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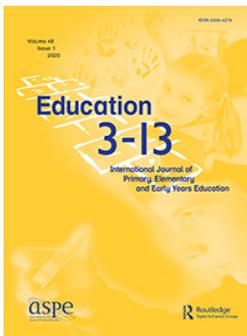
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Injury risks during outdoor play among Swedish schoolchildren: teachers' perceptions and injury preventive practices

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ABSTRACT

Approximately 36,000 Swedish children seek medical care annually because of injuries during school time. The purpose of this field study is to investigate risky outdoor play at the school yard and to describe teachers' perceptions of risk and safety in relation to learning and development. The study includes observations of children (6–12 years old) during outdoor activities as part of the school's activities and includes focus-group interviews with teachers and children. Children were seen climbing high in play facilities, speeding down slides, or competing with sticks in the woods. Different views of risk and safety among the participants influence outdoor play activities. Teachers' knowledge of risk seems to be derived from common sense and personal experiences rather than from a professional perspective. A joint approach of educational and medicine disciplines is desirable when it comes to children's health and development.

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KEYWORDS

Outdoor play; injury prevention; risk; safety; social representation

Background

Children in elementary school often participate in physical activities including vigorous running, jumping, climbing, dropping, and spinning (Hyndman and Telford 2015), with outdoor play among children seen as promoting physical skills, and social, emotional and cognitive development (Brussoni et al. 2012; Robinson and Barrett 2017). However, in addition to the positive development and challenges it provides to children, outdoor play also entails risks (Hyndman and Telford 2015). Annually approximately 30,000 Swedish children visit the emergency departments due to school-time injuries. Children, 6–12 years of age, especially boys are often injured in the schoolyard (National Board of Health and Welfare 2016), with several injury incidents causing contusions and fractures (Ball 2007; Gyllencreutz, Rolfsman, and Saveman 2015).

The school is a place where educational professionals are responsible for children's safety and wellbeing (Ministry of Education 2010; Sweden Parliament 1977, 1160) as well as their physical development but there is a growing debate about the balance between children's safety and physical challenges (Christensen and Mikkelsen 2008; Roberts, Smith, and Bryce 1995). However, the balance between safety and risk in a school context is rarely explored in research. Consequently, little is known about how teachers perceive risks and preventive strategies in school context outdoor play, and how these perceptions shape their approach to practice (Dale 2012; Hyndman and Telford 2015; Lindqvist and Nordäng 2011). There is, thus, a need to explore teachers' and children's views of risks and safety in the schoolyard and thereby being able to identify and understand the mechanisms and processes that precede injuries.

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Aim

The aim of this study is to explore injury risk situations among school children (6–12 years old) during outdoor play in the school environment. To be able to answer this aim, the following research questions have been formulated: What kind of risk situations can be identified? What are the perceptions of injury risks and preventive strategies among teachers? How can the identified perceptions and assessments be understood in relation to teachers' professional tasks and responsibilities?

Theoretical framework

We are using the theory of social representations to describe and understand teachers' perceptions of risk and outdoor play, as well as their views on what constitutes good experiences in relation to physical play for young children. Social representations denote the beliefs, concepts, and knowledge that people develop collectively and are reflected in communications, experiences and practices. They are conditioned by symbolic experiences of everyday life formed by social interaction with others (Purkhardt 1993). Social representations are circulating in conversation, conveyed in words, messages and images in the media and take the form of behaviours and material or spatial arrangement. Representations contribute to a form of everyday knowledge, 'common sense' that holds us together and help us orient to social life. These expressions or social representations of a particular phenomenon give people the sense of a social bond as well as substance to group functioning and actions. In this way, individuals and groups who share the same representations understand actions on the basis of similar premises. Actions are also influenced by social representations embedded in organisational and institutional cultures. Representations not only influence people's daily practices, but *constitute* these practices, in a cycle of reinforcement of ideas and beliefs (Chaib et al. 1996).

