One-to-three-year-olds' Risky Play in Early Childhood Education and Care

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Acknowledgments

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Summary

This study examined 1-3-year-olds' risky play in the context of group settings for Early Childhood Education and Care (ECEC). Previous studies have documented that children have a propensity towards risk-taking, and it has been argued that this propensity is valuable for children in several regards. First, because the play experience itself is intrinsically valuable, including experiences of exploration and autonomy, which may allow children to experience emotions such as hesitation, fear, excitement, pleasurable arousal and mastering. Second, several researchers have argued that risky play is essential for developing realistic risk assessment skills. At the same time, there are indications that children are increasingly being deprived of opportunities for exploration and risky play, both to avoid injuries, but also for fear of legal consequences.

Since research on 1-3-year-olds' risky play is scarce, the overarching aim of this study was to add to the existing knowledge of this aspect of children's play. It was situated in ECEC, since more than 90% of Norwegian children between the ages of 1 and 6 now attend institutionalized care. The overarching aim was split into four areas of investigation: 1) Identifying and describing what characterizes 1-3-year-olds' risky play, 2) describing what characterizes social interaction between ECEC staff and 1-3 year olds engaged in risky play, 3) describing what characterizes physical conditions for 1-3-year-olds' risky play in ECEC, and 4) investigating whether there are conflicting aspects in Norwegian ECEC between keeping children safe from harm and stimulating physical activity and risky play.

Due to limited existing research, exploratory methods were used to investigate these areas. In cooperation with the large-scale research project Better Provision for Norwegian Children in Early Childhood Education and Care (BePro), five ECEC-center groups were selected to represent a variety of Norwegian ECEC contexts, potentially elucidating different aspects of risky play and children's experience. Two center groups were selected based on their respective high and low general scores on a standardized measurement of ECEC quality (the Infant/Toddler Environment Rating Scale – Revised edition (ITERS-R)). Additionally, two nature center groups and one infant/toddler group were selected. In total, 53 children and 21 ECEC staff participated in the study. The main methodology was focused ethnography, resulting in both qualitative and quantified data. Video was also used to add detail to the qualitative descriptions. Additionally, quantitative data from the BePro dataset were analyzed.

The main findings of this study are divided into four parts following the four areas of investigation. First, children were observed to engage in risky play from one year of age. This finding was interpreted with the theoretical concepts of objective and subjective risk. The first concept addresses observable (sometimes measurable) conditions that entail a possibility of a negative consequence, and the latter addresses how individuals experience these physical conditions. Compared to the existing understanding of risky play, 1-3-year-olds' expressions of subjective risk were subtler and less extrovert in its appearance, than reported previously. Prominently, the 'fearful joy' expressed by older children was not always apparent, especially with the youngest children. Additionally, the risk of injury, i.e., an objective risk was often not evident. The theoretical concept of Zone of Proximal Development (ZPD) was also applied to interpret the observations and was useful for, among other aspects, clarifying whether children increased the risk level and discussing potential learning within risky play. In previous research, risky play is categorized with six categories, that is, playing with heights or speed, playing with dangerous tools or near dangerous elements, rough and tumble play and running away/hiding from adults. In this study, two new categories of risky play were suggested; playing with impact (e.g. crashing an object into another) and vicarious risk (a pre-face of risky play by watching others playing riskily). 1-3-year-olds' risky play was summarized as play that involves uncertainty and exploration – bodily, perceptual, emotional or environmental – with possible negative outcomes such as fear and/or physical harm, as well as possible positive outcomes such as mastering and/or thrilling experiences.

Second, the study found that ECEC staff, in almost equal portions, either did not interact with 1-3 year olds in risky play or supported risky play appropriately. Support was interpreted with the theoretical concept of scaffolding. The large amount of no interaction may relate to risky play's subtleness and briefness in this age-group, such that recognition and scaffolding requires keen knowledge of individual children and elaborate communicative skills. Comparing the ECEC center groups, the center group with lower general quality, as measured by the ITERS-R, had a higher degree of no interaction. In the center group with higher general quality, there was a higher degree of scaffolding. In general, the amount of inappropriate support (non-scaffolding) was low compared to scaffolding (22% and 78%, respectively). The large proportion of scaffolding might relate to Norwegian practitioners' culturally positive attitude towards outdoor play and risk-taking.

Third, indoor and outdoor environments were examined for their provision for 1-3-year-olds' risky play, applying the theoretical concept of affordance. In conjunction with descriptions of

1-3-year-olds' risky play, appropriate affordance was suggested to be versatile, complex and flexible. Appropriate affordance did not necessarily entail an objective risk, such as great heights, but should have aspects of uncertainty and potential for mastering and exhilaration. Again, the exploratory assessment was congruent with the standardized instrument, i.e., the ECEC center group with general low quality, as measured by the ITERS-R, also had less appropriate affordance for risky play compared to the center group with general high quality.

Fourth, data from the BePro-project were extracted and analyzed to examine the potential dilemma between appropriate provision for risky play and injury prevention. Suggestively, ECEC center groups that provide well for 1-3-year-olds' risky play also provide safety, and there is no apparent conflict between the two aspects in Norwegian ECEC, as measured by the ITERS-R.

In general, ECEC practitioners in this study appeared comfortable with – and the centers provided moderately well for – 1-3-year-olds' risky play. However, there was potential for improvements, both with regards to staff's interaction and physical provision. This thesis provides knowledge that might improve conditions for 1-3 year olds in regards to risky play, as well as their experience in general in ECEC.

Sammendrag

Denne studien undersøkte 1-3-åringers risikolek i barnehagen. Tidligere studier har dokumentert at barn over 3 år er tilbøyelige til å ta risiko i lek og det har blitt hevdet at denne leken er verdifull for barn på flere måter. Først og fremst fordi leken i seg selv er verdifull, særlig med tanke på opplevelsen av utforsking og selvstendighet, som igjen kan la barn oppleve følelser som nøling, frykt, gledesfylt spenning og mestring. Videre har flere forskere hevdet at risikofylt lek har noen mulige langsiktige fordeler blant annet ved at barn får utvikle evnen til å vurdere risiko realistisk. Samtidig rapporteres det om at barns muligheter for utforskning og risikolek generelt og gradvis reduseres, både for å unngå skader på kort sikt, men også av frykt for juridiske konsekvenser ved eventuelle skader.

Siden lite forskning er gjort på 1-3-åringers risikolek hadde denne studien som overordnet mål å bidra til økt kunnskap om dette aspektet ved lek. Studien ble lagt til barnehagen på bakgrunn av at rundt 90% av alle norske barn mellom 1 og 6 nå går i barnehage. Det overordnede målet ble delt inn i fire områder: 1) Å identifisere og beskrive hva som kjennetegner 1-3-åringers risikolek, 2) å beskrive hva som kjennetegner sosialt samspill mellom barnehageansatte og 1-3-åringer i risikolek, 3) å beskrive hva som kjennetegner de fysiske forholdene for 1-3-åringer risikolek i barnehagen, og 4) å undersøke om det er motstridende aspekter i barnehagen mellom det å unngå skader og å stimulere fysisk aktivitet og risikofylt lek.

På bakgrunn av lite eksisterende forskning ble utforskende metoder brukt for å undersøke disse fire områdene. I samarbeid med forskningsprosjektet Gode Barnehager for Barn i Norge (GoBaN) ble fem barnehageavdelinger valgt for å representere ulike aspekter ved den norske barnehagen og dermed potensielt belyse ulike aspekter ved risikolek og barns erfaringer. To avdelinger ble inkludert i studien basert på deres respektive høye og lave generelle skår på et standardisert måleinstrument av barnehagekvalitet (The Infant/Toddler Environment Rating Scale Revised edition (ITERS-R)). I tillegg ble avdelinger fra to naturbarnehager og en småbarnsavdeling inkludert. I alt deltok 53 barn og 21 ansatte i studien. Datainnsamlingen var hovedsakelig organisert som en fokusert etnografi som resulterte i både kvalitative og kvantitative data. Video ble også brukt for å øke detaljrikdommen i de kvalitative beskrivelsene. I tillegg ble kvantitative data fra GoBaNs datasett analysert.

De viktigste funnene i denne studien er delt inn i fire deler. For det første ble barn observert i risikolek fra ettårsalder. Dette funnet er fortolket med de teoretiske begrepene objektiv og subjektiv risiko. Det første begrepet adresserer observerbare (noen ganger målbare) fysiske

forhold som medfører mulighet for en negativ konsekvens og sistnevnte adresserer hvordan individer opplever disse fysiske betingelsene. I forhold til den eksisterende forståelsen av barns risikolek var 1-3 åringers uttrykk for subjektiv risiko mer subtil og mindre utadvendt enn i tidligere i forskning. Den skrekkblandede fryden, typisk uttrykt av eldre barn, var ikke alltid så fremtredende, særlig blant de yngste barna. I tillegg var risikoen for skade, det vil si en objektiv risiko, ofte ikke tydelig. Det teoretiske konseptet 'sonen for proksimal utvikling' (ZPD) ble også brukt for å tolke observasjonene og ble blant annet brukt for å avklare om barn økte risikonivået i lek og for å diskutere mulige læringsaspekter ved risikolek. I den tidligere forskningen blir risikolek gjerne kategorisert i seks kategorier, nemlig lek med høyde, fart, lek med farlige verktøy eller nær farlige elementer, boltrelek og å stikke av/gjemme seg for voksne. I denne studien ble to nye kategorier for risikolek foreslått, nemlig lek med sammenstøt (for eksempel å krasje et objekt inn i et annet) og vikarierende risiko (et forstadium til lek, ved å observere andre barn i risikofylte aktiviteter). 1-3-åringers risikolek ble oppsummert som lek som involverer usikkerhet og utforsking – kroppslig, sansemessig, følelsesmessig eller miljømessig – med mulige negative utfall som frykt og/eller fysisk skade, og med mulige positive utfall som mestring og/eller spenningsfylte opplevelser.

For det andre fant studien at de barnehageansatte, i nesten like store deler, enten ikke samhandlet med 1-3-åringer i risikolek eller de støttet risikolek på en god og hensiktsmessig måte. Samspill – og om samspillet eventuell representerte god og hensiktsmessig støtte – ble fortolket med det teoretiske begrepet 'støttende stillas'. Den store andelen risikolek uten samhandling med ansatte kan være knyttet til at risikolek hadde en subtil karakter i denne aldersgruppen. Dermed kunne leken være lett å overse, mens gjenkjennelse og god støtte krevde at de ansatte hadde nært kjennskap til enkeltbarn og gode relasjonelle ferdigheter. I sammenligning mellom avdelingene hadde avdelingen med lavere generell kvalitet, målt med ITERS-R, en høyere andel uten samhandling. I avdelingen med høyere generell kvalitet, var det en høyere andel av god og hensiktsmessig støtte. Generelt var andelen upassende støtte (ikke-støttende) lav i forhold til andelen med 'støttende stillas' (henholdsvis 22% og 78%). Den store andelen av 'støttende stillas' kan også fortolkes som et kulturelt uttrykk for norske barnehageansattes generelle positive holdning til utendørs lek og risikotaking.

For det tredje ble innendørs- og utendørsmiljøer undersøkt for fysisk tilrettelegging for 1-3-åringers risikolek. Godt egnet tilrettelegging ble foreslått å være allsidig, kompleks og fleksibel. Tilrettelegging for denne aldersgruppens risikolek innebar nødvendigvis ikke behovet for en objektiv risiko, slik som stor høyde eller stor fart, men burde ha aspekter av

usikkerhet og potensial for mestring og spenning. Igjen sammenfalt resultatene fra den utforskende delen av studien med resultatene fra det standardiserte instrumentet, dvs. at barnehageavdelingen med generell lav kvalitet, som målt med ITERS-R, også hadde mindre egnet tilrettelegging for risikolek sammenlignet med avdelingen med generell høy kvalitet.

For det fjerde ble data fra GoBaN-prosjektet analysert for å undersøke det potensielle dilemmaet mellom egnet tilrettelegging for risikolek og skadeforebygging. Analysen viste at barnehageavdelinger som legger godt til rette for 1-3-åringers fysiske aktivitet (som kan innebære risikolek) også ivaretar sikkerhetsaspekter, det vil si at det ikke var noen åpenbar konflikt mellom de to aspektene i norske barnehager, målt med ITERS-R.

Generelt virket barnehageansatte i denne studien komfortable med – og barnehagene la moderat godt til rette for – 1-3-åringers risikolek. Men det var potensial for forbedringer, både med hensyn til de ansattes samhandling med barna og fysisk tilrettelegging. Denne avhandlingen gir kunnskap som kan bedre forholdene for 1-3-åringers risikolek, og dermed deres erfaring generelt i barnehagen.

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1 Introduction

1.1 Background

The basic assumption in this project is that risk-taking is an inherent mode of children's play. Previous research has investigated this aspect of play in various ways (see for example Ball, Gill, & Spiegal, 2012; Brussoni et al., 2015; Cook, Peterson, & DiLillo, 1999; Engelen et al., 2013; Hill & Bundy, 2014; Lavrysen et al., 2015; Morrongiello & Rennie, 1998; Sandseter, 2010b; Sandseter & Kennair, 2011; Tovey, 2007), indicating that it is a topic that might interest both parents, professionals and policymakers. However, few studies include children below three years (Bjørnestad et al., 2012, p.21). Presently, Norway has near universal access to Early Childhood Education and Care (ECEC), with approximately 90% of Norwegian children between the ages of 1 and 6 years attending institutionalized care (The Norwegian Directorate for Education and Training, 2016). This situation implies that Norwegian children spend a great deal of their waking hours in institutions, making ECEC a place where children are likely to experience risky play.

The situation of near universal access to ECEC has instigated considerable research efforts to examine aspects of children's experiences, including children's well-being and potential long-term effects of ECEC attendance. This is reflected, for example, by a steady increase in government funded ECEC research since 2007 (Gunnes & Rørstad, 2016). The ECEC practice field, being at the receiving end of these research efforts, is certainly interested in taking part in these efforts. As one of the major stakeholders in the practice field in Norway, the Kanvas Foundation[1] has been generally engaged in this development and, for the current project, Kanvas' initiative was to cooperate with academia through the Norwegian Research Council's Industrial scheme (2009a, 2009b). The overall objectives of the scheme are to "increase the recruitment of researchers to Norwegian industry, to boost long-term competence-building and increase research efforts in business and industry and to enhance interaction between academia and industry" (2009b). In this case, it is for the benefit of the ECEC sector. This was the first Ph.D. project in Norwegian ECEC organized as an Industrial Ph.D.

Concurrent with the increase in government funding, the nature of research has gradually changed from small-scale to large-scale projects (Engel, Barnett, Anders, & Taguma, 2015;

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[1] Kanvas is a non-profit organization, one of Norway's largest private ECEC actors within development and management of ECEC centers. Kanvas manages 63 centers in 13 different municipalities and employs more than 1200 practitioners, taking care of more than 4000 children.

Gunnes & Rørstad, 2016). One of the major on-going research efforts is Better Provision for Norway's Children in Early Childhood Education and Care (BePro, 2013). The BePro project examines what characterizes Norwegian high-quality ECEC and what factors affect children's well-being, achievement and development. BePro is a population-representative longitudinal study including approximately 1200 children from 93 ECEC centers. The project runs from 2012-2018 and is funded by the Research Council of Norway.

Although BePro covers a wide range of children's experiences in ECEC, there might be additional aspects to examine. Consequently, in collaboration with BePro and Kanvas, I identified (at least) three initial reasons why it was timely and feasible to investigate 1-3-year-olds' risky play. First, accounts of practitioners' experience were that safety routines and media focus on accidents in ECEC were neither compatible with their experience nor with the children's wishes or needs. Second, it is reported that there is a general lack of knowledge of 1-3 year olds' experience in ECEC, not least of the specific topic of risky play. Therefore, and lastly, by investigating risky play in this age group, there was a potential for elucidating a supplementary approach to quality and children's experience in ECEC, especially from a Norwegian perspective. This project is developed from these initial reasons, and the results are summarized and discussed in the present thesis.

1.2 Risk

Despite being a relatively new concept in research, there is already a substantial literature on risk, partly dominated by economics, with a focus on risk-benefit analysis, and technical fields, with a focus on accident prevention (Adams, 2001; Ball & Ball-King, 2011; Rausand, 2011; Rescher, 1983). As the word *risk* is used colloquially with a variety of meanings, there is little general agreement on one authoritative definition. Moreover, risk is an abstract construct that cannot be entirely observed directly and this leaves the author of any given approach to be as clear as possible in what way one defines and understands risk. In the following section, I describe the way risk is conceptualized in this project.

Initially, my understanding of risk is influenced by the statement that "[…] risk-taking involves the implementation of options that could lead to negative consequences." (Byrnes, Miller, & Schafer, 1999, p. 367). One often cited authority in risk literature is the Royal Society's report from 1983 delineating risk to a calculation of the probability that a particular adverse event occurs during a stated period of time, including a measure of the expected harm or loss associated with that adverse event (see for example Adams, 2001; Rausand, 2011).

Thus, risk is a concept that deals with future events and probable negative outcomes (Ball & Ball-King, 2011; Rescher, 1983). This understanding of risk is often referred to as *objective risk* (Hansson, 2010; Rausand, 2011).

To give an example related to children, Kretch and Adolph (2013) investigate infants' (14 months) ability to assess objective risk while facing a "visual cliff" – a wide, transparent board that creates the illusion of a gap. The children were motivated to climb over the gap on a bridge and by changing the narrowness of the bridge, the probability of falling off was altered. By adjusting the height under the bridge, the potential negative effect of falling off was altered. The results from the experiment suggest that infants assess the probability of falling off, i.e., they became increasingly reluctant to climb over when presented with increasingly narrow boards, but they did not seem to consider the severity of the potential negative consequence, i.e., the height under the board. As mentioned above, both factors must be considered in a comprehensive assessment of objective risk (Ball & Ball-King, 2011, p. 18). In general, human's ability to estimate probability is crucial for dealing with the uncertainty of life and in a recent study this ability is observed in infants from 6 months (Kayhan, Gredebäck, & Lindskog, 2017).

As displayed in the visual-gap experiment, there is always the inevitable individual risk-taker. The Royal Society's report addresses this aspect as *perceived* risk, which includes each individual's experience and ad-hoc expectations of future events. This is often referred to as *subjective risk* (Adams, 2001; Hansson, 2010). The degree to which crawling across the narrow board is *experienced* as risky, depends on the individual. It is shown that both personality traits, such as temperament and cognition (Miller & Byrnes, 1997; Morrongiello & Matheis, 2004; Sandseter, 2014; Zuckerman, 2009) and previous experience (Adams, 2001; Byrnes, 2011) affect the experience and decisions in relation to risk. Generally, the notion of subjective risk entails that not only do individuals perceive objective factors differently, but also they affect the factors themselves. As all individuals are situated and acting in a social and historical context, the understanding of risk is therefore also affected by the context, such as cultural, social and historical factors (Ball, 2002; Beck, 1992; Rausand, 2011). Also how society (including parents, educators and policymakers) perceive risk in relation to our children is dependent on time and context (Ball & Ball-King, 2011; Penn, 2009). These aspects are discussed further in the sections 1.3.1, 1.3.4 and 1.3.5.

There are several problems with the objective risk perspective; firstly, a complete characterization of relevant physical facts relevant for future outcomes seems unrealistic (Adams, 2001). Further, there are problems related to the concept of probability, i.e., the likelihood of something happening. There are several interpretations of probability, e.g., frequentist, subjective and classical interpretations (Hand, 2015, p.78), and I will argue that the most relevant in my project is the frequentist interpretation. Frequentist probability is basically an assumption that the same physical conditions produce the same outcome given repetitious actions, and, in my project, this is seemingly a feasible approach in an observational study. The subjective interpretation is discussed below, but the classical interpretation is not addressed further, as it is mainly applied in technical fields (Hand, 2015).

