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The psychological health and well-being of children working in the brick industry: A comparative study

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ABSTRACT

How does arduous work affect child and adolescents' psychological health and well-being? This analysis of a unique four-country data set (915 children working in brick factories and a non-working comparison group of 638 children) sought to understand the nature and extent of psychological differences, if any, between the two groups and to validate an instrument capable of eliciting this information for use in population-based surveys. The instrument, combining variables from child psychology and occupational health, demonstrates a good level of reliability. Factor Analysis confirmed six dimensions of psychosocial well-being relevant to working children: stress, self-esteem, supervision, emotionality, personal security and sense of mistreatment. Multivariate linear regressions were used to statistically model the effect of "working" on these dimensions vis-a-vis pertinent sociodemographic variables. The results showed Work to be associated with negative outcomes on all the measured dimensions with girls most significantly affected; expected positive effects (e.g. increased self-confidence associated with work or with assisting the family) were not found. Migration status and work-related injuries appeared to have little influence. A potentially important finding is that attending school is the one factor that seems to have a mediating or psychologically protective effect.

Psychological health is often overlooked because it is invisible and considered too difficult to measure. Yet knowing the nature and severity of the psychological stresses experienced by working children can be critical for designing appropriate interventions (e.g. provision of schools in this case), and may persuade policy-makers to take action more urgently than they might otherwise have done.

1. Introduction

Some types of work are obviously dangerous for young people to do and virtually all countries impose various age-related restrictions regarding these in their labour laws. Not all dangers are obvious, however. The International Labour Organization (ILO) defines "hazardous work" as that which poses a significant risk to children's health, development or morals but leaves it to individual countries to identify what types of work and working conditions fit this definition in light of their priorities and circumstances. Developed countries with good educational systems have little difficulty establishing and enforcing laws against hazardous child labour, but countries with high poverty, limited social resources and high youth unemployment rates face major challenges in doing so. ILO estimates that 73 million children are currently doing hazardous work and among those under 11 years, the numbers appear to be rising (ILO, 2017).

This paper presents the findings of the psychosocial component of a larger study conducted by the ILO on the occupational safety and health (OSH) of children working in brick factories. It was undertaken in four countries: Afghanistan, Bangladesh, Nepal and Pakistan with a total of 1,553 children, of whom 915 were brick workers. The overall objective was to provide information and tools which could assist countries in assessing the risks and identifying appropriate and feasible interventions for the children concerned. The need for such information was underscored in a recent scoping review on occupational safety of young workers (Samano-Rios et al., 2019). The OSH study had six components: a) socio-demographic profile, b) work history and current tasks, c) health history and clinical examination, d) psychosocial functioning, e) environmental assessment, and f) stakeholder assessment.

Brick manufacturing was selected for this study because the urban construction boom of recent years, which has created a market for bricks, has led to an increase in the number of young children and

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adolescents employed in this industry in developing countries. The brick industry presents significant challenges for protection of workers and enforcement of child labour laws for four reasons. First, the factory workers constitute some of the poorest and most vulnerable groups in society. They include religious and social minorities, those displaced by war or ecological disaster and indebted or bonded families; for them, brick factories are an occupation of last resort (Awan et al., 2011; Joshi, 2013). Second, child labour makes economic sense in a piece rate system such as is common in brick factories, because even small children can increase the efficiency of the adult family members and thereby contribute to the economic stability of the family. Third, the factories are often in remote or rural areas which can be more difficult to regulate and are often far from schools. Fourth, especially for adolescents who are legally eligible to work over the age of 14 or 15 in most countries but still considered children by international law until age 18, contributing to the support of the family is perceived as normal and necessary.

Many studies assert that the making of bricks is obviously a “hazardous form of child labour” (implying, therefore, that further study is unnecessary) in that the kilns are often located in hot, dusty areas and the work easily exceeds normal standards of safety and hygiene in terms of the loads carried and exposure to toxic substances from the fuels used to fire the kilns (Awan, 2011). However, those directly involved argue that only the most skilled adults actually work in the vicinity of the kilns while children work at a distance simply molding bricks and running errands. Besides, they say, they would gladly do otherwise but they see no alternatives.

Brick manufacturing is one of the largest employers of children after agriculture and domestic service. Current estimates place the number of child workers in the brick factories (i.e., persons under 18 years of age) at roughly 5 million and the phenomenon has been observed in over 20 countries, the majority being in Asia, Africa, and Latin America (Gunn, 2013). One estimate places approximately half of the workforce in Afghanistan’s brick kilns as under age 14 (ILO-UNICEF, 2015; Brown, 2012). In brick-making, regardless of the country or the region, children frequently begin to assist their parents at the worksite from very young ages (Bruck and Yi, 2008; ILO, 2011, 2013, 2014a, 2014b; UNICEF, 2014).

1.1. Background

For the majority of studies which have examined the health risks associated with brick factories, the focus is on environmental impacts and how the air pollution caused by the smoke from the kilns is affecting the surrounding communities (Joshi and Dudani, 2008; Bhukuth and Guérin, 2005; Chaudhuri and Biswas, 2012; Kaushik et al., 2012; Chinh Chien et al., 2002; Trevelyan and Haslam, 2001; Singh, 2005). Only a very few (e.g., Bruck and Yi, 2008; Awan, 2011) have looked at the ways and degree to which children’s health might be uniquely affected by this work. Given that pictures of children laboring in brick yards and factories have long been used as a prime example of hazardous child labour, it is surprising how few studies have been done to verify and measure these risks and the impact they have on the younger workers’ health.