The theory of social representations consists of two mechanisms; anchoring and objectification, that should be regarded as complementary and interdependent. The function of these mechanisms is to concretise beliefs and preconceptions into a concretised social reality (Moscovici 2000). When we encounter an unfamiliar phenomenon, we first attempt to anchor it in existing knowledge, which ultimately leads us to make sense of and classify this new phenomenon in light of previous knowledge (Chaib et al. 1996). The first anchor of the unknown in something already familiar which can lead to the objectification of the phenomenon with previous experience and knowledge that forms the process basis (Hayes 2005; Marková 2012).

The theory of social representations will, thus, be used in the discussion of our results to illuminate how the teachers perceive risks and deal with risk assessment and thereby how they act and practice based on these perceptions.

Method

Setting

The research was conducted in the school context where the participants (children and teachers) engage in natural activity and interaction. A Swedish primary school-day is of maximum six hours, of which about one fifth is intended for outdoor activities. One or two teachers are scheduled to be outdoor during these activities. Two schools were purposively chosen for their location in an urban environment but with a natural milieu for outdoor play. They were chosen for their schoolyards similarities but also the differentials. Both schoolyards comprise a little forest. One of the schoolyard had a small constructed adventure area with soft surface below the playequipment. For more information about playequipment see [Table 1](#).

The location is in the northern part of Sweden, with four seasons and a climate closely touch to sub-arctic. The observations were carried out over four autumn weeks in October and November 2012 and two winter weeks in February and March 2013. The outdoor surface conditions were

Table 1. Characteristics of play equipment at the two schools.

Play equipment schoolyard	School 1	School 2
Swing	Frame but no swings	Four regular and one large
Climbing structures	One climbing structure without net, and one 'play hut' with a climbing roof.	Two climbing circles, one climbing net, one climbing tower and one arm climbing frame
Skating rink/soccer area	One/Two	One
Slide	No	One (large)
Seesaw	No	Two
Tree boat/house	One	One
Balance equipment	No	Two

either bare ground or covered with snow and ice. The air temperature ranged between +5° and –10° C. Furthermore, the schools were public Swedish schools with children from preschool to fifth grade. The age group (6–12 years) were chosen, based on common injuries and situations for this age group (Gyllencreutz, Rolfman, and Saveman 2015). The schools enrolled 175 and 250 pupils respectively. The school-day breaks were spent outdoor in the schoolyard.

Design

This study has a field-study design, incorporating naturalistic observations of children (Greig 2000) and focus-group interviews (Morgan 1997) with children and teachers. Since this article focuses on teachers' perceptions, data from child observations and child interviews are thus used to describe the context and will be found in the first part of the result. Furthermore, the theory of social representations is used in the discussion trying to explain and understand how teachers assess risks and preventive strategies, and how they act and practice based on these perceptions.

Participants and data collection

Observations

The observations focused on children's play activities in the schoolyard, not on specific individuals. Initially, the observations were unstructured, open and explorative to children's play (Patton 1990). The first author followed all scheduled outdoor play activities by conducting observations from a peripheral position (Løkken 1995). First, the observations were explorative but gradually the observation became more concrete and concentrated on risky play situations (Sandseter and Kennair 2011), that is situations which might result in injuries. Gyllencreutz, Rolfman, and Saveman (2015) describe activities such as play, sport and transport as the most common mechanisms leading to injuries. Thus, the observations focused on situations occurring due to, e.g. fall, collisions or violence (Haddon 1973; Janson 2005).

Observations covered six days at one school and eight at the other school. The scheduled outdoor activities were continuously observed. The activities overlapped classes, except for one-hour lunch break. Therefore, the observations could continue from 8:00 am to 3:00 pm, i.e. six hours a day, 14 days, and approximate 84 h all together.

Field notes were made continuously during the observations. Initially, an observation scheme was inductively developed from what was observed; child and teacher involvement at the schoolyard. Additional to the scheme, a deductively structure was developed from existing literature on risky play (Sandseter 2007) incorporating environmental factors, and school intensions based on policy and law. Both the scheme and structure was used to sort the large quantity of notes collected (Miles, Huberman, and Saldaña 2014). Field notes, sorted in the structured scheme, were transcribed within two days from each day of the observations (c.f. Graue 1998) and are considered as text in the analysis.