The obvious problem with the frequentist interpretation is that life is complex and that no two situations are exactly the same in real-life scenarios. We can estimate, but without complete accuracy. Moreover, human's general ability to predict the future (that is, assessing probability) has been severely questioned (Hand, 2015; Makridakis & Taleb, 2009; Taleb, 2005, 2007). Firstly, humans tend to overestimate their ability to predict. This is purportedly related to our tendency to recognize patterns. Most prominently perhaps, it enables us to interpret sequences of random sounds as speech with complex meaning, but it also enables us to see animals or faces in clouds. Moreover, we underestimate randomness, but interpret correlations as causal relations and end up interpreting a black cat crossing the road as conducive to later misfortunes. This tendency is also seen in the concepts of the winning streak or survivorship bias (Taleb, 2005). Repeated positive outcomes entice us to expect future positive outcomes, even when tossing dice, where the outcome is completely random. Additionally, our predictions are often fueled by so-called hindsight bias; it is easy to explain the outcome after it has happened ("the solution was staring us in the face") – and in hindsight the events of our story line up in perfect causality. Nonetheless, even if humans' ability to assess probability is fragile, it is something we need to do (Kayhan et al., 2017). To function, we simply have to make guesses or estimations of future course of actions.

These guesses sometimes, almost inevitably include the possibility of a negative consequence, i.e., a risk, and it should be noted that some theorists discard the idea of an objective risk altogether, maintaining that risk is purely a social or mental construct with no reference to the physical world, referred to by Rausand (2011, p. 52) as a Bayesian approach. No doubt, risk is a human, abstract construct, but a problem with the criticism of the objective risk theses is that it gives no feasible alternative to assessing risk (Hansson, 2010; Rausand, 2011).

Subjective probability has a similar origin to that of subjective risk, where subjective beliefs are at the core and not necessarily related to a physical world. Both assert that risk can simply be interpreted as ignorance or lack of experience (Hand, 2015). However, if physical facts are irrelevant, it is difficult to understand what one might be ignorant of.

As mentioned, risk is a concept that predominantly addresses future, *negative* outcomes. However, recent discussions have tended to take a broader approach and address risk as future *uncertainties* (Ball & Ball-King, 2011). Accordingly, in 2009, the International Organization for Standardization (ISO) changed its definition of risk from 'chance or probability of loss' to 'the effect of uncertainty on objectives' (ISO 31000, 2009; Wikipedia, 2017). This turn in discourse affects both policies and practices, tending to acknowledge the necessity of sometimes taking a risk to obtain a positive outcome. This implies, for example, a preference for risk-benefit assessments instead of only risk-reduction measures (Gill, 2017). Additionally, as I will describe later, literature linking risk-taking to sensation-seeking associates positive emotions – as well as positive outcomes – to risk-taking. Whether risk primarily receives negative or positive connotations is, to some extent, related to context, e.g., if we consider risk-taking in play or sports we might associate exhilaration and fun. If we consider risk-taking in business, we might associate large profits, and if we consider risk-taking in personal development, we might associate metaphors like possible gains of 'leaving one's comfort zone'. Thus, the initial statement of negative potential has been modified.

In sum, my position on risk in this project, has been to, first, combine the aspects of subjective and objective risk, also referred to as a dual or pragmatic approach to risk (Rausand, 2011). I assume that the concept of risk is both laden with facts *and* laden with values (Hansson, 2010). Probability in this project is largely qualitative (there are no mathematical calculations) and an acknowledgement of our ignorance of the future (Taleb, 2005). Yet, like the infants crossing the narrow bridge, I will make assumptions of probability and outcome severity, by considering relevant physical conditions and individual characteristics. In my case, based on previous experience, common-sense and systematic observations. My concept of probability is thereby also mostly related to the frequentist interpretation, and that it represents primarily an uncertainty – and not an inevitably negative value – in regards to the outcome. For example, if I have seen five children slip and fall on the same spot, I will assume that it is relatively likely to happen again, given approximately the same conditions. But equally important, I acknowledge that my interpretations and valuations may not be equal to the ones

of those experiencing the situation, i.e., varying subjective valuations of probabilities and severities (Adams, 2001; Hansson, 2010; Rescher, 1983).

1.3 Children, risk and safety
1.3.1 Cultural perceptions of children and risk
Historically, childhood has been understood very differently by parents and societies (Aasgaard, Bunge, & Roos, 2018; Frønes, 2011). Likewise, the understanding of childhood might vary with cultural context. Among researchers, it is generally acknowledged that a cultural perspective of children and childhood entails that parents hold beliefs about children and child-rearing practices that are specific to their culture (Roopnarine & Krishnakumar, 2006). This view entails also that children are part of the culture, and therefore are not seen as passive recipients of information from adults, for example, about appropriate social behavior or play. Rather, a cultural view emphasizes how children's learning and development is a reciprocal process between parents and children. That is, children are both formed by – and form their own experiences within their particular context (Super & Harkness, 1997; Weisner, 1998). Still, a generally acknowledged universal trait is that the common values of a given cultural group that are channeled through childrearing practices, aim at equipping children with the skills and abilities that are seen as necessary and/or valuable in that specific environments (Rogoff et al., 1993).

While investigating risks, researchers have distinguished various types of risk, e.g., physical, emotional, social, political, financial, ethical, intellectual, existential, etc. (Breivik, Sand, & Sookermany, 2017). Such a list substantiates the point that risk is a construct – an experience or a valuation of a potential outcome largely influenced by culture, e.g., what might be socially or ethically risky in one cultural context, might be completely risk free in another. However, the list also indicate that many experiences of risk are related to adults' – and not children's – experiences.

Regarding children and risks specifically, the central questions are what are seen as useful skills and abilities and what risks do acquiring these skills and abilities entail? That is, what probabilities; level of severity of negative outcomes and uncertainty are acceptable in one specific cultural context? Social-anthropological studies provide contrasting examples, thus supporting the cultural-specific thesis. For example, Hewlett's study (1991) of the Aka forager group in central Africa includes observations of how training for autonomy starts early, in the sense that an 8-month-old infant would play with a six-inch knife, helping to chop tinder for the household fire (p.34). Gottlieb (2004) provides a similar example from the

Beng community in Cote d'Ivoire, East Africa, where children as young as two years of age independently roamed the village and the surrounding forests and fields (p.32). Enjoying such independence included being able to protect yourself with a machete. Infants and toddlers handling sharp tools and roaming freely in nature might entail potential negative outcomes that would not be acceptable in many Western societies. However, comparative studies indicate variations, also between Western countries. New, Mardell, and Robinson (2005) compared Norwegian, Swedish, Danish, Italian and American ECEC-teachers and find that the European teachers are less worried about children's risk-taking than are their American colleagues. Their point is illustrated by a picture of a Norwegian preschooler whittling with a knife, something that would seem irresponsible in an American ECEC context. Other studies suggest a similar pattern of acceptance or tolerance towards children's risk-taking in the Norwegian context, especially while playing in nature, both from parents and ECEC practitioners (Borge, Nordhagen, & Lie, 2003; Brewer, 2012; Guldberg, 2009). This emphasis on (or valuation of) experience in nature is also reflected in the national framework plan (Ministry of Education and Research, 2017, p.52).

Hence, an acceptable level of risk in relation to what children are allowed to do is largely dependent on what is seen as valuable or useful in a given society. Potential actual danger versus preparing for real-life risks is probably one of the trade-offs parents (and ECEC practitioners) must consider when deciding what level of freedom children should enjoy and what children should be allowed to play with. During the last part of the previous century, Western societies underwent a shift in cultural perceptions of risk and children, from viewing accidents as haphazard, misfortunate and/or part of life to something foreseeable and preventable (Ball & Ball-King, 2011; Beck, 1992; Green, 1997; James & Prout, 1997). This might be seen as a consequence of the objective risk thesis, i.e., the belief that we can obtain a complete characterization of relevant or necessary physical facts and thus accurately calculate future events. This affects also how we view risk in relation to children (Ball & Ball-King, 2011; Sandseter, Little, Ball, Eager, & Brussoni, 2017). There might be several factors influencing this trend, but it is argued that economic wealth and few children per family means that parents have sufficient resources along with high expectations for keeping their children safe, i.e., a "zero tolerance" towards risk (Ball & Ball-King, 2011, p. 10). An important influencing factor is probably a strong belief in modern western societies that we might control nature. Sandseter et al. (2017) refers to how the British Medical Journal in 2001 suggested eliminating the use of the term 'accidents' and went on to suggest that taking all

objective factors into considerations, most injuries and fatalities are preventable (p. 212). This has widely influenced the development of norms and litigations, particularly on playground design (Gill, 2017). As such, preventing injuries and fatalities has had high priority and great progress has been made in reducing child injury- and fatality rates over the recent decades (Folkehelseinstituttet, 2016a, p. 34; World Health Organization, 2008b, p. 3).

However, there might be a flipside to a limited focus on injury prevention and an overly belief in the ability to prevent accidents. First of all, it is questionable whether it is realistic to avoid all accidents. Then, the quest for total elimination of accidents might have some unforeseen consequences. For example, it is suggested that our wish to protect our children is conducive to a well-documented decline of children's free play (Gray, 2011; UN Committee on the Rights of the Child, 2013). There are indications that the "risk averse society" (Gill, 2007), where increased focus on controlling risks, including high expectations of injury prevention, subsequently curbs children's freedom to move and play (Ball & Ball-King, 2011; Brussoni, Olsen, Pike, & Sleet, 2012; Gill, 2007). Presumably, this trend also affects ECEC institutions, where activities potentially involving risk of injury are met with ambiguity and increasingly deterred because of concerns with safety (Brussoni et al., 2012; Copeland, Sherman, Kendeigh, Kalkwarf, & Saelens, 2012; Gill, 2007; Wyver et al., 2010) or legal consequences (Little & Eager, 2010; Tovey, 2007; Wyver et al., 2010). Immediate safety concerns, partly to meet parents' expectations of keeping children safe, are prioritized over potential positive long-term effects of play involving risk, hence the emergence of a risk-averse institution (Little & Eager, 2010; Sandseter & Sando, 2016; Wyver et al., 2010). Therefore, in order to consider the potential positive aspects or effects of children's risk-taking, it is important to explore why children take risks in the first place.

1.3.2 Why do children take risks? – Children's propensity to take risk

Considering the possibility of both unpleasant emotions and possible injuries; it is curious why children take risks at all. The first proposal is willingness. Children *want* to take risks because there is an emotional reward at the end. Sensation seeking was introduced as a personality trait by Zuckerman, Buchsbaum, and Murphy (1980; 2009), and the concept relates to how humans, in various degrees, are driven by the wish to have novel and intense emotional experiences. Risk is not necessarily part of such an experience, but people with a drive for intense sensation more often ignore the objective risks involved in a situation (2009). Moreover, the danger itself might be adding to the excitement and reinforcing the drive, which is essentially what the subjective risk-taker does; weighing potential rewards against

adverse consequences (Adams, 2001). Another approach to humans' willingness to take risks is 'thermostat theory', which postulates that, to various degrees, everyone has a propensity to take risks (Adams, 2001). Apparently, sometimes, either willingly or out of necessity, an individual chooses to follow a sequence of events that could lead to negative consequences, and this somewhat paradoxical behavior is explained by an inner balancing act between external factors of, on the one hand, rewards and, on the other, accidents and losses.

Apter (1992, 2007) examines this balancing act further, as an emotional-physiological function, describing how we continuously alter between the emotional states of anxiety/excitement; boredom/arousal, where, for some, excitement and even danger is conducive to pleasurable arousal. It is the paradox of risk-taking. Willingly, we seek out something that evokes fear, often exposing ourselves to danger in the process, to experience, when in control, pleasurable arousal (Ibid). Notably, it is only when we are on the edge of real fear, that we are being rewarded with the most intense pleasure and, descriptively, such activities are referred to as "edgework" (Breivik, 2001; Lyng, 1990). The intense pleasure of controlling a dangerous situation is partly based in biology. Greater danger and stronger fear trigger stronger physical reactions (such as release of adrenaline), eventually enforcing the feeling of exhilaration when we manage the situation (Apter, 2007, p. 17 and p. 38). Subsequently, an interesting effect occurs: as we gain experience and feel more confident in a fearful situation, we gradually experience less fear. To apply the metaphor, we are further from the edge and the pleasure reduces its intensity or subsides. Consequently, we must get closer to the edge, i.e., continuously take bigger risks, to obtain the optimal pleasurable arousal (Apter, 2007; Lyng, 1990).

While exploring this aspect among children, Sandseter (2009c, 2010a) describes when children progressively master an objective risk, it leads to a decrease in the subjective risk experience, and subsequently less exhilaration. Consequently, the child increases the objective risk (e.g., climbs higher in the tree or slides faster) to optimize the pleasurable arousal. As a result, children do not necessarily avoid fear-evoking experiences, rather, they sometimes seek them out, motivated by a potential rewarding thrill of experiencing something unsafe. Children themselves report similarly, that being "almost out of control" or "on the edge" of what is safe provides the most intense pleasurable reward and is therefore desirable (Sandseter, 2010a). These are typically positive connotations of risk, including an approach that risk is conducive to exhilaration, fun and something valuable in itself for children,

thereby a contrast to the approach to risk in the accident-prevention regime presented in section 1.2.

1.3.3 Why do children take risks? – Taking risk out of necessity

A second proposal is that children take risks because they *need* to. Real-life risks have been inevitable throughout human evolution, thus, the ability to assess – and eventually take necessary risks – has been evolutionarily beneficial (Apter, 2007; Sandseter & Kennair, 2011). Generally, as play is often found to imitate real life (see for example Vygotsky, 1967), children also imitate real-life risks through play (Aldis, 1975; Sandseter & Kennair, 2011). The assumption is that by gradually approaching risks in playful contexts, children get to know their capabilities, thus becoming better able to calculate and manage real-life risks (Aldis, 1975; Christensen & Mikkelsen, 2008; Cook et al., 1999; Smith, 1998). In a similar vein, Kretch & Adolph's (2013) visual cliff experiment shows that the infants' choice of climbing across a gap is unaffected by the height under the board, at least up to 14 months, suggesting that fear of height is only partly present in infancy, and needs to develop, potentially through gradual experience, to give children optimal protection.

The evolutionary-based approach has several implications for how we understand risk and risk-taking behavior among children. Firstly, there is a mismatch between ancestral fear inducing situations (for example snakes and spiders) to present-day real-life risks (for example traffic). Many Norwegian adults report fear of spiders (Sundet, Skre, Okkenhaug, & Tambs, 2003); however, dangerous spiders have never been indigenous in modern times in Norway, so apparently evolutionary-based fears remain persistent (Hoehl, Hellmer, Johansson, & Gredebäck, 2017). In contrast, we are not naturally scared of cars, even if traffic accidents are a major cause of serious injury and mortality (Folkehelseinstituttet, 2016b). Effectively, this mismatch makes modern humans poor risk assessors, sometimes exaggerating evolutionarily-based fears (adapted to ancestral environments), simultaneously underestimating present day dangers (not adapted to modern environments) (Sandseter & Kennair, 2011).

A second implication of the evolutionary-based approach is that fearful experiences in childhood may reduce anxiety later in life. Anxiety and phobias emerge as a normal part of children's maturation, i.e., fear (e.g., of heights) has a natural protective effect (Poulton, Davies, Menzies, Langley, & Silva, 1998). As the child matures, thus becoming physically more capable of managing risks and learn coping strategies, the anxiety naturally subsides.

This effect is documented in empirical research and conceptualized as non-associative fear acquisition (Poulton & Menzies, 2002). It has been documented that fearful experiences in childhood, specifically with heights (Poulton et al., 1998), water (Poulton, Menzies, Craske, Langley, & Silva, 1999) and separation (Poulton, J. Milne, Craske, & Menzies, 2001), predict lower probability of anxiety of the same in adulthood. This implies further that deterring children from gaining experience with risk, increases the probability of sustaining, otherwise naturally subsiding, anxiety into adulthood (Edwards, Rapee, & Kennedy, 2010; Sandseter & Kennair, 2011).

This theory contrasts predominant conceptions in psychology, which posit that negative experiences in childhood are conducive to later anxiety (Poulton & Menzies, 2002; Sandseter & Kennair, 2011). Additionally, in psychology, risk-taking has normally been included in the spectrum of dysfunctional behavior or maladaptive social functions, described by Ellis et al. (2012) as "the prevailing developmental psychopathology model" (p. 598). In this model, risk-taking is something to treat and reduce (Boyer, 2006; Ellis et al., 2012; Lyng, 1990; Malaby, 2002). Positive approaches to risk, which incorporate perspectives of *willingness* and *need,* are therefore relatively new, but congruent with a general shift of perspective in psychology, in that adversity and risk-taking might not be all negative (Ibid). This can be exemplified with growing evidence of the "mild stress perspective", i.e., that some stress in childhood predicts later resilience to stress: (Gunnar, 2016). Similarly, research with both mammals (including humans) and birds suggests that developmental exposures to stress might enhance forms of attention, learning and problem solving that are context relevant, particularly in unpredictable environments, i.e., a type of developmental-contextual relevant stress (Ellis, Bianchi, Griskevicius, & Frankenhuis, 2017). Research in this vein, has disclosed great individual variance in physiological response in the different nervous systems activated by stress (Ellis, Oldehinkel, & Nederhof, 2017).

In the parent-child relationship, too little exposure to adversity is often referred to as overprotection, with the unintentional consequence of exposing children to increased chance of anxiety in adolescence and adulthood (Clarke, Cooper, & Creswell, 2013; Edwards et al., 2010; Ungar, 2009). Both the 'willing' and the 'need' perspectives imply that risk is something that needs to be dealt with and managed, not something that always needs to be avoided (Apter, 2007; Ball et al., 2012; Sandseter & Kennair, 2011). This perspective can therefore also be said to entail positive connotations of risk in that experience with risk from

an early age implies possible (long-term) learning effects and eventually reduction of negative consequences.

1.3.4 Development of understanding of risk in ECEC

As mentioned in the introduction, the Norwegian ECEC sector has grown steadily over the last 40 years, to near universal access at the present. This has entailed a steadily increasing formalization of criteria for the sector, including safety regulations. The ECEC institution develops in relation to the surrounding society. Thus, the claim – that society has changed in terms of how we perceive and manage risks – can also be traced in the ECEC sector. First, the shift might be illustrated by descriptions from one of the first studies in Norwegian ECEC. In 1967, Berentzen (1980 [1969]) conducted an anthropological study in a ECEC center in the city of Bergen to investigate peer interaction. Parts of his analysis explored children's (three to seven years) interaction while coming to – and leaving the center, either walking or taking the bus, and they usually came and left unaccompanied by parents. Safety issues were never mentioned. There was also no fence around the center's playground, and this was only mentioned because children not enrolled crossed the playground and disturbed the children, to the annoyance of the teachers. Both three-year-olds coming and leaving, especially taking the bus, alone and a lack of fence around the playground would probably have caused severe safety worries today.

On a more general basis, the shift is seen in an increasing standardization of playground equipment, which builds largely on the objective risk paradigm. Related litigations have focused primarily on adapting physical properties of playground equipment to maximum fall heights, impact absorbing surfaces, sharp edges, unstable equipment, and to reduce the probability of children being trapped, pinched, crunched or struck (Ball, 2002; Norwegian Directorate for Civil Protection and Emergency Planning, 1996).