There are also very few studies that look at working children’s psychological health in any occupation. One of the first was a guide for labour inspectors (Boidin, 1995). Others were undertaken for diagnostic or therapeutic purposes for individual children who have been subject to military (Betancourt et al., 2010; Kohrt et al., 2011) or sexual exploitation (Ward and Roby, 2004; UNICEF, 2014). Whereas many of the studies that touch on child workers’ psychological well-being are from industrialized countries (Breslin et al., 2007), some excellent work has been done in Ethiopia (Alem et al., 2006; Fekadu et al., 2006), Kenya (Onyango and Kayongo-Male, 1983), Bangladesh (Lieten, 2011) and Afghanistan (Loughry et al., 2005). Whereas these tend to be largely country-specific, one important exception being a six-country study of children engaged in domestic service (Gamlin et al., 2013). All of these studies have made an important contribution by drawing attention to

psychological health, many of them, however, tend to be qualitative, i.e., they do not attempt to model statistically child work in relation to socio-demographic variables (e.g., age, gender, health, migration status, etc. which research suggests may be determinant (Ben-Arieh and Frønes, 2007; OECD, 2017; and see Salam et al., 2016; Sturrock and Hodes, 2016 for reviews).

Initial findings from ILO’s health study of children working in brick factories suggested that the psychosocial aspect might be particularly important in determining the overall degree of risk. This is reasonable given that adolescence is a critical period when the brain and neurological system are still maturing and young people are developing their sense of self and relationships with others (Patton et al., 2016; Viner et al., 2012). In addition, while there is a debate about the importance of inexperience versus psychological qualities associated with adolescence such as impetuosity and insecurity (Breslin and Smith, 2005), young people’s lack of power in the workplace obviously can increase their susceptibility to abuse (Luchman and González-Morales, 2013). Therefore, while many assume that working is likely to produce negative effects on children’s emotional and intellectual health, some researchers point to the fact that contributing to family well-being might offer important benefits to child workers’ psychological health and development (Morrow and Boyden, 2018).

The major theoretical work on the psychological impacts of work on children has been undertaken by Martin Woodhead. He proposed a model (1999, 2004) which linked psychosocial well-being with hazards at work. He identified five psychosocial domains that can be specifically damaged by work at a young age and which should be taken into consideration when studying the well-being of child workers. These are:

1. Personal security based on social integration and stable competence (e.g., secure attachments, positive relationships with peers or adults, social confidence, sense of belonging, etc.);
2. Personal identity and valuation, such as self-concept, self-esteem, and pride;
3. Personal agency in which one has a sense of self-efficacy, internal locus of control, responsibility and independence, etc.;
4. Emotional and somatic expression of well-being, the negative indicators of which are stress, fear, anxiety, brooding, irritability, risk-taking, and problems of concentration, sleeping or eating, etc.;
5. Cognitive and cultural skills.

Woodhead’s model is comprehensive and well-regarded. Far from a static indicator-based approach to well-being, his model recognizes that even in the context of extreme poverty, children are social actors and that the perception they have of their lives is sensitive to culture and time, as well as to the compromises children have to make between their own needs and that of others (Camfield et al., 2009).

Woodhead, and later Leka and Jain (2011), are of the opinion that instruments measuring the well-being of adults at work could not be just transposed to children and that specific tools would be needed. In addition, Woodhead cautioned that the risks posed by work are not the same for all ages, given the different stages of neurodevelopmental and social transformation that occur during the ages when many children are beginning to work, (commonly between 11 and 16). Recently, researchers have determined that this developmental period extends, in fact, into the early twenties (Sawyer et al., 2018). Therefore, in order to be able to evaluate the impact of work on psychological health and well-being of children, a new tool would have to be developed and validated that included all three of the critical sets of requisite variables, i.e., those related to work, to children, and to psychological functioning.

2. Methods

2.1. Study design

This research arose from the concern that very little is known about

how the lives and futures of children are affected by working in adverse conditions, and even less about the effect on the mind of being included at a young age in the adult world of work. Our goal, then, was to bring the rigor of statistical analysis to the study of the occupational and social determinants of children's psychological health, enabling us to understand the effects of work but most especially the factors which might be exacerbating the vulnerability of these working children, and those which might help to protect them when immediate removal from the situation was not possible. To allow for credible conclusions, measurement required application on a population-wide basis of some magnitude as opposed to the more common way psychological assessments are made which are normally of specific individuals.

The study was developed as follows: we first undertook an extensive review of existing standardized tools that had been used in assessing either adult occupational psychosocial health or children's psychosocial development, plus their nationally-validated counterparts. Using Woodhead's theoretical framework, we extracted relevant items, adapted them where necessary to the cultural and occupational context we were examining, and constructed a draft instrument which was field-tested in Pakistan. Particularly helpful in this were tools used to assess rehabilitation needs of child soldiers. A second field-test was conducted in Nepal for the purpose of generating further indicators of psycho-social well-being among child labourers and to rank them. Items derived from this and the previous work were compiled, resulting in a list of 66 possible questions, which child workers organized into categories through pile-sorting. A third validation study was then conducted among Nepali child labourers ($n = 180$) and non-working peers matched for age, ethnicity and locality ($n = 180$) to reduce the items to those most relevant and indicative of good psychometric properties. In all, the draft instrument was field-tested three times, revised, and validated before being employed as part of ILO's health study of child brick workers (Hofman and Gunn, 2014; Gunn et al., 2015; ILO, 2019). This instrument needed to fulfill three main criteria: it needed to be appropriate for the age group which was most likely to be working for at least two years (i.e., children between 11 and 18 years of age)¹, useable cross-culturally, and capable of being employed by non-specialists². The resulting questionnaire is called "Instrument for the Psychosocial Assessment of Working Children" (IPAW).