Focus-group interview

Focus-group interviews were conducted subsequent to and after the observational period. Four focus-groups with teachers and six focus-groups with children took place. In total, 28 teachers and 46 children of both gender were included. All teachers had Swedish teacher's certificate showing in which types of school, years and subjects they are qualified to teach. Their age varied between 28 and 52 and the teaching experience between two years to more than 20 years. The children in fifth grade were 11–12 years old and the children in preschool were six to seven years old (Table 2). The focus-group interviews were conducted by the first author together with either the second or the fourth author. The focus-group interviews explored the views on teacher's and children's outdoor play, attitudes to risk-taking, safety, and injury; and views on environmental factors and school intention and law that may influence risky play. The focus-group interviews lasted approximately 60–90 min and were transcribed verbatim. The transcripts are considered as text in the analysis.

Data analysis

Data were analysed from the three sources; child observations, child focus group, and teacher focus groups interviews (c.f. Graneheim, Jansson, and Lindgren 2015). Initially, all sources were separately analysed by qualitative content analysis (Graneheim and Lundman 2004; Kirppendorff 2013). Each transcript of the text was read several times to achieve an overarching understanding. Meaning units were identified and denoted while preserving content. The units abstractions were given temporary codes in the text body. The coding was used to facilitate linking and sorting the meaning units connected to each other, with the research questions in mind. Codes were then sorted into preliminary subcategories. Within this phase of the analysis, the sources, child observation and child interviews, were mixed together and led to three risky play categories described in the first part of the result. The same procedure was used for the teacher interviews, i.e. combined into categories and describing the teachers' view. Three categories of teachers views were to be found and are described in the second part of the result.

Ethics

Informed consent was obtained from the Principal at each school to approve the schoolyard observations and the interviews. The first author or the Principal orally informed all children and teachers about the study. During observations, the first author was visible and known to both children and teachers but took no initiative in relating with the children. The teachers were informed that the first author would not interact with the children, and thereby only act as an observer. Teachers, children and their families received an information letter and gave written informed consent for participating in focus-group interviews. Those who returned the written informed consent were invited to participate in the interviews. For children, at least one parent or equivalent needed to sign the consent. Participation in the focus-group interviews was voluntary. No one withdrew. The researcher informed the participants about confidentiality during data collection, analysis and publication. Children's right in research, as well as the Helsinki declaration, has been taken into account (The World Medical Association Declaration of Helsinki 2013; Swedish Research Council 2017). The project is reported to and approved by the Regional Ethical Review Board in Umeå (2012-490-31Ö).

Table 2. Number of participants in focus-groups by school and grade.

Participants in focus-groups	School 1 (<i>n</i> = 46)		School 2 (<i>n</i> = 28)	
	Fifth grade	Preschool	Fifth grade	Preschool
Teachers	8	7	4	7
Children	15	16	9	8

Results

Based on child observations and child focus groups interviews, three different contextual risky play types were identified, namely (1) Play on heights, (2) Play with speed and (3) Rough and tumble play. Initially, the characteristics of risky play types will be described. Thereafter, the teachers' views will be presented, regarding different risky play types in relation to assessments of risk and preventive strategies. Three discernible categories of the teachers' views on risky play and preventive strategies at the schoolyard occurred, namely (1) Approved play, (2) Play with limits and (3) Disapproved play.

The context of risky play types

Risky play types include elements or products such as asphalt, gravel, trees, swings and slides, but also situations where too many children played at the same space with too few adults supervising. Children describe injuries as accidents and occurring from bad luck. They expressed that everyone hurt themselves sometimes at the schoolyard, it was not uncommon with accidents according to the children. Children also believe failures help teach them new abilities to have contributed to accidents. Nevertheless, children who sustained non-minor injuries, e.g. a fracture from falling, described how they later avoided these activities because they remember the pain and do not want to repeat the experience. The children described concrete descriptions of serious injuries, e.g. fractures, twisted ankles or bleeding that occurred at the schoolyard. They also described a knocked head as serious even if that injury does not always show. Scrapes can be counted as a minor injury. Observations revealed children exposing themselves to different amounts to risky play situations. According to the children themselves, risks include acting without thinking, or doing something that feels scary, for instance climbing high, balancing, or riding fast. Some say they enjoy taking risks and testing limits whereas others perceive themselves as 'careful'. According to the children, girls seemed more 'careful' than boys. Boys play more intensely 'I don't just do, I think before I jump, but the boys don't do that' (girl in fifth grade). Children were seen limiting their own outdoor play. At one occasion, three pre-schoolers were seen playing from a high rock. One boy was going to jump, but the other two advised him; 'Don't jump! You might have to go to the hospital' the pre-schoolers said.