Risk management in play provision goes back to the development of playgrounds in urban areas, particularly in the modern cities of the US in the industrial area (Ball et al., 2012; Gill, 2017; Sandseter et al., 2017). Playgrounds were built in the big cities to keep children off the streets and to be engaged in more stimulating environments (Ball et al., 2012; Gill, 2017). This development thus moved the responsibility of the children's safety from parents to playground developers and owners. The approach is simplistic; its main goals are injury prevention and risk reduction. The first example of a suggested national standard is from 1929 in New York City, which includes both recommendation for maintenance, standards for equipment and surfaces (Frost, 1986). The development of playground standards as a

dominant safety regime emerged around 1970. The equipment standard regime is widespread and adapted to local contexts, but according to Gill (2017) they share four common aspects: A risk reduction rationale; an engineering focus; inflexibility and objectivity. The extensiveness of the regime can be traced in the funding, suggested in the UK to amount to between 20-50m in annual spending on playground surfacing (Ball, 2004). There are no such national figures for Norway, but in Kanvas – responsible for playgrounds in 64 kindergartens – annual spending on surfacing amounts to NOK1,5m, about 1/6 of the total annual building maintenance budget. Presently in Norway, the owner of playground equipment is responsible for its safety under the official safety regulations (Norwegian Directorate for Civil Protection and Emergency Planning, 1996). Popularly, playground safety is sought safe-guarded, through the guidance of standards, specifically the NS-EN 1176 and NS-EN 1177, in Norway, owned and managed by Standards Norway (Standards Norway, 2017).

According to several researchers, there are two main problems with the standardization regime. First, its focus on objective risk and simplistic focus on injury prevention, allegedly misses the complexity of children's play and children's need for appropriate challenges, and has led to uninteresting, if not unused, playgrounds. Moreover, researchers claim that this regime has had wider consequences, since its thinking has spread into other domains of society, not least ECEC: Generally, it substantiates the belief that accidents are fully preventable in most areas of life – as long as we have enough and sufficiently precise information (Ball & Ball-King, 2011) and this influence can also be traced in Norwegian ECEC (Sando, Sandseter, Pareliussen, & Egset, 2017; Sandseter & Sando, 2016).

However, despite indications that the modern risk-aversiveness also affects Norwegian parents and ECEC (Sando et al., 2017), there are signs that Norwegian society's valuation of nature prevails in ECEC, which enable practitioners' relative ease in allowing children to explore freely, especially in outdoor settings (Borge et al., 2003; Brewer, 2012; Guldberg, 2009; Little, Sandseter, & Wyver, 2012), at least compared to other Western contexts. This cultural view is recently reiterated in the new Norwegian Framework plan (published August 2017), where the valuation of risk-taking is expressed plainly. Within the subject domain Body, movement, food and health it is expressed that '*By engaging with the human body,[…], kindergartens shall help the children to evaluate and master risky play through physical challenges* (Ministry of Education and Research, 2017, p.49). Following the cultural view, arguments for why children need to face risks (in nature) are thus more of emotional, intellectual, figurative or historical character, rather than directly practical (for example, few

Norwegian children today need to handle a knife for survival). However, comparing motor competencies in Norwegian and British samples of toddler, Moser and Reikerås (2014) found a relatively higher competence in the Norwegian sample compared to the (slightly) older British one. This might indicate the expected outcome from the Norwegian cultural context (that is, playing in nature is beneficial, at least in some ways) or, at least, as in the words of the authors, differences are possibly in line with stereotypical expectations. Thus, potentially, the perspectives presented in 1.3.2 and 1.3.3 might be easier to accept among Norwegian parents, practitioners and policymakers because the aspects of 'need' and 'willingness' for risky play, support the historical-cultural narrative.

1.3.5 Risk in ECEC

When speaking of objective risks as properties of the physical world and of children's risk-taking as rehearsals for real-world risks, it is reasonable to examine what are the real-world threats to children's health in ECEC. Investigations of this topic has largely had a focus on physical risk, typically looking at main causes of children's injuries or fatalities in ECEC. Although most Western countries map and register child accidents, there is little comprehensive information linked to ECEC, both internationally and in Norway.

The most recent international figures on child accidents and outcomes are from a report from the World Health Organization (2008b), including a separate report for Europe (World Health Organization, 2008a), but none of these specify ECEC as a context for any of their findings. However, I will mention some of the general findings to show what are the most typical real-life threats regarding accidents (violence and illness excluded) to children today. The leading causes of fatal injuries in Europe as of 2007 were road traffic (39%), drowning (14%), poisoning (7%), fires (4%) and falls (4%). The remaining 32% is accounted for by other accidental causes of death, such as suffocation, hyperthermia or animal bites. Generally, in Norway, all types of fatalities in children have been greatly reduced in the last 70 years (Folkehelseinstituttet, 2017). For the most vulnerable group, boys under four, the risk of dying in an accident is one-ninth of what it was in the 50's. Drowning and traffic accidents have been, and remain the main causes of severe and fatal outcomes.

In Norway, there is no national register for accidents and injuries in ECEC. However, in 2012, on assignment from the Norwegian Directorate for Education and Training, Sando et al. (2017) conducted a large scale survey to investigate the occurrence and severity of accidents and injuries in Norwegian ECEC. In total, 2078 ECEC centers, including 95,726 children, completed the survey. The researchers categorized injuries in four levels, where level 1

included injuries that required only simple treatments or first aid from ECEC staff and no further treatments from medical staff. Level 2-4 injuries included increasing degrees of severity, until fatality. The ECEC centers reported a total of 13,924 injuries in 2012. The reported injuries were mostly minor injuries, with 80 % belonging in level 1. 17 % of the reported injuries were found in level 2, while 3 % of the injuries were classified as moderate injuries in level 3, that were mainly long bone fractures or concussions, mostly results from falls or collisions. The 22 reported injuries in the injury level 4 amount to 0.2 % of the injuries reported. No fatalities were reported.

In total, their report suggests that there were very few serious accidents, i.e., accidents resulting in severe injury. Further, their report suggests that minor injuries, like bruises, cuts and scratches that could be dealt with by the ECEC staff, consisted the majority (97%) of all injuries. There were some indications that boys experienced injuries more often than girls and that the most injuries happen outdoors, apart from concussions that were more prevalent indoors. Similar to international playground research, the report also suggest that the prevalence and severity of injuries increases with the children's age.

Regarding causes of injuries, the report of Sando et al. (2017) indicates that the main cause of moderate injuries was falling, both outdoors and indoors. These findings coincide with findings from other injury studies in ECEC in Denmark (Møller & Laursen, 2010) and international playground research (Ball et al., 2012). Nevertheless, considering a broader approach to risk, research on playground accidents indicates that a main cause of injuries is "wrong use", for example that children climb on top of playhouses, outside barriers or generally utilize equipment in ways for which it was not intended (Ball, 2002; Ordoñana, Caspi, & Moffitt, 2007). Suggestively, children's propensity towards risk-taking spurs creativity that puts them in dangerous situations.

Considering the injury rates in relation to the high enrollment rate of Norwegian children in ECEC (90%) and the amount of time children spend in ECEC – 91 % of enrolled 1-5 year olds spend 41 hours or more weekly in ECEC (Statistics Norway, 2017, Table 4) – the probability of children experiencing severe injuries, or generally experience any threat to their health in ECEC, is very low. This finding is in conjunction with international research considering the ECEC context (see for example Cummings, Rivara, Boase, & MacDonald, 1996; Schwebel, Brezausek, & Belsky, 2006).

1.4 Play

Taking the aspects discussed above into account, it seems reasonable, for this study, to take an approach to children's risk-taking that is not delineated to activities that entails real-life risks of injury, but includes notions of subjective risk that for example appear in the context of play. I therefore start with some general considerations. Children's play is commonly seen as a complex concept with little consensus on a stringent or unified definition (Fromberg & Bergen, 2006; Johnson, Sevimli-Celik, & Al-Mansour, 2012; Lillemyr, Dockett, & Perry, 2013). Still, there are several characteristics that are observed across varying cultures, which indicate that play in itself is a shared common and fundamentally important aspect of humanity (Roopnarine & Krishnakumar, 2006; Sutton-Smith, 1997). Play can therefore be seen as both cultural specific, i.e., it often reflects a specific cultural context, but at the same time involves some generally recognizable features across cultures. Some of these commonly acknowledged characteristics are that play is intrinsically motivated, voluntary and "purposeless", in that the activity in itself is more important than any potential ends (Johnson et al., 2012; Lillemyr et al., 2013). Additionally, play is seen as children's natural behavior (Fromberg & Bergen, 2006; Sutton-Smith, 1997); it is what children do when they are free to choose, notably according to children themselves (Wiltz & Fein, 2006). Another typical trait, is that children's free play is an unpredictable activity that both prerequisites and nurtures children's creativity and ability to improvise (Sawyer, 1997; Whitebread, Coltman, Jameson, & Lander, 2009). As such, it is argued that play has unrivalled dynamic qualities, which makes it the "*ideal medium to help us understand complex and chaotic aspects of the world*" (VanderVen, 2006, p. 405).

Although play is seen as a complex and flexible activity, there are also indications that children's play development follows some common, sequential, age-related trajectories (Garner & Bergen, 2006; Pellegrini & Smith, 1998; Vygotsky, 1978). These theories generally describe patterns of increased complexity, either in terms of physical (Pellegrini & Smith, 1998), social and/or cognitive abilities (Garner & Bergen, 2006; Howes, Unger, & Seidner, 1989; Vygotsky, 1978), and how these developmental abilities affect and are affected by play. Based on these initial consideration of children's play – yet with respect to the rather elusive and complex character – I assume that these characteristics enables me to distinguish play from other activities during observations.

1.5 Risky play – Previous research

Children's autonomous risk-taking has been studied since the 1970s (see for example Aldis, 1975; Bruner, 1976; Jambor, 1986), but the term *risky play* is fairly new, and, similar to play, conceptualizations are limited in terms of consensus and definitions. However, similar to play theory, literature on children's risk-taking often refers to some common characteristics. Firstly, in a classical study, Bateson (2006 [1955]) used observations of animals' play-fighting in the zoo as a starting point and suggested the necessity of *play signals* as crucial for successful play. Participants need to signal to each other that 'this is play' and not real fighting. Hence, play allows for exploration of "what can I do"? (Bateson, 2006 [1955]). As play sometimes imitates real life, so risky play has been suggested to imitate real-life risks, like playfighting or playing that the floor is lava. But risky play is also used as a term when risk enters as a mode or part of the play, i.e., an objective risk becomes either an aspect of the family play (the family must climb a mountain to get food) or as the central focus of the play (children climbing in a climbing frame). Either way, when risk enters as an aspect of the play, experiences are descriptively in conjunction with that of curiosity and exploration, and the individual experience typically entails emotions or states such as deep concentration, fear and/or excitement (Sandseter, 2010b). Although fear has its natural place in risky play, the literature tends to focus on the fun and the thrill, overt sounds, and body language, i.e., screaming, laughing and big movements (Mårtensson, 2004; Readdick & Park, 1998; Stephenson, 2003). Such descriptions make risky play often congruent with, or at least strongly related to, vigorous physical activity; for example, sliding, swinging, climbing, bicycle riding, balancing over drops, jumping down, chasing and play-fighting, shooting with bows and arrows, rolling on the ground and whittling sticks (Hughes, 2012; Kaarby, 2005; Sandseter, 2010b; Smith, 1998; Stephenson, 2003). Typical traits of these play-activities are the apparent strong inner drive, flexibility and their repetitiveness (Sutton-Smith, 1997). Even with strenuous physical tasks such as climbing up a hill and sliding down, children tend to repeat such activities for long periods of time. Rough-and-tumble play is also regarded as risky play, as children may (unintentionally) harm each other while play-chasing or play-fighting (Blurton-Jones, 1976; Humphreys & Smith, 1984; Pellegrini & Smith, 1998; Smith, 2005). Such vigorous physical play is naturally seen as outdoor activities (Aarts, Wendel-Vos, van Oers, van de Goor, & Schuit, 2010; Brussoni et al., 2015; Cosco, Moore, & Islam, 2010; Storli & Hagen, 2010). Hence risky play is inherently seen as, and/or related to, outdoor play (Brussoni et al., 2015; Sandseter, 2010b; Stephenson, 2003). Referring again to the general shift in approaches to risk presented in 1.2 – from risk as purely negative to a more general

approach including positive connotations – I suggest that the rather young research tradition of risky play emphasizes positive connotations of risk.

In sum, previous research links risky play to exploratory behavior and an observable balancing act between fear and exhilaration. There is an emphasis on vigorous physical activity, overt bodily expressions, fun and thrill, mostly outdoor activities and risk of physical injury. It also asserted that risk appear as an aspect, or mode, of play behavior, appearing in conjunction with other types of play, e.g., pretend play or physical play. Relating risk-taking to play also implies the assumption that risk-taking is intrinsically motivated and voluntary. By bringing these perspectives together, Sandseter (2010b) summarizes characteristics to: "[Risky play] involves thrilling and exciting forms of physical play that involve uncertainty and a risk of physical injury" (2010b, p. 22). Clarifying, she identifies six categories of risky play: 1) Play with great heights (danger of injury from falling), 2) play with high speed (uncontrolled speed that can lead to collision), 3) play with dangerous tools (that can lead to injuries), 4) play near dangerous elements (such as fire, water or heights), 5) rough-and-tumble play (where children can harm each other), and 6) play where the children can get lost.

Largely based on these concepts, there are some recent studies exploring perceptions and attitudes of parents and ECEC practitioners regarding risky play (Cevher-Kalburan, 2015; Little, 2010; Little et al., 2012; Little, Wyver, & Gibson, 2011; McFarland & Laird, 2017; Sandseter, 2014; Storli & Sandseter, 2017; van Rooijen & Newstead, 2016). By comparing how, for example, gender or context affect attitudes and management of risky play, these studies substantiate that there are relative aspects (e.g. subjective or cultural) of how risky play is valued.

Summarized, in this study, I characterize children's risk-taking in relation to play, thus applying the common characteristics of play, most saliently the volunteer appearance and intrinsic value play has for children; the somewhat flexible and unpredictable character play has, and age-related characteristics. Both as a starting point for observations and for interpreting observations, I applied the work leading up to Sandseter's definition; that is, I used the definition itself and associated categories as basis for further descriptions. However, Sandseter's work and most of the previous literature is related to children three years and older, and I had to assume that younger children might express themselves differently, and conditions in ECEC might be different. Therefore, I have been cautious in applying the

existing concepts directly to younger children, both in terms of age characteristics and environmental conditions.

Lastly, I reiterate that I chose a dual understanding of risk with a particular attention to physical risk. The dual understanding is accounted for in section 1.2, while I will finish this section by elaborating on why I chose to focus on physical risk 1) Previous literature on risky play has largely focused on physical risk, and even if those studies only include older children, this has given me the opportunity to build on previous research and theoretical conceptualizations. Being an exploratory study, this could arguably have enticed me to look for other aspects of risks. However, the following arguments have consolidated a delineation to mainly physical aspects. 2) Risk literature explores a wide range of risks, e.g., social, financial, physical, emotional, social, political, ethical, intellectual or existential (Breivik et al., 2017). Even if some of these approaches to risk might be relevant for children's experience directly (for example social or emotional risks), most of these aspects either represent more mature/adult experiences, or are only relevant indirectly. Unequivocally, socio-economic disadvantages in childhood represent well-documented risks to a host of life-influencing factors, such as poverty or domestic neglect or violence (see for example Walker et al., 2011). However, my study has had a very different approach to risk, i.e., an observational study of very young children *playing*, with a partly positive view of risks. 3) More concretely on the observational issue, observing physical risk seemed feasible because of the existing dual risk regime. It would also seem inherently difficult to establish and delineate observational criteria of for example social or emotional risk. Instead, based on theory and previous studies, I could make assertions of the physical facts in a situation, including – however incomplete – approximations of potential outcomes, and interpret children's actions in terms of their subjective experience. I discuss methodological and epistemological challenges related to how to make observations on this basis further in the method section; in the general discussion and in section 5.1. 4) Additionally, the objective risk regime is dominant in ECEC. Playgrounds are regularly assessed on the basis of objective risk, and mishaps and accidents are mapped within so-called Health and Safety-systems with the ultimate goal of zero accidents (Ball et al., 2012; Gill, 2017; Sandseter et al., 2017). This forms a basis for making assertions that are commonly acknowledged (e.g., falling represents an actual risk), but might also lay the ground for discussing solutions (e.g., what are the best ways to avoid falling accidents: by allowing children to train with heights or by eliminating any possibility of falling from heights?). 5) Ultimately, although I assume that physical risk-

taking is important and valuable in itself, physical risk-taking can also be seen as an antecedent of later and more complex forms of risk taking, similar to the way physical play is seen as an antecedent or a necessary developmental step on the way to more complex learning. Numerous studies have documented an intertwined relationship between motor- and brain development, including relationships between aspects of physical, socio-emotional and cognitive development (Becker, McClelland, Loprinzi, & Trost, 2014; Bjorklund & Brown, 1998; Diamond, 2000; Lu & Montague, 2016; Sattelmair & Ratey, 2009; Sibley & Etnier, 2003; Veiga et al., 2017; Wang, Lekhal, Aaro, Holte, & Schjolberg, 2014). Some of these aspects are addressed further in section 1.6.2, as they, presumably, influence – and are influenced by – children's risk-taking specifically.

1.6 Risky play and learning perspectives

Combining play and learning implies a well-known paradox in research: If play is inherently purposeless; how can it have a function? Notwithstanding well-established relationships between development and play – for example, relations between play and the development of various competencies (Fromberg & Bergen, 2006) – several researchers have grappled with this problem (see for example Martin & Caro, 1985; Pellegrini, Dupuis, & Smith, 2007). However, to amend the problem, researchers suggest that play is first of all purposeless from the child's perspective; for example, children do not play with friends to become socially competent or proficient in language. Yet, it is maintained that play contributes significantly to such competencies (see for example Elias and Berk (2002), van Schaik, Leseman, and de Haan (2017) or Veiga et al. (2017) (social competence and play), and Christie (2006) or Charman et al. (2000) (language development and play)). The problem might therefore not be that the two concepts are incompatible, on the contrary, it is rather likely that experiences have both immediate and long term effects (Martin & Caro, 1985). Rather, the problem is, from the point of view of Whitebread et al. (2009), an indication of researchers' shortcomings in distinguishing the nature of learning in play (implied that there are different ways of learning and different ways of playing). They suggest that, for example, *pretend play* has superior qualities in learning metacommunicative and self-regulating abilities, thereby laying the foundation for higher-order thinking and long-term learning capacity. This is supported in the evolutionary approach, where play is seen as an arena of uncertainties and risks, where children practice these, sometimes fictive, sometimes real, risks (Sandseter & Kennair, 2011). Sutton-Smith (1997) argues that human evolution has been characterized by flexibility, continuous change and latent possibilities and suggests that this is typical for both play and

learning. Although specifically related to adolescents, Pellegrini et al. (2007) maintain that play-experiences are related to later ability to handle novel situations and unexpected events. Intuitively, this resonates with certain aspects of risk theory, where, for example, Miller and Byrnes (1997) suggest that being capable of handling uncertainty is part of the core capacities of risk competence. Moreover, uncertainty, and the ability to handle it, are suggested to be fundamental of the human condition (Pellis & Pellis, 2007; Spinka, Newberry, & Bekoff, 2001).