IPAW presently consists of 48 questions (it is available upon request in several languages). The first 16 questions were administered only to child workers because they are related explicitly to the work and its context. The last 32 questions were administered to both working children and the comparison group and explore feelings which might be common to both. The children's responses were recorded using a frequency Likert scale of 4 degrees: *never*, *sometimes*, *often*, and *always*. Pictograms of a glass filled with water at varying levels were used to help the child conceptualize the scale. The questions were carefully formulated so as to allow the children to express their own feelings but to avoid being upsetting or unnecessarily intrusive. The interviewers were from the same region as the respondents but not associated with the work context. They had been trained in the special techniques of interviewing children and carried out the interviews in local dialects. The children were interviewed individually at some distance from others although within sight of family members, which was particularly important in the more traditional areas.

¹ Although the perspectives of younger children are also important, their level of understanding would require a different assessment tool plus, they were unlikely to have been full-time workers long enough for the effects to be fully evident.

² The places where child labour is most common are where psychological professionals tend to be least common.

2.2. Participants

Although seven countries on three continents were initially considered for the study, availability of funds and organizational capacity on the ground led to the selection of four (Afghanistan, Bangladesh, Nepal, and Pakistan), all of which had large populations of brick kiln workers. Five sites were sampled in Afghanistan and Pakistan and two sites each in Nepal and Bangladesh.

The respondents were 915 children who were currently working in brick factories and a comparison group of 638 children from the same area who had never worked in the brick industry and who were similar to the study population in terms of key socio-demographic characteristics such as age, ethnic group, language, and socio-economic status (as evidenced by local indices of wealth such as domestic livestock, radio, appliances, cookware, type of dwelling). The children working in the brick kilns and the comparison group differ in that the former are more likely to have moved recently, less likely to attend school, and more likely to have had significant injuries during the last year. The brick workers and the comparison group are similar in that both undertake other kinds of work such as care of smaller children or elders, cooking, farm activities, and housekeeping. They are also similar in being exposed to environmental stress (e.g., drought) and conflict.

The samples were randomly selected from a site-based census and consisted of girls and boys between 11 and 18 years of age who had worked in the brick factories for at least two years. Due to the fact that brick kilns may be clandestine, remote, difficult to access, and operating only seasonally, it required considerable effort to do the random sampling of the study sites and respondents requisite for a quantitative study. Table 1 presents the number of respondents in each of the study countries and their percentage in the total sample.

Table 2 presents the frequencies and percentage of respondents for the socio-demographic variables of interest (frequencies by country are

Table 1
Frequencies and percentage of working and non-working respondents by country.

	Working children	Comparison group	Total
Afghanistan	398 (50%)	403 (50%)	801
Bangladesh	70 (64%)	40 (36%)	110
Pakistan	250 (74%)	89 (26%)	339
Nepal	197 (65%)	106 (35%)	303
Total	915	638	1553

Table 2
Frequencies and Percentage of Respondents on Socio-Demographic Variables.

	Variables	Frequencies (%)	
		Workers (n = 915)	Controls (n = 638)
Age	less than 12	300 (33%)	166 (26%)
	13–15	314 (35%)	306 (48%)
	16–17	295 (32%)	162 (26%)
	Missing values	6	4
Gender	Girl	245 (27%)	427 (67%)
	Boy	670 (73%)	211 (33%)
Education	Attending school now	Yes	123 (17%)
		No	586 (83%)
	Missing values	206	2
Family	Lives with family	Yes	798 (88%)
		No	110 (12%)
	Missing values	7	0
Migration	Moved recently	Yes	563 (62%)
		No	345 (38%)
	Missing values	7	15
Injuries	Major injuries in last year	Yes	506 (56%)
		No	392 (44%)
	Missing values	17	25

available upon request).

2.3. Work-related characteristics of the study population

Although many children are already assisting in the work at the brick kilns by age 5, the majority begin to have a substantive role between the ages of 8 and 12. By age 11, the number of hours children worked is substantial, with a mean of 6 days a week and 8 h a day. The sex distribution of child workers varies with the culture; in Afghanistan and Bangladesh fewer girls are working particularly after puberty, whereas in Nepal the sex distribution was roughly equal. Younger children are employed mainly in shaping bricks; older children may do heavier work of hauling clay and other materials; none of the children were found to be working in the direct vicinity of the burning kilns (see ILO, 2013, 2014a, 2014b, 2015 for the individual country reports; Gunn, 2013, for the synthesis report of the ILO four country brick kiln study).

3. Results

3.1. Analysis of the psychometric qualities of the questionnaire

We used a confirmatory factorial analysis (CFA) to ascertain the extent to which the dimensions that were supposed to be assessed through our questionnaire, as per the theoretical work of Woodhead, fit with the structure of the data. Analyses were done on both parts of the questionnaire: Part A, which was administered only to the children working in the brick kilns and included questions on work-related psychosocial functioning, and Part B, focusing on psychosocial functioning independent of the work, which was administered to both the brick workers and the comparison group.

3.1.1. Factorial structure of part A of the IPAW (Items administered only to working children)

The confirmatory factorial analysis (CFA) presented a three-dimensional structure for the 16 items of the work-related questionnaire. The model giving the best adjustments (RMSEA = 0.06, SRMR = 0.033, CFI = 0.954, TLI = 0.931) is shown in the Fig. 1.