The empirical material revealed that playing at heights include children climbing rocks, trees, climbing frames or other play facilities. 'We used to sit on top of the climbing frames and dangle our legs' (fifth-grade child). Climbing frames vary in design and may contain netting or monkey bars. Other objects children climbed on were a wooden boat/house, a barge, and snow banks. The obvious observed or discussed risk in relation to playing at heights is that the child might fall. The children described the risks with playing at heights as fracturing arms, legs, ribs, or suffering concussions when they fell, or jumped from heights. Often, the children climbed down but were also seen jumping the last meters or grabbing a branch and letting go. On one occasion the children went on an excursion to climb on a barge (>2 m) and balance on the edge (<0.5 m). The ground underneath was covered with ice and snow.

The empirical material (observations and interviews) showed that playing with speed includes running, biking on scooters or sliding with or without sleds down snow banks. The most frequent injury mechanisms observed and/or discussed in the focus-group interviews were falls on the same level or collisions. Potholes, gravel, leaves on the ground and asphalt affected the children's risk of falling according to both teachers and children. For example, children described risks as arm fractures or suffering a concussion from stumbling or slipping. The observations showed that children collided with each other in close play or collided with, e.g. trees or rocks when sliding down snow banks.

Rough and tumble play refers both to competing children and children in more violent play, e.g. fighting with sticks. Conflicts in relation to competing games led to pushes and hits. Children described injuries such as arm fractures and concussions when playing rough and tumble. The

children expressed that many of their games contained competition and considered that as part of the play. 'However, we aren't allowed to throw snowballs at faces or throw ice' (Preschool child). Children believe that many of their games are limited because it looks dangerous, but which according to them is not, because they are used to playing that way.

Teachers' views on risky play types and preventive strategies

Approved play

Observations and focus-group interviews revealed that teachers within this category allowed children to play freely on heights, at high speed, and rough and tumble at the schoolyard. Teachers are aware that these activities can lead to injuries but are of the opinion that risks are everywhere and cannot be avoided. Injuries are seen as accidents and occurring from bad luck. 'There is nothing we can do about children getting occasionally injured' (Preschool teacher). Within this category, teachers described that it felt impossible to supervise all the children all time, especially if the schoolyards are large. Therefore it is not their responsibility if a child gets hurt. Importantly, teachers within this category stated that accidents seldom happened on the schoolyard and think it is beneficial for children's development to be exposed to risks. Furthermore, they think that failures such as injury accidents help teach the child new abilities. Instead of risk, teachers call it challenges and are of the opinion that the children learn through exposure to risks. The teachers would rather say – 'How fun, see how high you are in the tree', instead of telling the child to climb down. The teachers do not want to cultivate caution within the child, instead, they want them to test limits even if it means the child could be injured. It was seen as unreasonable to caution or overprotect children with, for instance, soft surfaces or other help if falling. The outdoor environment must not be too protected as it might inhibit the child's development. 'It (the environment, author's note) is not that protective in reality', one of the teachers said.

Several examples of approved play were when children play on heights and when children taking initiative to climb up high (>3 m) in play equipment or in trees and to sit on the branches. Other examples of approved play were when children played with speed and includes several occasions where children were observed slide down snow banks or slides. Rough and tumble play was also allowed on the schoolyard in such as fighting and fencing with sticks especially in the forest. Teachers allowed play on heights, with speed and rough and tumble and wanted the children to learn to think for themselves and make their own judgments about what was, e.g. a reasonable height to climb and speed to go down the hill. Children should learn to question and not just follow the lead. 'We want to be the opposite of rules; we want to allow children to test and develop themselves', teachers within this category said.