This assumption is also emerging in empirical research, e.g., by Riksen-Walraven and van Aken (1997), who found that parents' willingness to accept children's autonomous play in infancy, including allowing children to grapple with challenges and face uncertainty, was predictive of children's resiliency in novel situations at the ages of 10 and 12. Other studies indicate that there are similar relations between parents' support for autonomy in early childhood and later improved school performance (NICHD, 2008) and later emotion regulation (Brenning, Soenens, Van Petegem, & Vansteenkiste, 2015), and this relation is found in different cultural contexts (Marbell-Pierre, Grolnick, Stewart, & Raftery-Helmer, 2017). Although uncertainty and unexpected events do not necessarily involve risks, the notion of 'uncertainty' captures an essential point: Life is unpredictable and risk is sometimes inevitable. Summarized, in this study, I follow the three general notions that 1) play can, simultaneously, have immediate and long-term consequences, 2) that there are conceptual similarities between play and learning that makes them congruent – and not opposing – aspects of children's experience and 3) that play – volunteer, intrinsically motivated, flexible and unpredictable – is an activity where children learn *about* – and how to handle – uncertainty and risk.

1.6.1 Zone of Proximal Development (ZPD)
To address the aspects of risky play and learning more specifically, I have chosen three theoretical concepts: ZPD, scaffolding and self-regulation, and the reasons for this choice is elaborated in the following. First, because these concepts have a similar origin in Vygotskian theory of the zone of proximal development, yet address different aspects of processes of play and learning. Therefore, they both relate to – and supplement – each other and might enrichen the analysis. Both historically and currently, the concept of Zone of Proximal Development (ZPD) has widely influenced educational practice and research (see for example Sheridan, Pramling Samuelsson, & Johansson, 2009; Sylva, Melhuish, Sammons, Siraj-Blatchford, & Taggart, 2004; Veraksa, Shiyan, Shiyan, Pramling, & Pramling-Samuelsson, 2016). The

theory has been applied mostly to learning of academic skills, such as reading, writing and numeracy (Berk & Winsler, 1995; Christie, 2006; Dixon-Krauss, 1996; Vygotsky, 1978; Wood, Bruner, & Ross, 1976).

Vygotsky (1967) emphasized how play was an essential source of children's learning, and one of his main concerns was the relationship between learning and development. Simplified, he refers to development as the continuous biological process, while learning is the conscious actions of the individual supporting his or her development. He argued further that children's *actual developmental* level can be determined by educators, by simply observing what they can do on their own (Vygotsky, 1978). In order to assess this accurately, and at the same time determine what children are ready to learn, Vygotsky suggested that educators could combine children's actual developmental level with an assessment of what would be possible for children to achieve with some help. He thus formulated the concept of Zone of Proximal Development (ZPD):*"It is the distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers,"* (Vygotsky, 1978, p. 86). The potential developmental level is what lies just beyond the learner's capacity, virtually the next level of achievement, obtainable with some assistance or support. Learning is therefore the process that gets the learner from the one stage to the other, and is signified with a change of behavior or change of thinking.

Originally, Vygotsky saw children's *natural actions* as prompts for educational actions from parents, teachers or more experienced peers (Veraksa et al., 2016). In this project, I interpret risk-taking as potentially such natural actions, with a reference to children's inherent propensity to take risks. Originally, although the emphasis was on the teacher's role, identifying and determining the ZPD was largely seen as a collaborative process, reiterated in contemporary adaptations, where the learner is seen as an active participant and collaborator in contrast to a passive recipient of teaching (Johnson et al., 2012; Veraksa et al., 2016). This might be timely in relation to risky play, as it is a situation potentially conducive to strong and ambiguous feelings such as fear, hesitation, joy and exhilaration. It should also be noted that, even if the focus has often been on the teacher-student relation, scaffolding can also occur between peers. Notably, Vygotsky maintained that play is where the zone of proximal development is created (Vygotsky, 1967, p.16).

For educators (including parents and more experienced peers), but also for researchers, the concept of ZPD provides a set of observable criteria. As stated, if children face a task within

their actual developmental level, they can do it by themselves, with relative ease. If the task represents a past stage of their actual development, it will be too easy; children might get bored and leave the activity, effectively learning nothing. If children face a task outside the proximal level, the task will be too difficult, and the learner will give up. In relation to risk, I therefore assume that a task within children's proximal risk level is what drives children's propensity to take risks, with three potential observable outcomes. If the risk level is too high, children will express fear and withdrawal. If the risk level is too low, children will experience, thus express, little or no arousing effect, and therefore eventually leave or try to alter the activity. If children find their proximal risk level, they will experience the optimal arousal, thus express excitement (e.g., fearful joy), and continue the activity, eventually increasing the objective risk to maintain optimal arousal, as suggested in 1.3.3.

1.6.2 Self-regulation
The concept of self-regulation has been widely addressed in Vygotskian theory. In this strand of theory, the concept of private speech has been prominent, originating from Vygotsky observing that children faced with a problem increasingly talk out loud to themselves (Vygotsky, 1978, p.25). This observation has instigated investigations of the role of such self-directed language and how it might augment the cognitive and behavioral resources available to the child (Winsler, Fernyhough, & Montero, 2009). The significance of self-regulatory language has later been explored for a range of features of typical and atypical development, such as nonlinguistic self-directed communication, metacognitive awareness, pretend play and the development of symbolic understanding, emotion regulation and motivation, and creativity. Not least, in the socio-cultural tradition (after Vygotsky), self-regulation is also seen as social adjustment in relation to others, to the extent that a more appropriate term would be "other-regulation" (Bodrova, 2008). Specifically, by Vygotsky, it is seen as the internalization of social norms and that dialogues (both with peers and adults) substantiates psychological links between the external sociocultural environment to the inner psychological plane. Notably, he suggested this to be a fundamental outcome of sociodramatic play (Vygotsky, 1978) and, by testing this empirically, Elias and Berk (2002) found a relationship between complex sociodramatic play and improved self-regulation, particularly for high-impulsive children.

However, it is natural to see both processes in conjunction, that children's self-regulating processes are conducive to the development of higher order thinking and at the same time are part of the cultural context to which they gradually internalize information and adapt.

Influenced by a cognitivist tradition, Miller and Byrnes (1997) have applied the concept of self-regulation directly to children's risk-taking, i.e. gradual self-adjustments in relation to one's own feelings and capabilities. They describe, basically, how children experience something as dangerous (external information), how they process that experience internally and, then, based on those two factors (the experience itself and the subsequent internal process), act further. Miller and Byrnes (1997) suggest that a successful risk-taker is recognized by five characteristics: 1) knowledge of diverse strategies, 2) the ability to coordinate multiple goals, 3) being capable of handling uncertainty, 4) self-correcting strategies when making mistakes (assessing tendencies, biases, and limitations), and 5) a tendency to learn from experience. Whitebread et al. (2009) suggest that such self-regulating tendencies are essential metacognitive abilities and are part of a foundation for the ability to learn. They group these tendencies into three overarching concepts. That is, *metacognitive knowledge* which is the individual's knowledge about him-/herself, the task itself and strategies that affect their cognitive performance. *Metacognitive regulation* is the process during ongoing activities that involve planning, monitoring, control and evaluation, and *Emotional and motivational regulation* which are the learner's ongoing processes of monitoring and control of emotions and motivation during learning tasks.

My interpretation of self-regulation would thus be that of a feedback cycle, in which external and internal information exchange and eventually lead to a decision by the child. That is, children regulate their actions according to their perception and knowledge of themselves in relation to both emotions (exhilaration/fear, "I get afraid/I get excited") and capabilities (able/unable "I can do it/I cannot do it"). Thereby, both withdrawing because of fear, maintaining or increasing the risk-level, could be interpreted as self-regulation, presuming a certain level of autonomy. That is the process of self-regulation can be interrupted, for example if the child is pushed outside his/her limits (by an insensitive adult) or restrained (by an anxious/overprotecting adult). Ultimately, I consider autonomy as both a prerequisite and a potential outcome of risk-taking: the child must be allowed autonomy to be able to go through the stages of independent decision-making and, if going through the process successfully, the child might experience a strengthened degree of self-assertion and autonomy.

1.6.3 Scaffolding – the educator's role
As this theory is developed as a socio-cultural learning theory, emphasizing how learning takes place between social actors, a key aspect is how children's natural actions are developed and adjusted into the existing culture (Veraksa et al., 2016; Vygotsky, 1978). As mentioned in

section 1.2 and 1.3.1., what is seen as risk and thereby what is accepted in terms of children's risk-taking, might vary in different historical or cultural contexts. Therefore, learning activities that involves risks might be seen as a typical expression of cultural learning. Although the term *scaffolding* was not used by Vygotsky, after being introduced by Wood et al. (1976), the concept of scaffolding has been widely applied to conceptualize appropriate educator-child interaction ('educator' here including adults, teachers, parents or more experienced peers) related to the ZPD (Berk & Winsler, 1995; Veraksa et al., 2016; Verenikina, 2003). For example, Williams, Mastergeorge, and Ontai (2010) build on Rogoff's 'guided participation', drawn from anthropological studies of diverse cultures, of how educators use hints, support and gentle suggestions or alter the environment to help children solve problems. Their particular aim is to develop scaffolding as a strategy to support peer interaction. Similarly, in the vein of Bruner and Vygotsky, Roopnarine and Krishnakumar (2006) emphasize how adults' and children's co-playing might communicate cultural information that children internalize,.

Following this potential for different applications, I apply scaffolding to conceptualize interaction where the ECEC practitioner and children, together, identify children's proximal risk level. The practitioner must determine how much guidance and support children need at any given moment, that is, appropriately support children in either increasing the risk, decreasing it or maintaining the status quo. Thus applied, a response from the practitioner can be observed and interpreted as either a good- or a poor fit response to the child's play needs (Trawick-Smith & Dziurgot, 2011). Further, scaffolding depends on a set of prerequisites and can be observed as a sequence of actions and interactions.

Firstly, *warmth and responsiveness* are argued to be essential characteristics and prerequisites for high-quality interaction, by any standards (see for example Albers, Riksen-Walraven, & de Weerth, 2007; Helmerhorst, Riksen-Walraven, Vermeer, Fukkink, & Tavecchio, 2014; Norman & Christiansen, 2013). While scaffolding, being responsive means that the practitioner must be aware of and open to the child's perspectives (Veraksa et al., 2016). The practitioner must continuously and consistently acknowledge children's individual emotional and physical needs and respond to them in a warm, engaged and forthcoming way. In a recent study Gartstein, Hancock, and Iverson (2017), suggest that infants' and toddlers' ability to handle fear is depend type the type of support from the mother, where, particularly, the mother's responsiveness was a significant predictor of the fear development, with higher sensitivity predicting lower levels of observed fear.

Secondly, it is maintained that optimal learning takes place when the educator and learner (in this case the ECEC practitioner and child) – together – explicitly define the problem and work towards a common goal (Berk & Winsler, 1995; Siraj-Blatchford, Muttock, Sylva, Gilden, & Bell, 2002; Vygotsky, 1978; Wood et al., 1976). This aspect might appear formalistic in previous studies with older children, i.e., that the learner must have a clear understanding of the problem and that educator and learner collaboratively agree on potential solutions and a final outcome (Wood et al., 1976). Nevertheless, generally, while observing and interpreting staff-child interaction, it should be clear *with what* and *in what way* the child actually needs support, as well as how the practitioner supports the child in expressing his/her experience and communicates with the child. Thirdly, autonomy is seen as the ultimate goal of scaffolding (Berk & Winsler, 1995; Trawick-Smith & Dziurgot, 2011; Verenikina, 2003; Vygotsky, 1978). The practitioner must therefore determine how much assistance the child needs at any moment in play. At some point, the practitioner must make an intentional choice to *not act further*, i.e., relinquish control, allowing the child to struggle and leaving the child largely responsible for making decisions (Berk & Winsler, 1995; Vygotsky, 1978). Generally, supporting autonomous play, i.e., play that is not in need of support, is considered a poor-fit response (Trawick-Smith & Dziurgot, 2011).

In this project, I delineated the 'problem at hand', i.e., the action that the ECEC practitioner and child jointly focused on, to situations that implied some sort of risk, for example, that a child was about to climb or two children were play fighting. *Responsiveness* was thus observed as how the practitioner acknowledged and showed genuine interest in the children's risk-taking. I did not expect to observe *joint problem-solving* between practitioners and 1-3 year olds in risky play as a process where the practitioner and child would 'formally' agree upon the child's proximal risk level and then make a plan for how to obtain it. Rather, my attention was on how a joint focus was expressed and communicated with the child through looks, facial expressions, body language and/or words. Ultimately, I should be able to observe how practitioners *enabled children to handle risks themselves*. That is, from the theoretical viewpoint, how practitioners support children through their proximal developmental level, from one actual developmental level to another, eventually supporting their ability to self-regulate and make autonomous decisions.

To summarize section 1.6, I maintain that, generally, there is a lack of concepts for interpreting learning in risky play related to the target age-group of this study; thus, the learning perspectives presented in the previous sections are suggestions in this respect.

Summarized, learning is included in the study for two main reasons. First, to develop an additional approach to analyzing and understanding risky play. Risky play has previously predominantly been interpreted and analyzed as sensation-seeking (see 1.3.2 and 1.5). However, initial observations in this study indicated a lack of exhilaration, thereby missing one central criteria for identifying risky play. Second, based on previous literature, learning has had a presumed, natural place in risk taking (see 1.3.3 and 1.5), but it is not always clear how 'risk-learning' takes place, especially with children under three years. As before, I needed to be cautious of direct applications of the suggested concepts, since these concepts previously have mainly involved older children, and predominantly been applied to cognitive skills and development. The concepts relate to each other in terms of having a similar origin and emphasis on play, and that they supplement each other in terms of addressing different aspects of play. ZPD-theory addresses how children assume and adjust their goals according to what is achievable, self-regulation conceptualizes the complex internal processes of reflection, problem-solving and decision-making, and scaffolding addresses how these processes can be supported externally.

1.7 Quality in ECEC

1.7.1 General concepts of quality in ECEC

As ECEC has grown globally, it has developed both as a professional sector and a research field, initiating more comprehensive discussions of quality. One overarching discussion addresses whether it is possible to establish universal criteria of ECEC quality or if the perception of quality always is context- and subject dependent (Douglas, 2004; Sheridan, 2009). Regardless of lack of conclusions in this debate, it is widely accepted that some general characteristics of high ECEC quality for children under 3 years can be identified, recently summarized by Mathers, Eisenstadt, Sylva, Soukakou, and Ereky-Stevens (2014) as five key conditions: (1) Knowledgeable and capable practitioners, supported by strong leaders; (2) a stable staff team with a low turnover; (3) effective staff deployment (e.g. favorable ratios, staff continuity); (4) secure yet stimulating physical environments; and (5) engaged and involved families (p. 40). In research and evaluations, these conditions are commonly delineated to structural and processual aspects (Mashburn et al., 2008; Sanders & Howes, 2013). Structural aspects include, for example, availability and appropriateness of space and equipment, the number of children attending a group, the ratio between children and staff (both academic and non-academic qualified), the stability of staff and absenteeism, while processual aspects encompass relations and interactions between children and between

staff and children. Additionally, the content of ECEC, i.e., the educational or pedagogical content, might also be included in quality assessments (Kontos, Burchinal, Howes, Wisseh, & Galinsky, 2002; Mashburn et al., 2008). These aspects have also been used to examine the effect of ECEC attendance, that is, examining relations between characteristics of ECEC such as the factors mentioned above, and later child development and achievements, e.g., relations between ECEC quality and cognitive and social development (Belsky et al., 2007; Camilli, Vargas, Ryan, & Barnett, 2010), often related to academic achievement (Sylva, Melhuish, Sammons, Siraj-Blatchford, & Taggart, 2011; Vandell, Belsky, Burchinal, Steinberg, & Vandergrift, 2010).

Generally, process quality, content quality and effects of ECEC attendance are seen as complex and often interwoven factors that are difficult to measure (Dalli et al., 2011; Lamb, 2009). Jamison, Cabell, LoCasale-Crouch, Hamre, and Pianta (2014) summarize these aspects from a child's perspective, as they suggest ECEC quality to be *"the aggregate of a child's experience within a child care setting"* (p. 554). Aspects of risky play are presumably subsumed within either of these factors, for example, preventing injuries through safe playgrounds (structural quality) or appropriate supervision (process quality), fostering physical activity and/or supporting risky play appropriately through staff-child interaction (process quality) or appropriate playgrounds (structural quality).

Based on the increasing size of ECEC, a subsequent need to have transparent, reliable and comparable methods to evaluate quality has emerged. Presently, there is a wide range of available standardized instruments, but, generally, despite most instruments including aspects of children's safety, few of these include risky play. However, a few research instruments are emerging, for example, The Tolerance of Risk in Play Scale (TRiPS) (Hill & Bundy, 2014) and an intensive package of risky play activities (Lavrysen et al., 2015), but these are not adapted to children under the age of three. Research on ECEC quality in the Norwegian context is limited, especially in regards to large-scale projects (Alvestad, Johansson, Moser, & Søbstad, 2009; Bjørnestad et al., 2012). Some small-scale qualitative studies have examined children's experience in ECEC with an emphasis on peer relations, staff-child interaction and aspects of children's participation (Bjørnestad et al., 2012).

On this background, I developed three strategies to relate 1-3-year-olds' risky play to ECEC quality. They were 1) examining scaffolding risky play as process quality, 2) examining affordance for risky play as structural quality and 3) analyzing the Infant/Toddler

Environment Rating Scale – Revised edition (ITERS-R) (Harms, Cryer, & Clifford, 2006) for feasible relations to risky play, as well as a means of triangulation to relate risky play to a standardized measurement of quality. These are presented in the following sections.

1.7.2 Scaffolding risky play as process quality
Of the many potential aspects that represent ECEC quality, social interaction between staff and children – process quality – is considered the core quality (Dalli et al., 2011; Helmerhorst et al., 2014; Jamison et al., 2014; Lamb, 2009; NICHD, 1996). Generally, ECEC staff are considered essential in establishing a sense of security, as well as promoting well-being and development, and there are several ways to evaluate how this is done. In this study, process quality is related to how the practitioner responds to – and interacts with – children engaged in risky play.

To assess this, I reviewed several concepts. Possibly due to the increased ECEC attendance over the recent years, there is now a wide range of available research instruments for assessing staff-child interaction quality, such as the Observational Record of the Care Giving Environment (ORCE/M-ORCE) (Kryzer, Kovan, Phillips, Domagall, & Gunnar, 2007; NICHD, 1996), the Caregiver Interaction Profile (CIP) (Helmerhorst et al., 2014), the Classroom Assessment Scoring System (CLASS) (Jamison et al., 2014; La Paro, Hamre, & Pianta, 2009) or the PICCOLO (Norman & Christiansen, 2013). These instruments typically assess interaction in broad perspectives applying predefined categories, which made them not suited for exploratory purposes. Regardless, these instruments provide detailed descriptions of high-quality interaction, essentially the necessity of knowledgeable and capable practitioners especially in the sense of *warmth, sensitivity and responsiveness*, which have influenced my interpretations and analysis. These descriptions coincide largely with findings in qualitative research (see for example Bae, 2012; Sheridan et al., 2009) and recommendations in systematic reviews of care quality for children under 3 years (Dalli et al., 2011; Mathers et al., 2014). These concepts should also be seen as cultural representations, largely reflecting a Western ECEC context.

Naturally, keeping children safe, e.g., preventing serious injuries, is part of assessing appropriate interaction, certainly when children engage in risky play. Previous research has correlated higher levels of direct supervision with lower injury rates in children (Morrongiello, Corbett, & Brison, 2009), strongly indicating that active staff supervision is an important focus for injury prevention (Chelvakumar et al., 2010; Hudson, Thompson, & Mack, 1999). Ultimately, I decided to apply the concept of scaffolding, as outlined in section

1.6.2, to interpret observations of staff's interaction with 1-3 year olds in risky play. This was mainly a natural consequence of applying the concept of ZPD. Additionally, scaffolding is widely applied in ECEC research, indeed influencing the standardized measurements identified above and generally implying a solid foundation for empirical interpretations and theoretical developments.