This CFA allowed us to explore the factors predicted by the theory and the items associated with them. As shown in Table 3, Factor 1 named Stress at work included 4 questions referring to a sense of pressure, obligation, and insurmountable challenges. Factor 2 named Self-esteem at work included 3 questions related to self-competence and social recognition. Factor 3 named Supervision at work included 2 questions related to oversight and training.

It is interesting to note that these three factors are not totally

Table 3
Items making up the 3 factors of well-being at work.

Factors	Items
Stress	Do you feel tired because of the long working hours or heavy work load?
	Does your family, employer or others ask too much of you?
	Do you feel under pressure to work faster and harder?
	Do you feel like your work prevents you from doing things you would like to do?
Self-Esteem	Do you feel like you have the skills needed to do your job well?
	Do you think others appreciate the work you do?
	Are you comfortable with the people you work with?
Supervision	At work, do you feel that people watch over you to make sure you don't get hurt?
	Do people at work teach you what to do and how to do it?

independent: Stress and Self-Esteem are correlated to 0.4, Self-Esteem and Supervision are correlated to 0.5.

3.1.2. Factorial structure of part B of the IPAW (Items administered to both brick workers and non-brick workers)

On the questions 17 to 48, administered to the 2 groups of children and on which their comparison was based, the CFA isolated the 3 factors predicted by theory. The model had correct adjustment indicators (RMSEA = 0.046, SRMR = 0.033, CFI = 0.943, TLI = 0.926) and gave the structure shown in Fig. 2.

In this model, the first factor, which we have labeled Emotionality, draws on four questions related to uncomfortable emotions such as sadness and fear. It relates to Woodhead's concept of "emotional and somatic expressions" and also to the concept of "emotional exhaustion" documented in the occupational psychosocial literature on adults. The second factor, which we have labeled Security, deals with Woodhead's concept of "personal security"; it is comprised of four questions related to emotional support and self-confidence. This factor is of great interest because, while all of the study population (working and non-working) are living in a precarious social and economic environment, this will indicate whether the working environment creates in the working children a greater need to rely on family and friends, and to look to the future for reassurance. Secure attachment, as a prominent concept in psychological studies of children but not in OSH studies, is important to measure for working children because it emphasizes children's critical need for attachment to a reliable and trusted figure or consistent safe environment. The third factor, Mistreatment, is composed of four questions on children's experience of being physically beaten, rejected, punished or criticized. This factor has been documented in the adult occupational psychosocial literature, often linked to bullying, sexual

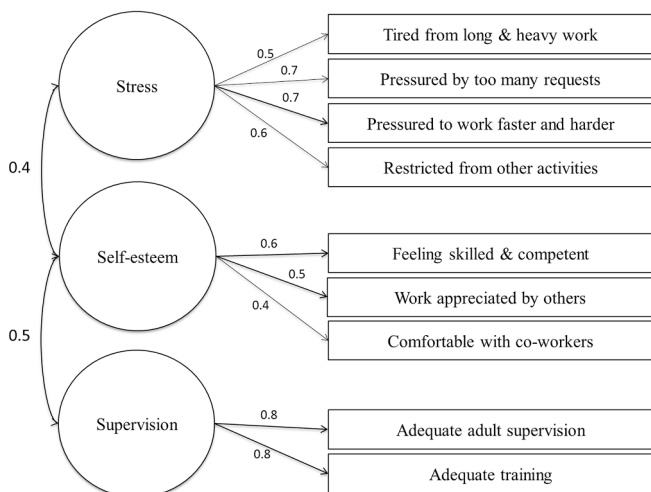


Fig. 1. Confirmatory structure of the work-related questions.

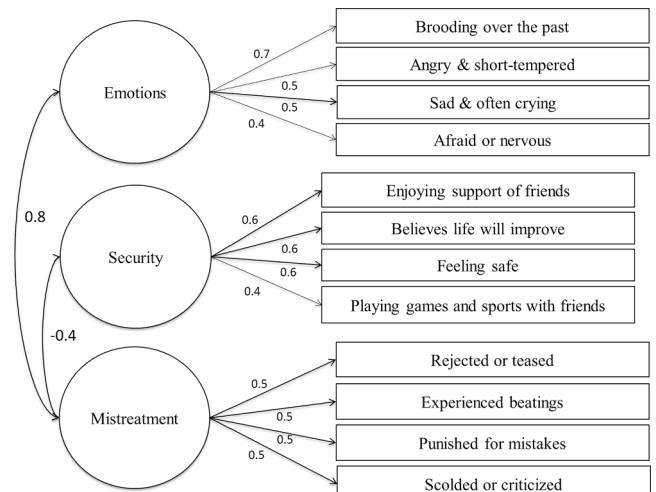


Fig. 2. Confirmatory structure of the second part of the questionnaire.

harassment, or intimidation (Einarsen et al., 2011).

These three factors are not totally independent: Emotions and Mistreatment are related at 0.8, Security and Mistreatment are negatively related at -0.4. These correlations give us additional information toward our understanding of the situation. Table 4 presents the items measuring the three factors of children’s well-being; they were examined for both groups of respondents: the children working in the kilns and those who were not.

3.2. Exploring the relationship between work and psychological health

Having verified the quality of the measurement instrument, we were then in a position to test the hypothesis that there is an association between working in brick kilns and the psychosocial well-being of children, and whether the observed effects, if any, are determined by other key variables such as sex, age, injuries sustained during the year, housing conditions, migration status, geographical location or school attendance.