Play with limits

It appears that not all teachers shared the same opinions about what activities were and were not approved at the schoolyard. 'It depends' was expressed among the teachers. Within this category, teachers were seen limiting play activities. The limitations were often judged on case-to-case and influenced by things like age, development, and personality of both children and the teachers themselves. The teachers' experiences also influence how they set their limits. 'I have searched for teeth in sand after a child was hit in her face' (Preschool teacher). Being parents themselves also influences and may limit their approach to risks for school children while others think that they allow the school children to do more than their own children. 'I am a proper hen around my own children but I don't want the schoolchildren to live through that' (Fifth-grade teacher). Experience also shows that some play activities require more supervision than others. This quotation illustrates one teacher's behaviour: 'Snowball fights; then I go there' (Fifth-grade teacher).

Teachers expressed their opinions about how serious they think the risks involved in the play are and the limitations were set on the seriousness. Teachers within the Play with limits category are of the opinion that it is unacceptable for a child to join a game where there is a risk to hurt oneself

seriously. The definition of serious varied among the teachers. Some believed breaking an arm was not so bad, while others considered a fracture a serious injury. The divergent opinions were also shown in the discussion of what situations teachers reported as an incident or not. Some felt an incident should be ‘near-death’ before reporting, whereas others were inclined to over-report.

One example of limiting play at heights was seen when teachers told children to climb down from trees and high rocks. However, it varied greatly in what stages of climbing the children were told to climb down. In contrast, children were seldom seen limited in climbing high on climbing structures. Teachers described that fixed play equipment was perceived as safer compared to, e.g. trees and rocks even if the height and the surface beneath were the same, especially during wintertime.

Situations where the teacher’s limited children’s play with speed were when the children went down the slide or snow banks, sometimes alone, sometimes many at the same time, and sometimes with their head first. During one excursion children were seen going down a hill at high speed on a sled. Not until one child crashed into a protective net, was the speed limited by the teachers by moving the starting point further downhill. ‘Sometimes it feels like somebody has to get hurt before the children understand that it is dangerous’ (Fifth grade teacher). There is, according to teachers the risk of compliance, i.e. not setting limits because no one has injured themselves in the past.

Disapproved play

Within this category, risky play activities may be disapproved by the school staff with or without the cooperation of the children. Children should feel safe and not humiliated in the school yard, according to the teachers. Safety responsibility often had the consequence that the product or activity that ‘cause’ the injury incident was removed. ‘If a child falls from a tree and gets hurt, the tree must probably be cut down (Fifth-grade teacher). Swings and zip lines had been removed from the schoolyards.

The teachers compare their own experiences as children, to what children today do at the schoolyard. ‘We wrestled and played king of the hill, things children are forbidden to do today’ (Preschool teacher). They believe there are more restrictions today, and that children play less without supervision, than they used to do.

Rough and tumble play, in particular, was often disapproved in the schoolyard because it may involve humiliating treatment. One example of disapproved play was king of the hill, i.e. pushing each other down a hill. Some other rough and tumble activities, e.g. snowball fights and playing war, are only approved in certain places.

Play with speed, such as skating and scooter riding was only allowed to those children wearing helmets.

Discussion

For centuries, injuries were considered synonymous with ‘accidents’, implying that injuries are unpredictable and unpreventable random incidents (Loimer and Guarnieri 1996). Despite criticisms of the misleading implications of the term ‘accident’, the tradition continues on the beliefs that the word accident is still often used to describe an incident that produces, or has the potential to produce, an injury (Davis and Pless 2001; Doege 1978). This is also in contrast to the medical profession’s approach to injury prevention, i.e. injuries are preventable and not random.

In this study, the views of risky play activities and prevention strategies in the schoolyard were not shared by all teachers. Risk-taking was seen by some teachers as an inevitable part of learning fundamentals, in order to develop physical and cognitive ability. In this perspective, injuries appear to be an inevitable part of the development process, although some of these incidents were more serious than others (Dale et al. 2013). This is, however, in sharp contrast to research in injury prevention research showing that injuries can be prevented (Haddon 1973), and furthermore, that non-minor injuries should be avoided due to their potential consequences in the long term.