1.7.3 Affordance for risky play as structural quality

ECEC practitioners provide opportunities for risky play not only through interaction, but also by creating and sustaining appropriate physical environments. For example, a climbing frame could provide experience with heights, tricycles and a downhill might be appropriate for experiencing speed, etc. To examine such provisions in a coherent framework, I apply the concept of affordance. In general, this concept is used to analyze and suggest how specific features of equipment and/or environments provide for specific interaction (Gibson, 1986). The concept has been applied in various disciplines; recently in relation to physical activity by Smith et al. (2016) who maintain that: "*The concept provides a powerful tool for environment–behavior analysis and has been embraced by a group of environmental design researchers and environmental psychologists, several of them researching children's environments [...]*" (p.553). As such, the affordance concept has been applied to investigate the relationships between environments and aspects such as brain development (Agyei, van der Weel, & van der Meer, 2016), sociability (Kyttä, 2002), play activities (Fjørtoft, 2001), physical activity (Smith et al., 2016; Storli & Hagen, 2010) or, as in the present study, risky play (Little & Sweller, 2014; Sandseter, 2009a). In this last regard, Little and Sweller (2014) maintain that "*Affordances encompass characteristics of both the environment and the person, and consequently are unique for each individual and correspond with the individual's body size, strength, skills, and motivation*" (p. 338).

For example, one child might use a sofa for relaxing; by sitting or lying down, while another child might utilize the same sofa for climbing and jumping. That is, the same environment affords different potential experiences for children, depending on their needs and interests, and, not least, their developmental levels. Presuming diverse actual developmental levels in a group of children, appropriate environment should provide diverse proximal risks levels. Equally, presuming diverse interests and risk tolerance (Sandseter, 2010a), equipment and environments presumably need to be complex and versatile. Ultimately, children's opportunities to interact with the environment depend on what their responsible adults (in this case ECEC practitioners) allow them to do. This is conceptualized as *actualized affordances*

(Kyttä, 2004; Sandseter, 2009a), i.e., the freedom or level of autonomy children are given by practitioners to interact with the environment based on their own desires and judgments. As such, both playground design and the concept of actualized affordance are influenced by, and might be seen as a reflection of, the cultural context. Affordance can therefore be interpreted both in relation to children's agency (what can I do?) and to cultural perceptions of what is allowed or accepted (Rogoff et al., 1993; Waters, 2017). Providing appropriate challenges also entails safety aspects. As suggested in 1.3.5, the main real-life threat to children's health in ECEC is falls. Regarding providing appropriate challenges, there are indications that playground equipment does not provide sufficient challenges in relation to children's propensity to take risks, thus conducive to wrong use (Ball, 2002; Ordoñana et al., 2007). Wrong use might also be interpreted as lack of proximal risk levels. In both cases, the interpretation might be that children are easily bored with equipment and environments lacking appropriate affordance. Appropriate affordance should thus take into account children's creativity in regards to both children's drive to learn and drive to feel excitement.

Table 1
Overview of Risky play environments

Risky play environment		
Environment that affords or accommodates risky play behaviors (Sandseter, 2009a).		
Affordances. Features of the environment can enable and invite children to engage in certain types of play behaviors (Herrington & Lesmeister, 2006). Affordances are unique for each individual and can be influenced by personal characteristics (e.g., strength, fear) and other features that may inspire or constrain actions (e.g., trees with low branches afford climbing).		
Risky Play Environments	**Affordances for Risky Play**	**Risky Play Category**
Climbable features	Affords climbing	Great heights
Jump down-off-able features	Affords jumping down	Great heights
Balance-on-able features	Affords balancing	Great heights
Flat, relatively smooth surfaces	Affords running, rough-and-tumble-play (RTP)	High speed, rough-and-tumble-play (RTP)
Slopes and slides	Affords sliding, running	High speed
Swing-on-able features	Affords swinging	High speed, great heights
Graspable/detached objects	Affords throwing, striking, and fencing	RTP
Dangerous tools	Affords whittling, sawing, axing, and tying	Dangerous tools
Dangerous elements close to where the children play (e.g., lake/pond/sea, cliffs, fire pits, etc.)	Affords falling into or from something	Dangerous elements
Enclosure/restrictions (e.g., differently sized sub-spaces or private spaces where children can explore on their own or hide away from larger groups, mobility license)	Affords getting lost, disappearing	Disappear/get lost

Sandseter's (2007) six categories of risky play (section 1.4) have been used for investigating affordances for risky play (Brussoni et al., 2015; Little & Sweller, 2014; Sandseter, 2009a), linking specific features of the environment (e.g., climbable features) to specific risk categories (e.g., great heights) (Table 1). As with the characteristics and definition of risky play, I used the risky play environments presented in Table 1 as basis for observations. Notably, these suggested affordances were developed and adapted to children 3 years and older. In this study, play environments and affordances for risky play potentially required adjustments to fit the needs, interests and developmental levels of children under 3 years.

1.7.4 Quality as measured by the ITERS-R
In the BePro-project, the Infant/Toddler Environmental Rating Scale – Revised edition (ITERS-R) (Harms et al., 2006) was selected as one of the main instruments[2] to assess ECEC quality for children between 6 weeks to 30 months. The ITERS-R is part of a comprehensive set of assessment tools, the Environment Rating Scales (ERS), developed in the U.S. to examine the general quality of childcare practices. It has widespread international use, and its reliability and validity is generally acknowledged (Barros & Aguiar, 2010; Goelman et al., 2006; La Paro, Williamson, & Hatfield, 2014; Vermeer, van IJzendoorn, Cárcamo, & Harrison, 2016; Vermeer et al., 2008).

The ITERS-R's main theoretical assumption is that infants and toddlers have certain physical, mental and emotional needs and that these needs must be provided for in ECEC. Basic needs assessed with the ITERS-R are delineated to "*protection of […] health and safety, appropriate stimulation through language and activities and warm supportive interaction,*" (Harms et al., 2006, p. 1), and, as maintained by Clifford, Reszka, and Rossbach (2010), *"all three components must exist to create a high quality environment,"* (p. 5). To meet these needs, the ITERS-R generally values care, play and learning, and observations must confirm that children are actively promoted to interact with their environment, peers and practitioners (Harms et al., 2006). Practitioners are evaluated based on their ability to engage, support and communicate, both verbally and non-verbally, with children. Both staff's interaction and the physical environment are evaluated based on their ability to promote children's autonomy and participation. The authors maintain that the ITERS-R is measuring process quality (Harms et al., 2006) , but since the ITERS-R emphasizes various aspects, including physical arrangement, routines and materials throughout the scale, ITERS-R is often referred to as

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[2] The ITERS-R data used in this project are acquired through two projects funded by the Research Council of Norway, "Better Provision for Norway's Children in ECEC" and "Searching for Qualities".

measuring global quality (Hestenes, Cassidy, Hegde, & Lower, 2007). The BePro-project is the first to use the ITERS-R with a representative sample of Norwegian ECEC centers, and instrument validity in the Norwegian context is currently under examination (Bjørnestad, Broekhuizen, & Os, In Progress).

The Environment Rating Scales have been criticized in various aspects, and some issues have emerged also in my project. These will be addressed in due course, but here I will first note that the ERS were developed in the U.S. and applications outside of this context should be cautious of cultural bias in the instruments. In the BePro-project, minor adjustments have been made in terms of clarifying how indicators are interpreted in Norwegian ECEC, as well as how Norwegian cultural beliefs manifested and affect scoring, for example, the general expectation of appreciation of nature from a very young age including outdoor play and sleeping outside (Bjørnestad & Os, 2018). However, findings of any instrument, the ITERS-R included, should be interpreted and discussed in relation to the cultural context. It is also worth noting that the original 'stop-scoring' procedure was not applied in the BePro study. The 'stop-scoring' procedure means that low-level indicators must be met before scoring higher level indicators. In the BePro study, all indicators were scored even if the lower level indicators were not met. This alternative scoring procedure does not affect the ITERS-R scores, but it gives more information about the center groups. For further information concerning clarifications and adaptations, see Bjørnestad, Gulbrandsen, Johansson, and Os (2013); Bjørnestad and Os (2018); Os and Bjørnestad (2016).

In my project, the ITERS-R was used for three purposes: Sample selection (introduced in 2.4), extracting information of risky play (introduced in 2.8.3, 2.8.4), and triangulation of findings (introduced in 2.7). General aspects, methodological issues, and implication for my findings are discussed further in 3.4 and 4.2.3. Methodological arguments for using the ITERS-R as a selection criterion are provided in section 2.4.

1.8 Research gap

Generally, there is a lack of research looking into the experiences of infants and toddlers in ECEC. Mangione, Kriener-Althen, and Marcella (2016) maintain that "*The numerous initiatives to improve quality point to the need for ecologically valid measures that assess the multidimensional nature of child care quality* […]. *In comparison to research on preschool quality, much less research has focused on the assessment of infant and toddler care quality* […]" (p. 149).

Additionally, I chose the specific topic of risky play for the following three reasons. First, it is well established that children from three years upwards take risks in play and that this type of play supports both children's well-being and development (Aldis, 1975; Boyer, 2006; Byrnes, Miller, & Reynolds, 1999; Christensen & Mikkelsen, 2008; Pellegrini & Smith, 1998; Readdick & Park, 1998; Sandseter, 2010b; Sandseter & Kennair, 2011; Stephenson, 2003). In contrast, apart from being mentioned briefly by Stephenson (2003), there are no known studies investigating children's risky play under the age of three years (Bjørnestad et al., 2012, p. 21). Hence, there is a need to examine basic aspects, such as, the age at which children start engaging in risky play and the defining characteristics for younger age groups. Even if the topic of risky play may appear narrow, I choose to follow Mangione et al. (2016), with the ambition of potentially adding knowledge to the multidimensional nature of child-care quality. Last, risk-taking among children and its implications is a timely topic, given the seemingly increasing focus on safety.

1.9 Aim of the project

The overarching aim of this project is to add to the existing knowledge on children under three years of age in ECEC, since risky play among 1-3 year olds has previously not been studied scientifically. While exploring a new phenomenon, certain approaches are appropriate: "[…] *it is perfectly legitimate, in our view, to begin the process of systematic observation with the simple goal of description. [...] hypothesis-generating research can play a vital role in the process of description and in the identification of phenomena. This kind of observational research is essential in new areas of investigation."* (Bakeman & Gottman, 1997, p. 12)

In a similar vein, I have concentrated on carefully describing central aspects of 1-3-year-olds' risk-taking in play. These descriptions might provide insight in children's experience and development, but, to follow Bakeman and Gottman (1997), should primarily create a foundation for further research questions and hypotheses. Ultimately, the knowledge generated in this project – both in itself and for further investigations – should benefit children, through helping parents and practitioners support children to understand and manage risks in their daily lives and in their future.

1.9.1 Research questions

1. What characterizes risky play for children aged 1-3?

2. What characterizes ECEC staff's interaction with children, aged 1-3, in risky play?

3. What characterizes affordance for risky play for children, aged 1-3, in ECEC?

4. What characterizes safety provision and appropriate stimulation of physical activity (including potential for physical risk) in Norwegian ECEC?

The first three research questions are previously addressed in separate articles. Because of time limitations, the fourth question is not yet examined in a separate article, but included in this extended abstract to address an overarching aspect related to risky play in ECEC.

2 Method

2.1 Type of study

This study was designed and conducted as a small-scale study as recommended for exploring new phenomena (Creswell & Plano Clark, 2011a; Johannessen, Tufte, & Christoffersen, 2010, p. 114). In such studies, the size and number of participants are mainly guided by what will provide sufficient and relevant information. The study is hypothesis-generating in that it is exploring a new phenomenon with mainly qualitative methods. The focus is on elucidating concepts, measurements and/or results that provide a basis for further investigations: "*A basic requirement of this kind of exploratory research is that it is essential to replicate and search for consistency across studies.* [...] *To summarize, hypothesis-generating research can play a vital role in the process of description and in the identification of phenomena. This kind of observational research is essential in new areas of investigation. However, it needs to be carefully done by incorporating it in programmatic research that builds in replication.*" (Bakeman & Gottman, 1997, p. 13)

This notion, to produce replicable findings through transparent procedures, has guided the project. However, by its very nature, exploration is open-ended, hence not intuitively set up to be replicated. Therefore, in this project, combining exploration with potential for replication has been a balancing act between creativity and structure. While exploring, it is tempting to look at everything, but this, paradoxically, increases the chance of ending up with nothing. The present exploration has been delineated to focus on children's risk-taking, but, obviously, more criteria are required to generate reliable findings. These criteria are presented in the following sections.

2.2 Ethics

Researching humans and social phenomena sometimes requires the researcher to observe or interact directly with the subjects of examination. Depending on research questions and scholarly tradition, such interaction might range from no direct interaction with participants, e.g., big data on internet habits, to living with participants for months or years, e.g., anthropological cultural studies. Regardless of level of interaction, the interaction is initiated by the researcher, and it is therefore his/her responsibility to ensure the rights and integrity of the participants. While researching children, special attention should be paid to the aspects discussed below.

Formally, the study has been approved by the Norwegian Social Science Data Service and Norwegian Data Protection Authority (NSD) (Confirmation letter in appendix), and it adheres to all ethical standards and privacy policies, which ensures participants' confidentiality and anonymity. The approval presupposes informed consent from staff and parents of children. Since informed consent from very young children is not feasible, it is normally obtained through gatekeepers (Homan, 2001). In this study, there were three main gatekeepers, in chronological order: Leading researchers in the BePro project, ECEC-staff and parents. In a longitudinal research project, such as BePro, it is vital to recruit and maintain a large sample, as attrition is considered a serious threat to the study's validity (Foster & Krivelyova, 2008). Therefore, BePro was an essential partner in initially selecting center groups from their existing database and collaborating to avoid research-/observation fatigue and subsequent drop-out by the participants.

ECEC staff and parents were approached with information about the project. Generally, it is essential to consider what, and how much, the participants should know about the project, to minimize the effects on their behavior and, eventually, the outcome of the study. Validity issues are discussed in section 2.7 and chapter 5, but in an ethical perspective, participants need enough information to provide informed consent. In this project, I chose to inform them about the topic and that it was an exploratory study, entailing open-ended observations (See "Samtykkeerklæring" in appendix). The information-letter was approved by NSD.

Children themselves should have a say, as they might experience intrusiveness. Firstly, the role of "detached observer" was chosen, since a low level of involvement and intrusion is recommended for observational studies on children (Gulløv & Højlund, 2003, p. 40; Homan, 2001). To prepare the children, staff would inform them of a visit by a stranger and the purpose of this visit, to the best of the children's comprehension. Most importantly, the children could give "ongoing consent" (Flewitt, 2005, p. 556). This means that if a child showed signs of discomfort related to the presence of the observer, the observer would withdraw. In addition, the study's focus is risky play, and there would be occasions where children might be at risk of, or actually, be physically injured. In such cases, continuous judgement was necessary to decide whether to intervene, and avoiding injury was given priority over the role as detached observer. No such situations occurred during the observations.

There are also ethical considerations while transcribing and disseminating information from behavioral studies. Actions and words are always subject to the researcher's interpretations, and the participants have volunteered to be subject to these interpretations. This consent is given in trust to the researcher and several measures have been taken to interpret observations as close to reality as possible. Double-checking my interpretations with supervisors, external researchers and practitioners, was therefore not done only for triangulation of findings (elaborated in 2.7), but also in respect to the participants.

2.3 Multiple methods

In the present project, I have included both qualitative and quantitative data to answer the research questions, inspired by multi-method or mixed-method approaches (Creswell & Plano Clark, 2011b; Teddlie & Tashakkori, 2009). The reason for this has been a pragmatic goal of obtaining as much optimal information as possible, in the most effective way (Johnson, Onwuegbuzie, & Turner, 2007).

Creswell and Plano Clark (2011a) argue that the need for different methods or additional data may be fixed and/or emergent, i.e., predetermined and planned from the start or arising while conducting the research. In this project, I planned to use both quantitative and qualitative tools, but I also added research components during the research process. Thus, my multi-method design was both fixed and emergent. As mentioned, the initial theoretical delineation focused on observable risk, and I wanted to collect as much information as possible related to this aspect. For overview, I made use of the following data collection techniques, elaborated in 2.6:

- **Field notes.** Purpose: Descriptions of behavior and context related to risky play.
- **Mapping.** Purpose: To quantify information parallel to the field note, thereby obtaining an overview of complex situations (Cosco et al., 2010), and comparable data within, and between, centers, regarding extent and context.
- **Video.** Purpose: To increase the level of detail in the descriptions, especially of one-year-olds' risky play (Knoblauch & Schnettler, 2012).
- **Infant/Toddler Environmental Rating Scale – Revised edition (ITERS-R)** (Harms et al., 2006). Purpose: Sampling criterion (described in 2.4) and triangulation of findings between a standardized measurement and exploratory methods.

2.4 Sampling and participants

2.4.1 Sampling strategy

There are several ways to select participants for small-scale studies. One often underlying assumption is that "*the case should stand for a population. If this is not true, or if there is reason to doubt this assumption, then the utility of the case study is brought severely into question,*" (Seawright & Gerring, 2008, p. 306). Seawright and Gerring (2008), continue to suggest that selecting samples for case studies has the same *"twin objectives as random sampling; that is, one desires (1) a representative sample and (2) useful variation on the dimensions of theoretical interest,*" (2008, p. 296). I interpret the notion of representative sample in the vein of ethnographic methodology, where it is maintained that the research questions dictate where and when data should be collected and that the goal must be to represent the full range of relevant settings and times (Miles & Huberman, 1994). Thus, I operationalized the criteria of useful variation on theoretical dimensions of interest as structural conditions for risky play in three ways:

1) ECEC quality (as measured by a standardized instrument, i.e., the ITERS-R)
2) Physical conditions outdoors and indoors
3) The two main Norwegian seasons; summer and winter.

I assumed that these factors might be structurally related to, and/or might influence risky play in one way or the other (Sayer, 1999). Of the three, I assumed that ECEC-quality would be the most influential and this choice is substantiated in the following, beginning with a brief introduction to the instrument and the BePro sample result. In the BePro-project, the ITERS-R (described in section 1.6.4) is one of the main instruments to assess general ECEC quality for children under three years of age. The BePro-project is designed as a population-representative study, recruiting and including centers using stratified random selection (SRS) and self-recruitment in 4 counties in Norway, regarding center size (number of children), geographic location (regions and urban/rural) and ownership (private/municipal). After several requests based on SRS and self-recruitment, there was a distribution issue regarding the balance between municipal and private centers. However, an independent sample t-test showed no significant differences in the total ITERS-R scores between municipal and private centers and the distribution has been assessed to be representative of the Norwegian population (Bjørnestad & Os, 2018). For further description of BePro's selection criteria see Bjørnestad et al. (2013) and Bjørnestad and Os (2018).

Analysis of the total ITERS-R scores in the BePro sample (n=206) (Table 2), show a mean score of 3.89; a relatively small standard deviation (SD=0.80); a total range from 1.65 (minimum) to 5.90 (maximum) (Table 2) and no apparent issues with skewness (lack of symmetry) and/or kurtosis (pointedness), with values not deviating unacceptably from zero (Field, 2013; Ghasemi & Zahediasl, 2012). Given close to normal distribution, this means that 95% of center groups are found in the range between 2.4 and 5.6. Suggestively, the variance between a majority of center groups in the sample is not large. (For histogram, see Figure 1 in appendix.)