The first step toward isolating the effect of work was to analyze the distributions of the three psychosocial factors of well-being Emotionality, Security and Mistreatment (Table 5) and their correlations with all the variables under study (Table 6).

Before estimating the impact of work on the three psychosocial factors of well-being in an integrated model, i.e., a model in which all four countries were included, we felt it necessary to see what effect, if any, their differing cultural and political contexts would have. Therefore, we first conducted a stratified regression analysis by country. The results of this analysis showed that, regardless of the country, the crucial variables of being a worker and of attending school had approximately the same effects on the psychosocial factors associated with well-being in terms of size and direction. The models were quite similar and justified the introduction of the four countries in an integrated model that made it then possible to study the effects of the variables Work and School controlled from the country contexts (the amount of information being extensive, the stratified models are not included here but are available from the authors upon request).

In the integrated model, we estimated the impact of eight variables on well-being: Work in brick kilns (“yes” or “no”), Country (Pakistan,

Table 4
Items making up the three factors of well-being of children (not concerning only workers).

Factors	Items
Emotionality	Do you think back about all the bad things that have happened to you?
	Do you get very angry and often lose your temper?
	Do you feel sad and like crying?
	Do you feel afraid or nervous?
Security	Do you have one or more good friends that support you?
	Do you feel your life will get better some day?
	In your day to day life, do you feel safe?
Mistreatment	Do you play sports or games with friends?
	Do you get beaten at home or work?
	Do people reject or tease you or call you names?
	Have you been severely punished for mistakes made?
	Do you get scolded, or criticized or made you feel small or stupid?

Table 5
Descriptive statistics for the three psychosocial factors.

	Emotionality	Security	Mistreatment
N	1535	1539	1543
Missing values	20	16	12
Means	47,62	59,64	43,08
Standard deviation	15,84	17,19	15,24
Asymmetry	0,73	0,01	1,04
Kurtosis	0,25	-0,8	1,1

Table 6
Correlations among the three psychosocial factors and all study variables.

	Emotional	Security	Maltreatment	Female	Age	Injuries	In family	Migration	Pakistan	Bangladesh	Nepal	Afghanistan	Worker	School
Emotional	1													
Security	-0.184**	1												
Maltreatment	0.493**	-0.278**	1											
Female	0.189**	0.133**	0.133**	1										
Age	0.101**	-0.032	-0.084**	-0.159**	1									
Injuries	0.048	-0.096*	0.006	0.053*	0.066*	1								
In family	0.050	-0.044	0.093**	0.071**	0.066*	0.066*	1							
Migration	0.023	-0.296**	0.091**	-0.096**	-0.200**	-0.200**	0.012	1						
Pakistan	-0.089**	-0.105**	-0.047	0.146**	0.091**	0.326**	0.012	0.012	1					
Bangladesh	0.034	0.190**	-0.048	-0.172**	-0.262**	0.039	-0.262**	0.039	-0.146**	1				
Nepal	-0.102**	0.047	0.104**	0.286**	-0.136**	0.018	-0.136**	0.018	-0.260**	-0.136**	1			
Afghanistan	0.137**	0.145**	-0.093**	-0.114**	-0.109**	-0.103**	-0.103**	-0.044	-0.546**	-0.285**	-0.508**	1		
Worker	0.084**	-0.359**	0.175**	0.005	0.164**	0.164**	0.165**	0.555**	0.159**	-0.508**	0.061*	-0.194**	1	
School	-0.234**	0.424**	-0.202**	-0.059	0.138**	-0.075**	0.138**	-0.463**	0.149**	-0.014	0.059*	-0.137**	-0.615**	1

Note: ** p < .05, * 0.05 < p < .10.

Afghanistan, Nepal, Bangladesh), Gender (“girl” or “boy”), Age, School attendance (“yes” or “no”), living In family (“yes” or “no”), Migration from a different district (“yes” or “no”), Injuries in the past year (“yes” or “no”). To study the possible co-variation of work and school attendance on these factors, we first used a model where we study the impact of Work in kilns, and in two others we introduced the variable School attendance.

Overall, the best adjusted models account for 10 to 43% of the variance. The variables Work and School have varied effects on the three psychosocial factors of well-being as seen in Table 7 (detailed regression models are available upon request).

3.2.1. The determinants of the factor Emotionality

The factor Emotionality include sadness, anxiety, and anger (propensity for being engaged in interpersonal conflict). In Model 1, we introduce all variables except Schooling. The adjusted R² is low (12%). The main effect is due to gender. Girls have a 0.28 standard deviation (SD) score higher on Emotionality than boys; they are more depressed, more anxious and more in conflict than boys. Age also has a significant effect: each additional year increases the Emotionality score by 0.15 SD, i.e., the older the children, the more emotional problems they encounter. Surprisingly, the fact of living with the family appears to have a negative effect on the child’s emotions (+0.07), but less strong. On the other hand, other variables, such as location, may have positive associations. For example, compared with Afghanistan, the emotional condition of children in Nepal (−0.20) and Pakistan (−0.19) is not as bad as that of children in Bangladesh (+0.05). Migration and Injuries appear to have no effect.

Once these six factors are adjusted, we find that working in brick kilns still has a significant deleterious effect on the Emotionality scores. Compared to non-working children, the working children have significantly higher scores of 0.15 SD. The results indicate that work is associated with a negative emotional effect, such that the children are more sad, nervous, angry, and anxious.

