consuming to improve parental education (Huisman & Smits, 2009). Therefore, in order to stimulate parents to send their children to preschool, improving access by providing more preschools and reducing financial barriers are more feasible policy interventions. Due to the scarcity of government resources, one solution could be to merge preschools and primary schools, especially in rural villages without preschool facilities. Merging preschools with public primary schools would not only increase access but could also make preschools affordable or free.

Second, the strong positive effect of access to media, which is independent of all other factors and circumstances studied both at the household and community levels, indicates that mass media can be a very important instrument to enhance parents'

awareness of the importance of preschool enrollment; this is given that most parents in Indonesia have a primary education background and have thus not yet experienced the possible benefits of preschool attendance. However, because almost all Indonesians have access to radio and television, mass media are among the available tools to increase parents' awareness of the importance of preschool attendance.

Third, the strong positive effect of household group associations indicates that social capital as measured by group associations is an important factor to increase the likelihood of children attending preschool. This result suggests that a government campaign to increase parents' awareness of the importance of early child education could make use of such group associations, which are omnipresent in Indonesia. For instance, the government could stimulate trained cadres in each village and community to approach these associations to discuss the important role of preschool attendance on children's school readiness and as a foundation for creating active and responsible citizens, also in the group associations themselves.

Finally, community reciprocity, measured by one's readiness to borrow and/or to lend money, also has a positive effect on children's preschool attendance. This effect tends to be stronger in low-income families in rural communities, indicating that community reciprocity is a pivotal buffer, particularly when *households* experience *economic shocks*. This finding suggests that policy interventions to improve preschool participation need to conserve community reciprocity as a potential buffer for low-income families. This consideration may prevent government interventions from weakening the existing positive effects of reciprocity, but rather help governments to strengthen the effectiveness of their interventions by collaborating with the informal social networks available in the community.