Table 2

ITERS-R descriptive statistics

	N	Mean	SD	Min	Max	Skewness	Kurtosis
ITERS-R total score	206	3.89	0.80	1.64	5.9	-0.11	-0.07

According to Gobo (2008), this makes it feasible to focus on differences. As such, I decided on differences in terms of extremities of the scale, thus potentially representing the suggested useful variation (Seawright & Gerring, 2008), in this case of ECEC quality. In collaboration with researchers from the BePro-project, I therefore selected two ECEC-center groups based on their varied scores on the Infant/Toddler Environmental Rating Scale (ITERS-R) (Harms et al., 2006), one center group from the highest scoring portion of centers (ITERS-R > 5.5) and one from the lowest scoring portion (ITERS-R < 2.5). This means that these two center groups represent a considerable variance, i.e., two center groups that is "as different as you get" in the Norwegian ECEC context, as measured by the ITERS-R. Moreover, we not only know that they are different, we also have quite substantial information of the way they differ, in terms of the care and learning environment and thus, the everyday situation for children in Center 1 and 2. This information is reliable in the sense that the criteria is openly provided in the ITERS-R manual (Cryer, Harms, & Riley, 2004; Harms et al., 2006), and observations follow rigid, standardized and replicable procedures, conducted by trained and certified observers (described in 1.7.4 and 2.5.4).

Note that the other centers were also assessed with the ITERS-R, and all three scored in the middle range (Table 3). For those centers, it is therefore more difficult to make general assumptions, since it is uncertain how most items scored (a mid-range score can be obtained by scoring high and low on alternate items). This has not been a problem for the analysis since the goal of including Center 3 -5 was primarily collecting data on other aspect of risky

play that was outdoor play and children under 2 years specifically. To provide further context, the ecology of each center is described in 2.4.2.

To better understand the analytic potential, I will present the general assessment of Center 1 and 2 in the following. Note that, when I present information regarding each centers' scores, I have to be cautious of being too detailed, following my contract of confidentiality with the participants. Centers are generally assessed with 32 items, and, based on the total score of these items, we can assume that most descriptions of Center group 1 are in the range of the scores of 5 ('Good') and 7 ('Excellent'), and of Center 2 in the range of the scores of 1 ('Inadequate') and 3 ('Minimal'). Therefore, based on the qualitative criteria (the descriptive indicators) provided in the manual, we can assume that Center 1 has the following characteristics (subscales and items are in **bold**):

Regarding **Space and Furnishings (Subscale 1)** we can assume that Center 1's **Indoor Space** is sufficient and well maintained, its **Furnishings for routine care and play** are comfortable, well-maintained and appropriate to the size of the child, thereby allowing children to focus on developing self-helping skills. There are ample soft furnishings and toys that allow children opportunities for daily **Relaxation and comfort**. Their **Room arrangement** is arranged to promote safety and provide for both active play and quiet play, and the free movement of children. Materials are placed so that children can access them easily, to encourage independence and participation. There are colorful and ample **Displays for children, i.e.,** pictures and mobiles displayed at child eye-level.

Regarding **Personal Care Routines (Subscale 2)**, the daily **Greeting and departing routine**, provides parents and children with an attentive, warm welcome. **Meals and snacks** contribute to the health of children and provide a model for good meals and nutritional habits. Mealtimes are relaxed and scheduled to meet children's individual needs. **Naptime** is scheduled and safely supervised to suit the individual needs of children. **Diapering/Toileting** routines are safe, appropriate and hygienic, equal to general **Health practices**. Children's **Safety** is protected both through adequate supervision and minimizing hazards, both inside and outside.

Considering **Listening and Talking (Subscale 3),** staff both **help children to understand language** and **help children use language** by being active models, attentive and pro-active. Staff show interest, respond in a timely and positive way and are skillful in trying to interpret

children's communication. Staff play with words and rhymes, they describe their own actions, introducing children to new words, adding words to children's play and asking them questions. Appropriate, sufficient and well-maintained **Books** are accessible to children throughout the day.

Regarding **Activities (Subscale 4)**, the children have access to a variety of age-appropriate **Fine motor** toys and materials much of the day, and they have ample opportunity to exercise **Active physical play,** both indoors and outdoors. There are regular child-initiated **Art** activities that are process oriented, and they are provided with many opportunities for **Music and movement** much of the day. Musical toys and/or instruments are accessible for the children's independent use, daily. Staff sing, dance and play music with the children, on a daily basis. Children have the opportunity to play with varied **Blocks** and accessories, daily. There are many and varied, age-appropriate **Dramatic play** materials accessible daily. Materials are well organized, well-maintained and gives children opportunity to discover an array of roles and responsibilities. There is sufficient space, time, props, materials, both indoor and outdoor, and staff take part. There is **Sand and water play,** with a variety of toys and different activities, available at least weekly (snow can replace sand in Norway). Children are offered experiences with **Nature and/or science** at least two times a week, and the use of **TV, video, and/or computers** are used appropriately to encourage active involvement and learning. Lastly, the center **Promotes acceptance of diversity** by exposure to diversity through pictures, books, dolls, and other materials, including activities and social interaction.

Regarding **Interaction (Subscale 5)**, the center's **Supervision of play and learning** is scheduled flexibly to provide for individual needs and providing for a variety of play activities. Staff support **Peer interaction** by allowing children to move freely and by guiding and reinforcing the positive efforts of children interacting with each other. **Staff-child interaction** is frequent throughout the day, and there is much holding, patting, and physical warmth between staff and children. Children are met with appropriate expectations and they experience consistency in **Disciplinary** care.

Regarding the **Program Structure (Subscale 6)**, the **Schedule** for basic routines is flexible and individualized to meet both the needs of the group and each child's needs and provide for both indoor and outdoor activities. **Free play** occurs much of the day, both indoor and outdoor. Children are permitted to select materials and companions, and, as far as possible, manage play independently. **Group play activities** are flexible and appropriate, i.e., planned

and in accordance to both group and individual needs, and, lastly, if the group has **Children with disabilities** or special needs, staff display knowledge and collaborate with parents and other professionals to adapt routine care needs, individual assessments and developmental levels to the individual child. (An extended summary is provided in the appendices).

In sum, according to information collected in the ITERS-R, we can assume that the descriptions above are mostly true for Center 1, and we can assume that the 'reverse' is mostly true for Center 2. In brief, a score below 3 regarding **Space and Furnishings (Subscale 1)** implies that there is insufficient space and/or that they are in poor repair, including problems with supervision and safety. A low score on **Personal Care Routines (Subscale 2)**, implies that there are problems with hygiene, safety and that interaction is not always supportive and educational in care routine situations. Considering **Listening and Talking (Subscale 3),** a score below 3 implies that staff talk little or only moderately with the children throughout the day, and that there is insufficient material to support language development. A score below 3 on **Activities (Subscale 4)**, implies that children have limited access to materials and toys; including little variation and not being age-appropriate, also that there is little or only moderate staff-child interaction in relation to these activities. A similar low score on **Interaction (Subscale 5)**, implies that there are both problems with supervision and safety, and little or only moderate staff-child interaction, including little support for peer interaction, throughout the day. Lastly, a low score on **Program Structure (Subscale 6)**, indicates that there is limited flexibility to provide for individual needs, and that children have limited opportunities to select materials and companions, and to manage play independently.

As presented in 1.7, there is a general assumption that ECEC quality in terms of the care and learning environment will affect children's learning, well-being and development (Mathers et al., 2014), in this case – quality as measured by the ITERS-R. Based on the contrasting descriptions of the care and learning environment of Center 1 and 2, I have utilized this information to discuss potential aspects of quality in relation to risky play. The use of the ITERS-R provides reliable, accessible information on these contexts in which children might engage in risky play. My 'weakest' assumption was that, even if ECEC centers might vary a lot, in many aspects, the ITERS-R provide information that is comparable. My 'strongest' assumption was that the information provided by the ITERS-R is a reliable reflection of the care and learning environment, that actually influence children's risky play. (Sayer, 1999). My general analytic approach has been: what are influencing factors of risky play, both by looking separately at each center and by comparing them.

I assumed that if I found similarities across such different contexts (high and low ITERS-R scores), they could be said to indicate consistent patterns (Gobo, 2008) or what Williams (2000) calls *cultural consistency*. In this study, three factors may strengthen this assumption. First, most Norwegian children now attend ECEC, thus ECEC attendance is the norm for the population. Therefore, it can be assumed that parents who choose to send their children to ECEC do not deviate from the majority of the population, nor do their children. Second, given the situation of near universal access, ECEC provides the opportunity for natural observations. Groups of 1-3 year olds – spending time and playing together – are very rare outside the ECEC context today. Third, ECEC provides formalized, comparable and reproducible sampling conditions, in this study delineated to high and low global quality, nature centers, and infant/toddler groups.

As I utilized cases from the extremities of the scale, I assumed that these contrasting conditions could be relevant in hypothesis generation; to clarify directions of hypotheses and/or improve the testability of further assumptions (Bakeman & Gottman, 1997). For example, big differences in frequencies of risky play in the centers might generate questions of whether prevalence is related to staff behavior, amount and/or type of equipment, and/or other processual or structural conditions. I discuss more concrete assumptions in 4.2.

I also included groups from two nature ECEC-centers in the sample. This is often referred to as purposive sampling (Teddlie & Yu, 2007), meaning that I had specific, delineated intentions for including those centers. The nature centers are centers where children spend most of their time outdoors, in a natural environment, and might be seen as a typical expression of Norwegian outdoor culture (Lysklett & Berger, 2017). More specifically, previous research suggests that vigorous physical activity, and therefore risky play, will occur more often outdoors (Aarts et al., 2010; Cosco et al., 2010; Sando & Lysklett, 2012; Storli & Hagen, 2010). The specific intention of including nature centers was therefore to ensure observations outdoors, and thus increase the likelihood of relevant observations.

A second, purposive sampling choice was to include an ECEC center group of one year olds. After the first seven days of data-collection, the observations indicated deviations amongst one year olds from the predominant understanding of risky play. Therefore, to strengthen detailed descriptions, I decided to observe only one year olds for parts of the remaining data-collection, and including a group of one year olds was part of that strategy.

Additionally, observations were scheduled to include summer and winter conditions. I considered it important to collect data during the two main seasons, since they provide very different opportunities and challenges for risky play. In a learning perspective, it might also be assumed that dealing with varying climatic conditions is essential, not only in presenting different types of risks that the child need to manage, but also providing different opportunities for fun and exhilaration. In sum, I assumed that these structural differences provide similar analytic potential as those of differences in quality.

In total, I suggest that the sampling strategy and the current situation in Norwegian ECEC attendance strengthens the reliability of the study, i.e., that the findings might be reproduced by others.

2.4.2 Participants

In total, five ECEC center groups participated, including 53 children (1-3 years) and 21 staff (15 female and 6 male). Participating children were 28 boys and 25 girls, with 26 one year olds, 20 two year olds and 7 three year olds. An overview of participants is also presented in Table 3. The low number of three year olds reflects Norwegian practice, where children move to the older age group within the semester they turn three. To provide more information on the context of all centers, I therefore present a brief description of the ecology, i.e., a summary of physical features of each center. Descriptions are still kept relatively general to ensure anonymity. All centers were located around the central eastern part of Norway.

Center group 1 (High ITERS-R score): Center group 1 was in a building from the mid-90's with a total of four groups. *Interior*: One large room with small kitchen and low children-sized tables for eating and arts activities. The large room also contain a 'mattress-corner' for relaxation and reading, but children were also allowed to jump, climb and play-fight there. On one side the mattress corner is shielded by a floor-to-ceiling shelf, containing toys, on the other side there was a book rack accessible for children. The large room also contained a large wooden pallet transformed into a garage with lots of toy vehicles, and displays on the wall were abundant and relevant for children. There were two adjacent smaller rooms, were the one was draped in hanging cloths and subtly illuminated, and there were clothes for dressing-up. In the other room, there was a climbing frame and a rack to climb and balance on. In the adjacent dressing room (wardrobe) there was a toy kitchen well-equipped with toys and material for typical 'family play' (dolls, prams, kitchen-ware etc.). There was also a common room (available for all departments in the center) with a large climbing tower including a slide

and large mattresses. This room was accessible for the children only occasionally and only in company with staff. *Outside:* The center was surrounded by a traditional playground mixed with the natural landscape. There was a stretch of tarmac path surrounding the building allowing children to circle the building on bikes or running. There was a mix of surfaces including grass, sand, rocks, mud, exposed roots and moss. There were three swing racks with two swings each, three separated sandpits and one climbing frame with a slide. The natural landscape included a broad downhill slope facing the main playground in front of the building, with a longer slope facing the side of the playground and a smaller rocky surface behind the building. There were several small houses or structures that invited to role-play. There was varied vegetation spread out, with a variety of big and smaller types and sizes of trees and bushes. Additionally, descriptions from the ITERS-R indicate that the center generally was well-maintained with abundant and appropriate equipment and material, both inside and outside.

Center 2 (Low ITERS-R score): Center group 2 was in a building from the first decade of 2000, with a total of five groups. *Interior*: One large room containing a small children's-sized couch, a large mattress, and, on one wall, there were low shelves containing boxes with toys. On one wall, there was a wall-mounted table that was rarely used. There was one adjacent small room. This room was empty apart from two boxes of wooden train set and a wall-mounted table that I did not see in use. The adjacent dressing room (wardrobe) was not used for other activities than dressing. There was an extra room, across the adjacent kitchen, equipped with some cars, two small 'rocking beetles', some books and a couch, that the children could use in company with staff. *Outside*: The department faced a relatively large flat area, mostly with either a tarmac or rubber surface. There were two small patches of grass and a short slope with mud. There was one large sandpit, with a small wooden playhouse in the middle. There was one very low climbing frame (50cm, including a 1 meter rail not meant for climbing, but which some children attempted to climb and were stopped), including a slide and one small swing. There was a wooden 'grand stand' with five large steps. There were no trees or bushes. The low ITERS-R score substantiates this description, with lack of space, furnishing and toys. The environment generally provided little variation and relatively few appropriate experiences and challenges.

Center 3 (Nature center): This center consisted of two groups. *Interior*: There was only a small cabin used mainly for meals and routine care, clothes- and diaper changes. The room consisted of a large, open fireplace in the middle, two wood-burning stoves on one side for

cooking and a long table for meals on the other side. The table was also used for arts activities. There were also benches and trunks for storage along the walls. The center also had a lavvo (a large tent) that was used for story time/circle time, reading, rest and relaxation. *Outside*: The area surrounding the cabin was a large, partly fenced, area; partly forest, partly open natural landscape. The surfaces consisted of typical forest surfaces, including moss, grass, rocks, exposed roots and mud. In front of the cabin, the area was a long slope ending in a fence towards a field on one side and forest on the other. There were two shelters on one side of the slope, with the one side open. In one of the shelters there were hammers, nails and saws. The shelters were also fitted with benches and shelves and generally the structures invited role-play. There was a large rope-pendulum swing attached to two trees next to the slope. Other than that, the center had little manufactured equipment, but there were lots of loose parts such as planks.

Center 4: (Nature center): This center consisted of one group. *Interior*: The main building consisted of one large room with a wood-burning stove in one corner and a long table stretching almost the length of the room. The table was used for meals and arts activities. There were shelves and trunks along one side of the room with toys and books. Additionally, there was a semi-open house used for play and for rest and a wooden lavvo used for story- and circle time. *Outside*: The two cabins were surrounded by a large partly fenced area with mainly large rock formations and forest. The surfaces were varied forest surfaces such as grass, moss and mud. There were two large swings, a climbing frame with a slide and several, creative wooden structures for the children to climb and balance on.

Center 5: (Infant-Toddler group): Center group 5 was in a building from early 1990's, with a total of four groups. *Interior*: One large room with two low, child-sized tables for meals and arts activities. In one corner, there were mattresses and cushions for relaxation, but the children were also allowed to play rough and tumble there. There was a three-step rubber structure that invited climbing up and jumping off. The room was also equipped with several large toys that invited physical activity such as tunnels for crawling, a wooden bridge and balls. There was one adjacent, large room that was draped in soft fabrics and there were a number of flat cushions. Another smaller, adjacent room was equipped with small tables and chairs and toy kitchen equipment. The adjacent dressing room (wardrobe) was open for the children to play in. There was also a common room, available for all groups, that was filled with large mattresses and cushions and included a mounted climbing wall. The children could access this room in company with staff. *Outside*: The center was surrounded by a large

traditional playground where some of the natural landscape was kept. The surfaces consisted of tarmac closest to the building and natural surfaces elsewhere such as grass, rocks, mud and exposed roots. There were two large sandpits and several large trees and some bushes. The area was quite flat, but with several manufactured climbing frames, including slides and several small houses for role play.

My main focus with these physical features of the environment has been to investigate how they can be seen in relation to – and can potentially influence – risky play. Those results are presented in the Article summary (3.3) and in Article III.

2.5 Data collection
2.5.1 Focused ethnography
While experience and theory suggest that children under three take risks, no research literature indicates exactly how, so I considered open-ended observations to be a valid approach (Creswell & Plano Clark, 2011a; Pink & Morgan, 2013). Typically, in ECEC, children's everyday life consists of several routines, such as diaper changes, meals and naps. The children were observed in all activities and transitions between activities. However, the focus was to determine whether a behavior could be characterized as risky play, so describing all activities would be unfeasible and unnecessary. Therefore, the data collection was inspired and planned in accordance with focused-, rapid- or short-term ethnography (Knoblauch, 2005; Millen, 2000; Pink & Morgan, 2013). These concepts essentially provide the same framework and focused ethnography is used as the overarching term.

Knoblauch and Schnettler (2012) summarize that the aim of ethnographic knowledge production "*is that the researchers (a) get a sense of the (typical) meanings of the actions they are observing, and (b) can recover the (typical) knowledge of actors and the knowledge about the contexts of the action,*" (p. 345). Generally, focused ethnography is suggested to fit well within theoretically informed, applied research (Knoblauch, 2005; Pink & Morgan, 2013). This project is *theoretically informed* by previous conceptions of risky play and concepts of play and learning and *applied* in the sense it is related to the profession of ECEC and that findings might have implications for practice.

In contrast to the more traditional use of ethnography, where the ideal is long-term participation (Knoblauch, 2005, p. 5), focused ethnography emphasizes less intrusive and time-consuming data-collections. Notably, they are applicable when a certain aspect or phenomenon is defined beforehand, i.e., delimited, yet open-ended, observations. In this

study, observations were delimited to risk, inspired by the existing definition of "thrilling and exciting forms of physical play that involve uncertainty and a risk of physical injury" (Sandseter, 2010b, p. 22). However, I needed to be circumspect of this, considering the target age group was younger, and I decided on a wider cue, i.e., *any situation that was perceived potentially dangerous, either by the child, staff or the observer*. Thus, I paid attention to staff and children and made running assessments myself regarding whether staff, children or myself perceived any situation as risky. When such a situation occurred, I made general notes, filled in predefined information (see section 2.5.2) and, during two days, I also video recorded (see section 2.5.3). More specifically, observations were directed by two main criteria: the subjective and the objective risk in a given situation (Adams, 2001; Sandseter, 2009c). *Objective risk* means observable or measurable risk factors, while *subjective risk* involves how individuals perceive these factors differently in different situations. In this project I have followed Sandseter (2009c) and described these respectively as *environmental characteristics* of the situation, e.g., height, speed, unstable surfaces, etc., and as *individual characteristics*, i.e., how the children express their experiences through body language, facial expressions, sounds or words. Individual characteristics might also include assessments of personality traits that typically influence a person's subjective risk experience, e.g., temperament, previous experience and/or risk-propensity (Morrongiello & Rennie, 1998; Sandseter, 2010a), but I did not have the resources or permissions to do this in the present study.