In Model 2, the variable School is introduced. The adjusted R² of the model is higher and significant but its explanatory power is still low (14%). Attending school has a protective effect of −0.14 SD. Those respondents who report that they attend school are less depressed or angry than children who are not, and they report fewer negative emotions. The point of interest here is that the introduction of the variable School in the model annihilates the effect of work to the extent that it is no longer significant. In other words, once School is controlled, the deleterious effect of Work in kilns on children’s Emotionality disappears, which implies that attending school has a beneficial effect.

As some children may be working and attending school at the same

time, Work and School are jointly determined. To isolate the variable Work from the effect of schooling, we developed a third model to differentiate the children who are combining school and brick work (school and work) from those who are not working (school and non-work). The results showed that “school + work” was not significant whereas “school + non-work” is significant (negatively) ($\beta = -0.217, p < .000$). The interrelationship between work and school is no longer ambiguous and we can conclude, therefore, that it is the fact of going to school which is protective. No interaction has been found between Age and Work nor any between Age and School (respectively $\beta = -0.285, p = .159, \beta = -0.255, p = .10$).

This finding suggests that the deleterious effect of working in the kilns on the children’s emotions could come from the fact that work deprives them of the opportunity for the social experiences, diversion, learning and intellectual stimulation that education provides.

3.2.2. The determinants of the factor Security

This factor includes friendships, social support, optimism, and a sense of safety. In the first model where all variables except School are taken into account, the adjusted R² is high (40%). The effect of working in brick kilns is noticeable on this dimension of well-being: working children have −0.63 SD lower than the comparison group of non-working children. In a second model, the variable School is introduced to see its impact on sense of security once Work is controlled: R² goes to 0.43. In a third model, when the variable School is divided into “school + work” and “school + non-work”, the R² goes to 0.433. There continues to be a principal and negative effect of the variable Work. All other things being equal, working reduces the sense of personal security score by more than 0.46 SD. Compared to the control group, working children feel significantly more insecure, are less optimistic, and feel less closely connected to friends.

Gender has a negative association as well, rising to −0.096. Girls have fewer friends, play less and engage in fewer leisure activities (games or sports), do not think their life will improve and feel generally more insecure than boys, when all other variables are adjusted. Living In the Family, again, appears to have no positive or protective influence. It lowers the scores by −0.052. On the other hand, there is considerable differentiation according to which country is being examined. Not surprisingly, Afghanistan which is presently at war has a negative score in relation to the other three countries. For example, children report greater security in Bangladesh (+0.255), followed by Nepal (+0.124), and Pakistan (+0.116). Once these factors are controlled, neither migration, nor age, nor previous injury seems to have an effect on the factor Security. “School + non-work” appears to have a beneficial effect (+0.165) suggesting that while education can mitigate, it does not offset

Table 7
Regression models analysis.

	Emotionality			Security			Mistreatment		
	model 1	model 2	model 3	model 1	model 2	model 3	model 1	model 2	model 3
	β	β	β	β	β	β	β	β	β
Female	0.281**	0.250**	0.237**	−0.075**	−0.111**	−0.096**	0.190**	0.168**	0.168**
Age	0.154**	0.127**	0.124**	−	−0.14	−	−	−0.054*	−0.054*
Injured	−	0.099**	0.101**	0.052**	−	−	−	−	−
In family	0.071**	0.068**	0.064**	−0.31	−0.056**	−0.052**	0.089**	0.079**	0.079**
Migrant	−0.01	−	−	0.008	−0.016	−0.025	0	−	−
Pakistan	−0.192**	−0.151**	−0.145**	0.055**	0.125**	0.116**	−0.152**	−0.049	−0.049*
Bangladesh	0.049*	0.080**	0.085**	0.262**	0.261**	0.255**	−0.032	−0.027	−0.028
Nepal	−0.200**	−0.174**	−0.167**	0.136**	0.132**	0.124**	−0.200**	−0.201**	−0.201**
Working	0.149**	0.38	−0.46	−0.633**	−0.565**	−0.462**	0.237**	0.223**	0.226**
School	−	−0.139**	−	−	0.069**	−	−	−0.051	−
School + Work	−	−	−0.031	−	−	−0.015	−	−	−0.031
School + Nowork	−	−	−0.217**	−	−	0.165**	−	−	−0.047
R ² adjust	0.119	0.140	0.144	0.401	0.427	0.433	0.097	0.107	0.106

Note: ** p < .05, * 0.05 < p < .10. The reference groups for Female is Male, for Injured it is Not injured, for In family it is Out family, for Migrant it is No migrant, for Nepal/Bangladesh and Pakistan it is Afghanistan, for Working it is No working, for School it is No school, and for School + work and School + no work it is No school + work.

the negative effect of work. The effect of work decreases from -0.63 in the first model to -0.46 in the third model, but does not disappear. It is on the Security factor that work has the strongest effect. No interaction has been found between Age and Work nor between Age and School (respectively $\beta = 0.155$, $p = .294$, $\beta = 0.067$, $p = .640$).

3.2.3. The determinants of the factor Mistreatment

The factor Mistreatment includes being beaten, punished, criticized, or feeling rejected. In the first model, when we examine Work independently of School, we eliminate two non-significant variables: migratory status and injuries. In the second model School is introduced, in the third model this variable is once again split into "school + work" and "school + non-work".

The three models are significant but their explicative power is limited; they have an adjusted R^2 of 10% and 11%. The variables linked to School that were introduced in the second and third models are not significant. For Mistreatment, it is the effect of the variable Work that is the most important ($+0.237$). Compared to the respondents who are not working in the brick factories, the working adolescents feel they are more often abused, criticized, and punished.