This study shows that when teachers set limits for risky play at the playground, limits are set on a case-by-case basis and judged differently from teacher to teacher. Thus, children, to some extent, are

approved to play at high elevations, with high speed and rough and tumble at the school playground. Children were seen climbing high on climbing frames and on natural heights such as rocks, speeding down slides, or competing and playing with sticks. This also leads to non-minor injuries such as broken legs and arms, concussions, and bleeding. However, children are not always given the opportunity for challenging play at the schoolyard. Safety restricts outdoor play such as when swings and zip lines are removed and not replaced. In addition, some types of play are not allowed, which is in line with other studies showing that teachers have become more cautious about letting children climb trees, jump, or play with sticks (Lindqvist and Nordäng 2011; McWilliam and Perry 2006). To sum up, parts of the findings in our study show that risky play is allowed at the schoolyard but also that some risky play is not, in between, allowed. This is an important ambiguity that indicates the need for clarity of risky play and safety in the schoolyard. However, research in the field is ambiguous. Some researchers have described injuries among children as a normal part of everyday life in a way that would be frightening to most adults (Wall and Olofsson 2008). Others presume that one important feature of the educators' professionalism is to protect children from injuries (c.f. Gert 2004; Palmer 2007). Furthermore, research also shows that injuries do not discourage children or evoke fear and caution among them (Green and Hart 1998). However, in our study, children who described being hurt with non-minor injuries, on the contrary, explained that they avoided exposure to the situation again, which is in contrast to other studies (Morrongiello et al. 2008; Olsson 2013). This is an ambiguity that needs to be taken into consideration, and it indicates the need for further research in this field.

The way teachers perceive risks and how they respond on risk situations can be understood by the use of the theory of social representation since teachers' risk perceptions are derived from 'common sense' and personal experiences rather than from a professional perspective (Slovic et al. 2004). This circumstance is in sharp contrast to and not consistent with school policies and legislation. Hence, in line with the theory of social representation, teachers' risk perceptions are socially constructed and derived from their experiences, which apparently partly vary among teachers.

Different views among teachers can be seen as representations that contribute to a construction of a form of everyday knowledge, i.e. 'common sense', that help the teachers orienting in social life. These social representations give people a substance to group functioning and action. In this way, individuals and groups who share the same representations understand actions on the same premise. The teacher's actions could also be seen as expressions of the organisational and institutional culture. We emphasise that representations not only influence people's daily practices but *constitute* these practices (Chaib et al. 1996).

The teacher's different views of risky play could also be understood by the two mechanisms; anchoring and objectification (Marková 2012), which could be regarded as complementary and interdependent. As the teachers over time can experience different challenges in the children's out-door environment, they first anchor their perception based on their existing knowledge. When they for the first time encounter a potential risk with the children's play, the perception of the risk is thus formed by their previous knowledge. This first anchoring of the perceived risk in something already familiar can lead to an objectification of their perception, i.e. how they in the future view risks and risky play (Chaib et al. 1996; Hayes 2005; Marková 2012).

Nevertheless, as previously discussed, risk precautionary principles are not commonly defined among teachers. Risky play still occurs as predominant for injuries (Sandseter 2009) and climbing frames, slides, and swings often are involved when children become injured during play (MacKay 2003). It is, therefore, of vital importance that teachers and children have knowledge of injury prevention and safety.

Additionally, a continuous dialogue about the professional assignment, and attitudes towards risk, risk assessment, and preventive strategies in a school-team, is needed to challenge teachers' perceptions and ways to encounter risky play situations. The findings indicate that there is a need to deal with these issues on an organisational level, which at the school level includes the school leadership and the educational professionals.

The spontaneous process of perceiving risks as they arise is important, but ensuring a high level of safety and injury prevention, requires preventive strategies based on systematic knowledge regarding when, where, what, how, and why a risk incident has occurred. It is possible to develop strategies and action plans creating a more secure environment and giving politicians decision making information regarding measures that may be relevant and effective (Spicer et al. 2003). Incident reporting is, thus, a systematic approach proven effectively to reduce risk factors (Sellström and Bremberg 2000).

Thus, this study contributes to the teacher's educational research with an injury prevention perspective on outdoor challenging play. This field-study is made in an authentic setting and with multiple data collection methods. However, there are some limitations to consider. A small number of schools and participants were used. Transferability to other similar contexts is possible but should be made cautiously.

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