While observing, I made approximate, qualitative, assessments of objective risks, that is, a statement of the physical facts, for example properties of a structure the children were climbing, including the height and surface. Probability in this case was not calculated mathematically, but related to previous knowledge and experience (of physical facts) and relative, e.g., more unstable surface equals higher probability of a fall, tools involved in play-fighting equals higher probability of a bruise; higher speed while sliding equals higher probability of a (too hard) impact. Simultaneously, I paid attention to children's and practitioners' actions and body language, trying to interpret how they perceived the risk the children engaged. This would indicate their subjective risk experience but would also give input to my own risk assessment.

Eventually, this resulted in a dataset made up of units of behavior, i.e., the smallest possible but still meaningful piece of information (Lincoln & Guba, 1985, p. 345). In this project, this unit is called "Instance of risky play". The overarching aim of collecting this information was to substantiate that the described situation included environmental or individual

characteristics in the situation that indicated risk – either from the child's, staff's or my perspective – and that the children's behavior could be characterized as play.

The use of different data-collecting techniques (field notes, pre-defined categories of information and video) is in line with recommendations for focused ethnography (Knoblauch, 2005), where the aim is to obtain as much information as possible in the most effective way (i.e., the shortest possible time) (Pink & Morgan, 2013). However, the main tool for registering information on the instances of risky play was field notes, and, throughout the data collection, I made sure to register as much information as possible related to each event, with the ethnographic ideal of thick descriptions (Geertz, 1994), not knowing what might be of analytic interest. Throughout the data collection, as preliminary patterns or findings would emerge, I could go back to earlier field notes, ensuring I had collected sufficient information (ranging from, e.g., who was participating, the length of the event, and location, to children's facial expressions and staff's reactions).

In ethnography, the researcher typically takes part in the life of the participants, while in focused ethnography, the role of detached observer is more applicable (Knoblauch, 2005). I chose the role of detached observer for three reasons. First, for ethical reasons, as it mainly involved low intrusiveness, as described section 2.2. Second, observations should include as many situations as possible, including situations normally occurring outside of staff's view. Corsaro (2003) suggests that this can be obtained by behaving differently from regular staff. Thus, I observed the staff and noticed, from the beginning, that the staff in all centers generally appeared playful and involved with the children. An unengaged adult would therefore presumably not be recognized as staff by the children. In Article I (p. 4), I present a short video transcript where a 3-year old boy confirms that I achieved this role, by stating that I am not an adult, rather a child. Third, I assumed that the detached observer would be the best option for my exploratory and descriptive purposes.

2.5.2 Mapping and quantification of qualitative data
During pilot observations, I decided it was feasible to delineate situations involving risk. The qualitative descriptions should focus on *how children interact (by words and body language) and how staff react and interact (by word and body language).* Additionally, I decided on a set of information I presumed to be relevant for these situations, including *who was involved (providing information on gender and age); where and when the situation happened; how long it lasted,* and *what risk category (described in section 1.4) could apply to the situation.*

As suggested by Cosco et al. (2010), this type of predefined information, as a type of mapping, is an useful exercise to get an overview of complex situations. Additionally, it increased the potential for comparing data, as the predefined, thus similar, information was collected on each event.

2.5.3 Video

During data collection, it also became clear that field notes have limitations in terms of detail, and a need for additional qualitative methods emerged. In particular, one-year-olds' risk-taking appeared different from previous characteristics (described in section 1.2.3), and I wanted the opportunity to examine their sequences of risk-taking more closely. Video recording offers the opportunity to stop, rewind, and review, which allows a high level of detailed examination, or "a 'microscope' for an in-depth study" as described by Knoblauch and Schnettler (2012, p. 335).

I decided I would only use video as a back-up of the field notes, thus limiting the time-consuming procedures of processing and analyzing video data. I video recorded for two days; one day in one nature center (Center 3) and one day in the infant/toddler group (Center 5). As discussed above, the presence of an observer presumably changes the behavior of the participants, and a camera might add to this effect (Knoblauch, Schnettler, & Raab, 2006). I therefore made sure to film children and staff from a distance, and also to schedule video-recordings at the end of the data collection, when, presumably, children and staff were more used to my presence. Additionally, today's children are presumably quite used to being video-recorded, and generally they appeared uninterested and unaffected by the camera.

Similar to my general observations, I focused on situations that involved some kind of risk, and followed the same strategy as with field notes and mapping. I pointed the camera at situations where either risky play was already initiated (for example children sliding) or where risky play could be expected to occur (for example an infant crawling towards a balancing board). I recorded two hours in each center, four hours in total. Instances from the two days of video recordings are used for qualitative descriptions only and are not added to the quantified sample of instances of risky play.

2.5.4 ITERS-R

Additionally, I examined data from the Infant/Toddler Environment Rating Scale – Revised edition (ITERS-R), collected by the BePro project. ITERS-R data were collected from 206 center groups. All raters were trained by BePro trainers who were certified ITERS-R raters through the permission holders at the Environment Rating Scales Institute (ERSI). Inter-rater

reliability was (α ≥ 0.8), and ratings were conducted in accordance with Harms et al. (2006), with a few adaptations and clarifications for the Norwegian context (Bjørnestad & Os, 2018). I received training and collected ITERS-R data for the BePro project. ITERS-R data from the centers representing ECEC quality (high and low score) (described in 2.4) were not collected by me. ITERS-R data from centers selected for purposive sampling reasons (the nature centers and the infant/toddler group) were collected by me.

There were several challenges while rating the ITERS-R in the nature centers. Mainly, because the ITERS-R was developed implicitly to score indoor environments with outdoor environments as supplementary, and not vice versa, like in the nature centers. Especially Subscale 1 Space and Furnishing, including items for Indoor space, Room arrangement and Display were challenging to assess. These are interesting aspects for discussion but are not the topic of this project.

2.6 Data overview and issues

Admittedly, the multiple-method strategy resulted in a complex data set (Table 3), and I should explain the circumstances for this. Mainly, why did I not do a predetermined number of comparable observations – for example, equal number of days in all centers, including all ages, video recordings and counting instances every day? The first reason for this is a composite of practical considerations. It has been reported that practical setbacks are major causes of delays in empirical research-projects and especially Ph.D. projects (van de Schoot, Yerkes, Mouw, & Sonneveld, 2013). In Norway, of candidates admitted to Ph.D. programs in 2011, only 65.8% had completed their dissertations as scheduled by 2015 (Ministry of Education and Research, 2016, p. 83). It has therefore been of high priority to avoid practical setbacks and to aim for completion within the scheduled timeframe.

Table 3
Participant and data overview

Center groups:	Center 1	Center 2	Center 3	Center 4	Center 5	Total
Children:	13 children 7 girls 6 boys 7 =1y 5 =2y 1 =3y	11 children 6 girls 5 boys 7 =1y 4 =2y 0 =3y	12 children 5 girls 7 boys 3 =1y 4 =2y 5 =3y	9 children 1 girl 8 boys 1 =1y 7 =2y 1 =3y	8 children 6 girls 2 boys 8 =1y	53 children 25 girls 28 boys 26 =1y 20 =2y 7 =3y
Staff:	4 1 male 3 female	5 0 male 5 female	5 3 male 2 female	3 1 male 2 female	4 1 male 3 female	21 6 male 15 female
Purpose of inclusion in the sample:	High global quality	Low global quality	Nature center	Nature center	Infant-toddler group	
ITERS-R total score:	> 5,5	< 2,5	within 3-4	within 4-5	within 4-5	
# days participating observation:	3 (1) *	3	3 (1)	1	(2)	10 (4)
# instances of risky play:	55 (0)	60	63 (0)	20	(46)	198 (46)
Hours of video:	0	0	2	0	2	4

* # in brackets = days when I counted only 1-year-olds' instances or I did not count instances at all.

In my project, I planned to do all data collection myself, including a number of different ECEC center groups (thus many people) and over a long time-period (two seasons), thereby exposing the project to potential practical setbacks. This can be illustrated with a brief description of the planning and implementation of the observations: 1) Develop and select criteria for observations and participants, 2) apply and obtain approval from research authorities (NSD), 3) make the first contact with gatekeepers to access the ECEC centers, 4) make appointments for first meetings, 5) make appointments for pilot observations and regular observations (including 1 full-day first visit to get acquainted and 1 full day of ITERS-R assessment in Center 3-5 before commencing observations of risky play), 6) carry out observations. This might sound straightforward, but, as mentioned, the initial processes (step 1-5) affect and involve many people and took altogether approximately six months. As I wanted a variance in seasonal conditions, the data collection would stretch over at least six months. This allowed for the full process to stretch over at least 12 months, which, from a three-year project period, makes out 1/3. Obviously, I could not afford long delays.

Considering the high probability for setbacks in any of these steps, I initially reduced the sample to what I considered a minimum of three ECEC center groups, including 42 children (2 to 3 years old) (see NSD approval in appendix), and was concerned to get started and to finish the data collection as quickly as possible. As shown, the planning and start-up process took time away from the data collection itself, and it was essential to finish at a point where I

could assume that I had sufficient data, yet to leave enough time for completion of the project. It was not an ideal situation (more data could potentially strengthen the study), but proved to be a realistic one. The second main reason for allowing flexibility in the data collection, thus ending up with up a slightly complex dataset, was allowing observations to partly guide the development of the data collection, i.e., acknowledging that this was an exploratory study. Therefore, I added components to the data collection throughout. Main adjustments were expanding the sample to include 1 year olds and an additional nature center group, and adding video and staff interviews as potential data sources.[3] Justifications for these expansions and additions were as follows.

Adding 1 year olds and video. In my initial project description, my suggested age range was actually 0 to 3 years, i.e. as young as possible. As the project was under way, it seemed likely that I could start observations in August. This is the start of the school year also for the youngest children and I therefore did not want to intrude on 1 year olds in that particularly vulnerable period. However, during pilot observations and in agreement with practitioners and colleagues, I decided to include 1 year olds according to the general low intrusion of the focused ethnography. Then, initial observations (including 1 year olds) indicated that 2- and 3-year-olds' play resembled older children's play, while 1-year-olds' did not. I therefore considered it crucial to document risky play among the 1-year-olds as thoroughly as possible. Therefore, an additional infant/toddler group was recruited to the sample; additional days of observations were scheduled, and video recordings were added to obtain more, and more detailed, descriptions of this emerging finding. Initially, I quantified instances of risky play on the days of observing only one year olds. However, I realized I would not be able (timewise) to collect a large sample of instances including only one year olds. Additionally, these instances could not be compared quantitatively to the previous observations, including older children. Therefore, I did not pursue seeking a large number of instances of risk-taking by one year olds, considering both that a sample of only one year olds would be at the lower limits of what is acceptable and that the main focus of the project was 1-3 year olds.

Adding interviews as potential data source. At the point when I added video as a data-collection method, I was also encouraged by participants in my feedback loops (see section 2.7) to include staff's opinions, attitudes or reflections. The emerging findings, considering

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[3] All changes to the original project (as described in the letter of approval from NSD (appendix)) are reported and approved via email by NSD.

both children's play and how staff interacted (or not), triggered curiosity in regards to practitioners' knowledge and attitudes. I considered it unlikely that I would be able to include additional data, not least a new method, yet I included the possibility for staff interviews in my last request for participation ("Samtykkeerklæring" in appendix), just to be on the safe side. I did not conduct any interviews.

Issues with adding a nature center. I initially recruited one nature center, but because 'nature center' is not a unified concept in Norway (see for example Lysklett, 2013; Lysklett & Berger, 2017), it would be legitimate to have at least two centers to confirm and/or complete findings. I visited Center 4 for three days, one day for getting acquainted, one day for collecting the ITERS-R and one day for risky play observations. Due to practical obstacles, I was unable to implement more risky play observations before I had to finish the data collection. Instances of risky play were therefore only collected on one day in Center 4, and these instances were added to the total sample of instances, but, for lack of additional days of observations, Center 4 as such, has not been included in other aspects of the analysis, such as interaction and affordances.

The main issue is whether the changing/evolving data collection and the complexity of the final dataset jeopardize the potential for reproduction of observations. I would suggest not, based on two factors. First, it has not been a goal to give an exact estimation of the frequency of risky play in this age group, implying that the somewhat unclear numbers, including lack of foundation for comparison between centers, are not essential to understand 1-3-year-olds' risky play. Rather, and second, the goal has been to thoroughly describe and rigidly adhere to the observational criteria of objective and subjective risk in varying conditions, which, purportedly, are better strategies to create a foundation for understanding of risky play in this age group, and should also make reproduction and development of findings feasible.

2.7. Reliability of observations

Commonly in ethnography, the researcher does all the data-collection, thereby exposing the study to several problems regarding the reliability of observations. Generally, it is considered a challenge that the presence of a researcher and knowledge about the research topic could alter participants' behavior to the point at which they are less representative of the population, thereby threatening the external validity (Bordens & Abbott, 2011). In quantitative research this is often referred to as the Hawthorne effect (Wickström & Bendix, 2000), while in ethnographic studies, researchers' influence is acknowledged as inevitable and dealt with as

such, mainly addressed by open discussion and included while interpreting observations (see for example Hammersley & Atkinson, 2007, chapter 4). In my project, low intrusion and informing the practitioners were chosen mainly for ethical reasons. Additionally, as described in 2.5, the data-collection left me with a distinct impression that what I had observed was situations that would have happened also without me being present. Nevertheless, I have made three main measures to strengthen the reliability of the observations.

Multiple data collection techniques. Ethnographic field notes are infamously difficult to reproduce, their very nature being haphazard and complex (Gobo, 2008; Knoblauch, 2005). Additionally, a single researcher design such as the ethnography is particularly vulnerable to confirmation bias (Nickerson, 1998), i.e., the observer sees only what interests him/her or worse, s/he sees only what s/he wants to see. The field notes were therefore supplemented with quantifications of observations and video-recordings. The different data collection techniques document the same observations in different ways, thus reducing potential bias in one method. The mapping ensured collecting similar information for each observation, thereby strengthening comparability between observations.

In this study, I made approximations of occurrence of risky play; that is how often risky play occurred throughout a day in a ECEC center group. This presumes that I had a close to complete overview of observed children throughout the day. The technique was that I scanned the environment and made notes of specific events and necessary information, decided beforehand. Additionally, in the present study, small group sizes and restricted environments, both indoor and outdoor, strengthened the possibility to observe most of the children most of the time. Even if children were allowed to wander, they rarely wandered out of sight, at least only for short time spans.

Additional triangulation. While the main observation methods focused only on risky play, albeit with different approaches, it seemed important to relate this novel concept to a more established one. This is why observations on risky play have been triangulated with the ITERS-R. In qualitative research, Breitmayer, Ayres, and Knafl (1993) summarize that the term triangulation is applied to strategies meant to accomplish two distinct purposes, *confirmation and completeness*, i.e., either to confirm results from different approaches or to add or complete the information already obtained. In this project, triangulating the observations from the field notes and mapping with a standardized measurement serves both purposes. First, completeness would relate risky play to general ECEC quality. If we accept

the assumptions that risky play is seen culturally as an important part of Norwegian childhood and also is of intrinsic value for children, but not included in the ITERS-R, risky play should be added as an aspect of quality to get a comprehensive assessment. Second, since risky play has not been previously seen as quality or necessary for quality assessments, it has been valuable to test whether there are congruence or discrepancies between the two approaches. This way the triangulation has served the purpose of confirmation, checking whether the two ways of assessing quality can be said to consider the same or totally different aspects, or in general, assessing quality in two different ways. The qualitative data have thus been compared with the ITERS-R to investigate if some aspects of quality are not captured by the standardized instrument.

Feedback loops with research- and practice communities. Throughout the planning and implementation of the project, I have made use of external references to discuss and validate my theoretical and methodological choices and interpretations of findings. I have met regularly with colleague researchers and practitioners to present and discuss these aspects. In itself, this process might strengthen the reliability of the findings. Additionally, since this project is within the field of applied sciences, i.e., research that has practical/professional relevance, in this case for ECEC, there are several advantages and possibilities inherent in such feedback loops (Rickinson, Sebba, & Edwards, 2011). Firstly, researchers (BePro) and teachers have been essential in giving access to participants. Secondly, they provided networks and recent experiences. By establishing a system for feedback loops, the research might be strengthened by testing face validity of results, avoiding biased interpretations and being kept up-to-date on changing conditions and emerging aspects in the research field.

2.8. Analysis (Unit of data collection and coding)
The analysis would start with me transcribing and preparing data, be it field notes, mapping information and/or video sequences. Further, I would suggest initial interpretations and present data and information to external references; that was supervisors and colleagues. Basically, the analysis would start with an attempt at understanding "what is going on" (Knoblauch & Schnettler, 2012, p. 349), with the specific goal of substantiating whether there were environmental or individual characteristics in the situation that indicated risk, and/or, if children's behavior could be characterized as play. Children's and staff's behavior were described qualitatively with focus on actions, interactions, facial expressions, body language, voice/sounds and verbal expressions of both staff and children. Additionally, each instance was coded as follows:

- *Who* – with codes for individuals, gender and age. In dissemination, children are given fictitious names and ages in the 'year, month', brackets, e.g., Lene (1.5).

- *What* – with descriptions of activities, and coded with the following preliminary risk categories: 1) play with heights, 2) play with speed, 3) play with dangerous tools, 4) play with dangerous elements, 5) rough-and-tumble play, 6) play where the children can get lost, and 7) other.

- *Staff interaction* – with description of interaction and coded "Alone" (no staff present), "No interaction", "Scaffolding-" or "Non-scaffolding interaction", as presented in Article II and section 1.5.1. In dissemination, staff are given fictitious names and staff levels in brackets. Teacher = (T), Assistant = (A), e.g., Adam (T).

- *Location* – with descriptions of where the activities took place, including descriptions of environment and equipment related to risk categories (see description in section 1.6.3 and Article III) and codes for inside/outside.

- *Sociability* – with codes for Alone/Together.

- *Duration* – with codes for Long/Short*.

*The rule for coding an instance *short* was that it lasted approximately 1 minute or less. Any play lasting longer than 1 minute was coded as *long*. The reason for this was the distinct briefness of many situations. Situations lasting for two minutes and longer, even up to 30 minutes, had more similarities between them than with the very short ones. This is elaborated in Article 1 and discussed briefly in section 4.1.

2.8.1. Video analysis

In this project, I used video as support for the field notes, thus making less of the normally time- and resource-demanding procedures required if video was the main source of data, e.g., a "videography" (Knoblauch & Schnettler, 2012). I filmed and analyzed "natural situations" (Knoblauch et al., 2006, p. 11), which means that the analysis might be open and descriptive., i.e., different from a standardized analysis where, for example, behavior and/or interaction are rated quantitatively on predefined scales. Notably, these natural situations represent only very short excerpts from the children's life, hence the open and descriptive analysis are dependent on the context (Knoblauch & Schnettler, 2012). In this case, my field notes and experiences from the data collection provided the context. Video sequences were coded similar to field notes, thus ending up as similar, but more detailed descriptions of instances of risky play.

Approximately 18 instances of risky play were recorded: 10 in Center 3 and 8 in Center 5. Four instances were transcribed and presented to external references on several occasions, for

the sake of refinement and reliability, as presented in section 2.7. Shortened versions of two video-transcripts are presented in Article I (p. 8 and 11) and one in Article II. (p. 8).

2.8.2 Analytic samples

The predefined information (mapping) was piloted in two ECEC centers to investigate the relevance of the codes and the usefulness for observations and analysis. Small adjustments were made to this mapping format throughout without altering the basic content so that early and later mappings are comparable. Hence, I decided the many aspects of comparability between the instances were interesting and made the main analytic unit of the thesis *Instance of risky play*. This gives a potential sample where *n* represents a number of instances of risky play. A total of 244 instances were registered, but, as discussed in 2.6, instances from observations with only 1 year olds (n=46) are not compared statistically with instances including 1-3 year olds (n=198). Additionally, on days of video-recording, instances were not registered quantitatively.