After work, the second strongest effect is that of gender. Being a girl increases the risk of feeling mistreated by 0.17 *SD* compared to boys. Other factors have an effect as well. Note the effect of the variable Living In family, which significantly raises the score ($+0.08$). Children who live with their families, compared to those who live with friends, have a much greater sense of being mistreated. The country, again, also appears to be a significant factor in sense of mistreatment. For example, Nepal has notably lower scores (-0.20) than Afghanistan. Age also displays some effect (significant at 0.06) in that the older the children, the less they feel mistreated (-0.054 *SD* per additional year). School attendance (models 2 and 3) does not show an effect on the sense of mistreatment. That means that, contrary to what happens with the two other factors of well-being, the deleterious effect of work is not mitigated by school. No interaction have been found between Age and Work and between Age and School (respectively $\beta = -0.155$, $p = .294$, $\beta = -0.042$, $p = .813$).

To summarize the results, the variable which has been shown to have the most important and constant impact on the children's well-being is the fact that they work. Work increases the expression of negative emotions, heightens the sense of mistreatment, and reduces the sense of personal security and social support. However, its negative effects are shown to be reduced when the working child attends school. Other variables which are also demonstrating a powerful impact are gender and the country where the children live.

Having demonstrated these effects individually, it is important to note that they also have a cumulative effect because children and adolescents all have simultaneously a gender, an age, a geographical location, a living situation, and many are (or are not) experiencing health issues or attending school as well. We can now deduce with some confidence that certain composite profiles are therefore particularly "at risk" of psychosocial distress. For example, Afghan girls who are living with their parents, not attending school, and working in the brick factories are in a very worrisome situation as they display more negative emotions, a greater sense of insecurity, and lack positive social relationships.

These findings lend support to the hypothesis that arduous work, such as in brick factories, and lack of schooling have a negative impact on the psychosocial well-being of children in the age group 11 to 18 in these countries. In relation to the comparison group, the working children in this study experienced less social support, they have less confidence in others and in their future, and they have a significantly greater feeling of abuse.

These findings should not be construed as indicating that work, in and of itself, is bad for young people's psychological health. Rather, there are certain activities and circumstances (cultural, social, familial and occupational) that can make it dangerous, particularly for children. These activities and circumstances seem to be present in brick kilns, and

the nature and severity of the psychosocial discomfort underscores the need to take urgent action on their behalf. Research of this type, and these results in particular, which show the gravity of the situation for children, especially girls, who are working but not going to school can provide the impetus for political actors to take concerted action against child labor in brick factories. It can also be persuasive for parents who must make choices, and for workers' and employers' organizations and NGOs who must prioritize their efforts. On a wider scale, this type of research can demonstrate the importance of taking psychosocial factors – not only physical safety – into account when assessing which types of work are suitable for adolescents of working age.

4. Discussion

The instrument (IPAW), which was developed for the purpose of studying the psychosocial impact of work on children in lesser developed countries, may be of considerable interest to action agencies and researchers for several reasons: it reliably measures psychosocial variables, is easy to incorporate in population-based studies, is comprehensible to children, even those who are non-literate, and can be administered and interpreted by non-professionals. The target group for IPAW is children of 11–18 years, although it has been tested with youth, 18–25 years, and younger children (aged 7–10 in Bangladesh). When administered in the local dialect, it has been demonstrated capable of being successfully used cross-culturally. It enables children, who are active social actors, to express their points of view and thus makes it possible to evaluate the quality of their life at work and outside.

Psychosocial well-being of child workers is expressed in a number of dimensions. We have identified three which are specific to work (Stress, Self-esteem, Supervision), and three others which are not specifically work-related (Emotionality, Personal Security, Mistreatment). Of the dimensions which theory supports and for which our analysis has empirical confirmation, there is one dimension – personal security – which generally receives little attention in occupational health, but which these results suggest is an important factor for younger workers. Additional research could help to confirm whether this is, in fact, age-related or an artefact of an environment where poverty, war, and bonded labor practices prevail.

This research has sought to test the determinants of psychosocial well-being, and at the same time to assess the plausibility of a causal relationship between work and well-being. The explicative power of all the confounding variables under study is relative to the models, but the trends are coherent. In addition to the effect of work, the results which we find to be of particular note are the following: a) Gender – being a girl demonstrates an overall negative effect with respect to all psychosocial factors studied. Compared to boys, girls have higher scores for negative Emotions, lower scores for Security, and higher scores for sense of Mistreatment; b) Migration – the lack of a noticeable effect due to migration when work is controlled is interesting because it suggests that if work is safe and age-appropriate and living conditions are good, migration is not psychologically deleterious in itself; c) Injury – the fact of being injured has some contribution ($\beta = 0.10$) but only with regard to the Emotionality score and when adjusting the effect of attending school. Perhaps more telling is the absence of a link between injuries and the two other psychosocial factors which suggests that psychological health and physical health may be independent of each other. This argues for including psychosocial items in national labor force and health surveys. In other words, it is not sufficient to collect medical data to have a real indication of children's health and well-being.

In the end, when socio-demographic variables are controlled, working in the kilns is shown to have a marked negative psychosocial effect on the children and our hypothesis that there might be positive effects associated with working with the family is not confirmed. In short, the fact of working in kilns reduces the adolescents' psychological health and well-being. Vis-à-vis children who do not work in the brick industry, the working children have higher Emotionality scores, lower

Security scores, and higher Mistreatment scores.

We have noted, however, that attending school can mediate the harmful effect of work with respect to two of the three psychosocial factors of well-being and suggests that school may have a significantly protective effect. These results constitute a strong argument for providing schools as a way to provide immediate psychosocial protection for the working children. In addition, the lack of a significant relationship between Gender and School leads us to conclude that attending school is crucial for both girls and boys.

Brick factories are obviously an extreme form of work in which children and youth are employed. Until similar studies are conducted on other common types of children's work, such as agriculture, domestic service, and tourist industries, it is not possible to conclude that the same factors will be operant in these as well, although we fully expect them to be. It will be important in future also to analyze statistically, the psychosocial impacts of other factors which are specific to the workplace and type of work; these include work-related stress, high-speed and repetitive tasks, lack of job control, long hours, early age of work onset, and lack of appropriate supervision and training.

4.1. Limitations of the study

The situations where child labour is most prevalent are also those which present the greatest challenges for conducting research. Consequently, research designs have had to be adapted, often creatively, to the exigencies of the situation.

Chief among the constraints faced in this study was that of identifying appropriate matches for the study population of child workers in that a significant proportion of the families working in the brick kilns were not year-round residents, some were indebted or bonded, and many had suffered a variety of adverse economic impacts from war, drought, or other calamity.

Another factor of potential bias is translation. This was particularly important in administration of the IPAW because it is essential to convey accurately the nuance and subtlety of the questions, not only into the dominant languages (Urdu, Pashtun, Hindi, and Bangla) but also into local dialects. Sensitivity to cultural modes of expression are crucial here, especially when concerning matters of violence or socially decried activities, and necessitated the use of local interviewers, often less experienced, rather than professionals from urban areas.

Sampling bias, such as the "healthy worker effect", wherein the oldest or most able child is sent to work is a concern that is often raised in regard to child labour studies. This appears to be less of an issue in this study in that the brick kiln families tend to bring all their children to the worksite to assist including the very young, the exception being post-puberty girls in religiously conservative areas. Nonetheless, sampling bias could very well be operating with respect to the selection of sites and respondents in that brick factories are not necessarily registered, nor are there written contracts with the workers. Whereas the study attempted to address this lack by undertaking the time-consuming work of developing its own lists of kiln sites and subsequently a census of their workers for sampling, the mobility of the workers, and political instability may well have compromised this process.

In spite of these drawbacks, it is clear that this study was able to generate a large and unique set of quantitative information. The psychosocial component benefited from the detailed data on physical health, work tasks and working conditions, demographic characteristics, educational information, and environmental assessment which were collected as part of the larger occupational health study of children working in the brick factories.

5. Conclusions

We have undertaken extensive methodological preparation in order to take advantage of a very valuable empirical data set – the psychosocial profiles of children working in brick factories in four countries

along with a comparison group which does not do such work.

The methodology employed in this study was shown to be reliable and relevant for use in a challenging research environment and a tool for assessing psychosocial well-being is now available to be tested in other occupational sectors. The psychosocial dimensions of working children posited in theory by Martin Woodhead have been empirically validated in large part. An additional dimension has also emerged – that which deals with attachment and sense of personal security – which was unexpected and may be particularly of concern in relation to child workers.

Our statistical model provided a strong fit for the data, and the variable Work in the brick kilns emerged as a powerful contextual predictor of child psychosocial well-being. Today, in the political, technological and economic context of the countries studied, the children who work in brick factories are at greater risk of being emotionally upset, of feeling personally insecure, and feeling mistreated than their peers who do not work in the brick factories. Reinforcing this finding, the results of our study have not identified any psychosocial domain where work in brick factories has a positive effect for persons less than 18 years of age. Whereas some of the child workers do not feel bad, none of them feel better, on the whole, than their peers in the comparison group.

This study shows that from the psychosocial standpoint alone, i.e., apart from any physical impacts, brick factories are a dangerous form of work for youth. It adds force to the argument that, because this is an important source of income for very poor families, more effective means of responding to the problem must be found. Whereas there is an immediate benefit to the families of the young members of the family working (i.e., "putting food on the table"), we now know that there is also a clear psychological cost. The sense of abuse, insecurity and anxiety the working children are experiencing now, can have a deleterious effect on their ability as adults to cope with a rapidly changing world. Not only is it unacceptable that they must endure a reduced quality of life at present, but damage to their future potential will sadly ensure that the cycle of poverty is perpetuated. Our analysis suggests that children must be protected not only from the visible dangers of this type of work, but also from the invisible psychosocial dangers that hamper their development.

There still remains analytical work to be done. We need to understand what is putting girls at much greater psychosocial risk than boys. And we need to see if and how other work-related factors (e.g., stress, repetitive tasks, lack of job control, long hours, early age of work onset, and lack of social or familial support), might be contributing to negative psychosocial outcomes.

There is also further field study to be done. It is important to know more about the coping strategies which working children develop in order to survive within such difficult situations. Such research might show, for example, their capacity to ignore things that cannot be changed, or to avoid thinking of the future, or to take pleasure in providing support to their families and in seeking a better life for their younger siblings. In that the data suggest school to be a potential protective factor, it is essential that we learn the details of this relationship.

Finally, this research provides evidence to support the conclusions of the Lancet Commission (Patton et al., 2016) and the Global Strategy for Women's Children's and Adolescents' Health (Temmerman et al., 2015), which call for legal and political measures to be taken to improve the mental health of working children and adolescents including safety in the workplace, the promotion of health and access to care, the extension of social protection, the prevention of violence, and free and quality education as an alternative to work.

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