In Article I (What characterizes risky play for children aged 1-3?), I utilized 198 instances, extracting information on the occurrence and general characteristics of risky play. In this article, ECEC was not addressed and analyzed per se, only discussed in relation to the sampling strategy, see sections 2.4 and 2.7.

In Article II (What characterizes ECEC staff's interaction with children, aged 1-3, in risky play?), I utilized 198 instances, extracting information on staff-child interaction. I utilized instances from the two ordinary centers (Center 1 and Center 2), specifically, to triangulate findings with the ITERS-R, examining the potential contrasting effect, presumably provided by the sampling strategy.

In Article III (What characterizes affordance for risky play for children, aged 1-3, in ECEC?), I utilized 171 instances, delineating the analysis to three centers, since they were observed for three comparable days each. I extracted information on physical provision for risky play, and the main analytic information from the predefined codes was *risk categories*. This was done to examine versatility in physical provision. Additionally, data from Center 1 and 2 were compared and triangulated with the ITERS-R data, for potential contrasting effects.

To answer the last research question (Are safety aspects, e.g., injury prevention, and appropriate stimulation for physical activity/risky play contradictive aspects of Norwegian

ECEC quality?), I used ITERS-R data from the BePro project, and did statistical analysis of ITERS-R data from the total sample of ECEC center groups (n=206).

2.8.3. Statistical analysis of the ITERS-R

The main purpose of relating the ITERS-R to the concept of risky play has been to link a relatively new concept to an established one (Breitmayer et al., 1993). It has therefore been necessary to examine the ITERS-R closely, to make the relation feasible. The ITERS-R consists of 39 items organized in 7 subscales: *Space and Furnishings (5 items), Personal Care Routines (6 items), Listening and Talking (3 items), Activities (10 items), Interaction (4 items), Program Structure (4 items), and Parent and Staff (7 items)*. Item 23 *Use of TV, video, and /or computer* and Item 32 *Provisions for children with disabilities* were excluded from the analysis due to low respond rates (n= 22 and n=24). Additionally, the BePro-study did not include the *Parent and Staff* subscale since it does not deal with child behavior, leaving the final analysis with 30 items. Each item consists of 8–17 indicators. Each item is rated on a 7-point scale; where value 1 represents 'inadequate' quality; values 2-3 represent 'minimal' quality; values 4–5 represent 'good' and values 6–7 represent 'excellent' quality. A center with a high total score provides for all (presumably) necessary aspects, hence the term global quality (Hestenes et al., 2007). A center with a low score provides minimally or inadequately for all or most aspects and is therefore essentially different from a high scoring center.

I examined basic descriptive statistical characteristics of the total sample and four selected items (see next section), through means, standard deviations, min-max values, skewness and kurtosis (Table 2 & 5). To test the relationship between the ITERS-R and risky play, I extracted information of provision for risky play from the ITERS-R indicator level and creating a new item (Table 4). To investigate potential conflicting aspects between stimulation and safety, thus relevant for risky play, I examined associations between the four selected items through correlations (Table 6) and internal consistency (Cronbach's Alpha) (Table 7) (procedure and results in 3.4).

2.8.4. ITERS-R scores in relation to risky play

Risky play is not addressed directly in the ITERS-R. However, since I use it as basis for participant selection and triangulation in my project, I sought to establish to what extent there are common concepts shared between the ITERS-R and risky play. I therefore examined all items for content that could feasibly relate to risky play, applying the inclusion criteria of Brussoni et al. (2015, p. 6429), and adapted to 1-3 year olds as described and discussed in Article III, (summarized in section 3.3), and discussed in sections 1.6.3 and 4.2.2. Overall, I

identified four items with indicators that could feasibly relate to risky play, including *items 11 Safety practices, 16 Active physical play*, *25 Supervision of play and learning* and *30 Free play*. Detailed justification on indicator level is presented below. Generally, I interpret *Active physical play* and *Free play* as primarily assessing "appropriate stimulation" and secondarily "protection of children's safety", while I interpret *Safety practices* and *Supervision of play and learning* as primarily assessing "protection of children safety" and secondarily assessing "appropriate stimulation". Therefore, I assume that scores on these individual items are dependent partly on how the environment affords risky play and partly on how staff interact with children in risky play.

Subsequently, I examined the relationships between them, to elicit whether the assumed conflict between these different aspects would become apparent in the ITERS-R measurement. These results are presented in 3.4. However, the ITERS-R and the ECERS-R have previously been criticized for being unidimensional, subsequently with high redundancy among items (Bisceglia, Perlman, Schaack, & Jenkins, 2009; Scarr, Eisenberg, & Deater-Deckard, 1994). Naturally, in the four selected items, there are several indicators that do not relate to risky play. I therefore assumed that information from single indicators was potentially more interesting and used the selection process from the item-examination, where I had identified nineteen single indicators, to comprise a new *Risky play* item (Table 4). The selection was justified as follows.

From *item 11 Safety practices*, I selected four indicators addressing supervision and safety, which arguably is important in relation to risky play. The focus in this item is to avoid accidents and/or injuries, but examples of play given in the indicators, suggest that risky play should be allowed, such as climbing and sliding. Additionally, an aspect of children's learning risk management is addressed in indicators 7.1 and 7.2. Norwegian adaptation included a clarification regarding supervision in large outdoor areas (indicator 1.3). Supervision would be assessed inadequate if children were allowed to wander outside adult supervision. Also, I included two indicators from *item 25 Supervision of play*. The aim of this item is similar to the previous item, to avoid injury, but primarily to support children in developing their play. Combined, these indicators substantiate warm, responsive and engaged staff, which both protect children from injury and support risky play.

In *item 16 Active physical play,* all indicators aim at facilitating active physical play. Examples include *riding toys without pedals* (risk category: playing with speed), *large push-*

pull wheel toys (risk category: playing with speed), *age-appropriate climbing equipment* (risk category: playing with heights/elements), *slide* (risk category: playing with height/speed/elements), *balance board* (risk category: elements*), cushions or rugs for tumbling* (risk category: rough and tumble/impact). Therefore, I selected nine indicators that clearly address space and equipment that feasibly relate to affordance for risky play. The item emphasizes that opportunities for active physical play should be observed both outdoors and indoors. Considering that Norwegian children spend more time outdoors than what is implied in the instrument, some adaptations were made to ensure appropriate provision and supervision outdoors. Additionally, clarifications address provision for physical activity indoors, which might be essential for the youngest children during winter.

Last, I selected three indicators from item 30 *Free play.* In the ITERS-R, free play means "*that the child is permitted to select materials and companions and, as far as possible, to manage play independently. Adult interaction is in response to child's needs,*" (Harms et al., 2006, p. 51). Freedom to move and make individual choices – on what to do and how to use the environment and equipment – is a prerequisite for risky play. Given children's propensity to take risk, some children will engage in risky play if they are given the freedom to do so. Free play is also central in the Norwegian Framework Plan and generally highly valued in Norwegian ECEC (Borge et al., 2003; Brewer, 2012), and would entail, even for children under three, that they are actually free to run, climb, jump off, slide, cycle, crash into each other and objects, hide chase each other and play-fight.

Table 4
Provision for risky play (comprised item)

Provision for risky play (Comprises items from 11 Safety practices, 16 Active physical play, 25 Supervision of play and learning, and 30 Free play)

Inadequate 1	2	Minimal 3	4	Good 5	6	Excellent 7
1.3. Inadequate supervision to protect children's safety indoors and outdoors (Ex. too few staff members; staff occupied with other tasks; no supervision near areas of potential danger; no check-in or check-out procedures used). 1.1 No appropriate outdoor or indoor space used regularly for active physical play. 1.2 No appropriate equipment/materials.		3.2 Adequate supervision to protect children's safety indoors and outdoors. (IN138) 3.1 Open space provided indoors for active physical play much of the day. (IN195) 3.2 Some space for outdoor physical play used by infants/toddlers at least 3 times a week, year-round, except in very bad weather. (IN196) 3.3 Some appropriate materials and equipment used daily; materials/equipment generally in good repair. (IN197) 3.1 Free play occurs daily, indoors and outdoors. (IN342)		5.2 Staff usually anticipate and take action to prevent safety problems. (IN141) 5.2 Large active play area that is not crowded or cluttered. (IN199) 5.3 Ample materials and equipment for physical activity so children have access without long periods of waiting. (IN200) 5.5 All space and equipment is appropriate for children. (IN202) 5.3 Staff play with children and show interest in or appreciation of what they do. (IN293) 5.2 Staff actively involved in facilitating children's play throughout the day. (IN346)		7.1 Staff help children to follow safety rules. (IN142) 7.2 Staff explain reasons for safety rules to children. (IN143) 7.3 Materials used daily to stimulate a variety of large muscle skills (Ex. crawling, walking, balancing, climbing, ball play). (IN205) 7.3 Staff vary supervision to meet differing requirements of activities. (IN297) 7.2 Staff add materials to stimulate interest during free play. (IN349)

Based on descriptions in the ITERS-R and the All About the ITERS-R (Cryer et al., 2004), I assumed that the selected nineteen indicators collected above (Table 4) covers both safety and stimulation aspects, comprising a score on general provision for risky play. Results are presented in 3.4.

2.9 Validity of findings and conclusions

All types of research are faced with several problems when it comes to generalization. In this case, the very nature of small-sample studies represent an inherent problem of inference from a few cases to a larger population (Seawright & Gerring, 2008, p. 296). Additionally, historically, in social science there has been an ambiguity towards the necessity for generalization (Knoblauch, 2005; Williams, 2000). However, theorists have attempted to

(re-)establish feasible criteria for generalization in qualitative research (Gobo, 2008; Seawright & Gerring, 2008), and this section has been an attempt at establishing such criteria for the present project. To summarize, in the present project, these criteria are 1) appropriate sampling, 2) precise observational criteria and coding and 3) methodological pluralism, thus, strengthening the assumption that the observed behavior represents general patterns suitably for further examination.

3 Summary and conclusions of the three articles

In the following, the three articles that make up the foundation of the thesis are summarized, eliciting how they complementarily contribute to the topic of the thesis.

3.1 Article I – Identifying and characterizing risky play in the age one-to-three years

Based on lack of basic knowledge of 1-3-year-olds' risk-taking, the first article was dedicated to identify and explore the occurrence and characteristics of risky play in this age group, in relation to the current understanding of risky play. Based on the criteria of objective and subjective risk, and play, I observed risky play in all ECEC centers throughout the data collection and all together 244 instances of risky play were observed throughout the 14 days of observations. The observations indicated that children engage in risky play from 1-year-old, but, compared to the existing understanding, it was subtler and less extrovert in its appearance, and objective risk was often not evident. For example, climbing among 1-3-year-olds did not necessarily entail the objective risk of great heights, or sliding was sometimes too slow to entail the objective risk of high speed. In both cases, the risk of injury is minimal. Still, the potential for both a negative and a positive consequence was apparent, i.e., either the child could fall or hit something and feel pain, or the child could get scared and withdraw. A positive consequence could be that the child could experience a thrill and/or satisfaction from mastering the challenge. Additionally, I suggest several common characteristics from the observations, specifically that children play more lengthily, more socially and are less repetitive with increasing age.

Because of lack of overt expressions of exhiliration, as reported in previous research, it was uncertain how aware and reflected 1-3 year olds, especially 1 year olds, were of the risk they engaged with, and it would be difficult to argue that they take risks willingly, as suggested by previous theory. This problem was not elaborated in the article and is therefore discussed in section 4.1.2 and 4.1.3. In accordance with the observations, I suggested to modify Sandseter's (2007) risk category "playing near dangerous elements", to "playing *with* dangerous elements", to include a wider range of elements, i.e., including any object or environment that can, subjectively by the child, be perceived as risky. Further, several instances of risky play eluded the existing risk categories. These instances grouped into two segments. First, I observed several instances where children willingly crashed into something or crashed objects together. That is, they would slam themselves onto a mattress or into a wall, or they would slam an object into another, e.g., the tricycle they were riding or send a

toy car into another. These instances were assessed to be risky based on an objective risk; there would sometimes be an actual risk of injury or certainly of pain. Additional, children observably got a thrill out of the experience, and staff would often react with surprised and slightly fearful exclamations. According to the Oxford Dictionary (2015) the word *impact* is defined as "the action of one object coming forcibly into contact with another"; therefore, the risk category was named "Playing with impact". Additionally, children were observed a few times to watch other children engaged in risky play. These were the only times I observed children watching other children playing over a length of time. Since watching others take risks (for example watching an action movie), can have almost the same arousing effect as directly experiencing the risk (Apter, 1992), and might imply a pre-face of engagement. I suggested this as an emergent category named "*vicarious risk (watching others play riskily)*". Thus, the list of risk categories was expanded with two new categories, and the complete list was proposed to be: 1) play with heights, 2) play with speed, 3) play with dangerous tools, 4) play with dangerous elements, 5) rough-and-tumble play, 6) play where the children can get lost, 7) play with impact, 8) vicarious risk.

Essentially, the lack of thrill and potential injury induced a discussion whether the existing definition would capture essential aspects of 1-3-year-olds' risky play (developed further in sections in 4.1). The main problem with the existing definition would be that several instances of risky play, where I would argue that children experienced risk, would not be included if emphasis was on observable thrill and potential for physical injury. This lead to an emphasis on the aspect of uncertainty, summarizing 1-3-year-olds risky play as play that involves uncertainty and exploration – bodily, emotional, perceptional or environmental – that could lead to either positive or negative consequences.

The article introduces the theoretical concept of Zone of Proximal Development (ZPD) to interpret and understand children's risk-taking in play. The balancing act between objective and subjective risk and especially when children increase the risk, is suggested to indicate how children progress to their proximal risk level. The article provides detailed qualitative descriptions and how these are interpreted and conceptualized. The usefulness and potential scientific and practical applications of the concept is discussed in 4.1.4, 4.2.1 and 4.2.2. The study found similarities across the different ECEC contexts, which consequently were suggested as a general pattern, i.e., common characteristics of risky play in the age group.

3.2 Article II – Characteristics of staff–child interaction in 1–3-year-olds' risky play in early childhood education and care

For the purpose of linking the concept of risky play to ECEC quality, in the second article, I investigated the purportedly most essential aspect of quality, namely staff-child interaction (see referenced literature in 1.6.2). Data were taken from the same 198 instances of risky play, as in article I. In this article, I suggest that *scaffolding* is a pertinent theoretical foundation for describing high-quality staff-child interaction in risky play. Firstly, because the concept is assumed to substantiate the intrinsic value of well-functioning staff-child relationships (see referenced literature in 1.5.1). Secondly, because of its relation to the concept of Zone of Proximal Development, an ECEC practitioner might identify the child's proximal risk zone and thus be able to support the child's risky play appropriately. The purpose of scaffolding is to foster autonomous play; however, the study's target group is infants and toddlers, presuming closer and continuous interaction.

Scaffolding could be observed as supporting the child in ultimately deciding whether to increase, maintain or decrease the risk – with continued interaction. Of the 171 instances where staff were present, staff did not interact at all in 70 of the instances (41%). Staff-child interaction, directly related to children's risky play, occurred in the remaining 101 instances. Of these 101 instances, "Scaffolding"- and "Non-scaffolding"-interactions were observed in 78% and 22% of the instances, respectively. Examples, given as qualitative descriptions of both scaffolding and non-scaffolding are presented in the article, to substantiate the interpretation of the concepts. Non-scaffolding is suggested to have typical over-protecting characteristics, for example, to stop children from climbing, which, by previous research is argued to have several negative long-term consequences. Even if the frequency of non-scaffolding is relatively low, a qualitative example is presented and analyzed in the article, to substantiate this assertion and to substantiate typical characteristics of scaffolding by a descriptive contrast.

The findings were triangulated with the ITERS-R in the two ordinary centers; to validate and strengthen the qualitative findings. A high frequency of Scaffolding coincided with a high score on Subscale 5 Interaction, and a high frequency of No interaction coincided with a low score on Subscale 5, thus indicating theoretical congruence between the two approaches and that lack of interaction could be interpreted as poor quality.

3.3 Article III – Affordances for 1-3-year-olds' risky play in Early Childhood Education and Care (ECEC)

In the third article, the aim was to relate structural quality to risky play and therefore describe how institutions provide for 1-3-year-olds' risky play through equipment and environment. The main findings describe how three substantially different ECEC centers provide opportunities for risky play. These environments were assessed with the theoretical concept of affordance, i.e., how environments and equipment invite us to interact with it in certain ways. Applying the concept of the ZPD, the immense variety of developmental levels and risk-tolerance in a given group of infants and toddlers, became apparent. This led to a general characterization of appropriate affordances as versatile, complex and flexible/dynamic. The subtleness and lack of objective risk described in Article I lead to emphasizing low-objective-risk environments and equipment. Additionally, 1-year-olds were found to engage in more risky play inside than outside.

Based on these characteristics, I proposed an adapted list of affordances for risky play, emphasizing low-objective-risk environments and equipment, affordance for crashing/falling (playing with impact) and vicarious risk (possibilities to watch more experienced peers and/or older children), resulting in the following list of affordances (all additions to the original list in *italics*; for more details see Article III):

- **Climbable features**– affords climbing (great heights) or *(risky elements).*
- **Jump-down-off-able features** – affords jumping down (great heights) *or (risky elements)*
- **Balance-on-able features** – affords balancing (great heights) *or (risky elements)*
- **Flat, relatively smooth *and/or soft* surfaces** – affords cycling, running, skating, skiing, chasing and play fighting (high speed and rough and tumble-play)
- **Slopes and slides** – affords sliding, sledging, and running/cycling/skiing (high speed) *or (risky elements).*
- **Swing-on-able features** – affords swinging (high speed and great heights) or *(risky elements)*
- **Graspable/detached objects** *(including sticks, soft hammers, plastic shovels etc.)* – affords throwing, striking, and fencing (rough-and-tumble)
- **Dangerous tools** – affords whittling, sawing, axing, and tying (dangerous tools),
- ***Mattresses, sofas, pillows, soft grounds, soft walls** – affords falling onto, crashing into (playing with impact and rough-and-tumble)*
- ***Windows facing the outdoor area or sharing time and space with older children** – affords watching/interacting with older children (vicarious risk)*

The findings indicate that centers with more appropriate affordance have more *varied* risky play (not more risky play) (Table 5 in the article). Additionally, the assessment of affordance for risky play coincides with the ITERS-R scores, especially when comparing Center 1 and 2.

Based on the features described above, indicating affordance for risky play, Center 1 presumably provides for most risk categories, both indoor and outdoor, while Center 2 and also the nature center provides fewer opportunities for risky play (Tables 2-4 in the article). Unexpectedly, the nature center did not provide better opportunities for risky play in general. Although a natural environment provides superior complexity compared to a playground dominated by commercial fixed installations, it is, suggestively, not a given that it provides for versatile experiences. The nature center did not provide for playing with speed (in summertime), and experiences for 1-year-olds were generally limited. However, it is assumed that nature itself provides the unique feature of the "unexpected", potentially promoting later coping strategies. The predictability and lack of complexity of standardized pre-fabricated playground equipment were apparent compared to natural environments.

3.4 Characteristics and relations between aspects of safety and risky play in a representative sample of ECEC center groups

Since the ITERS-R is used to triangulate findings in the study, I have examined and tested the ITERS-R in several ways to justify relations to risky play. Firstly, the total scale was examined as reported in sections 1.7.4, 2.5.4, 2.8.3 and 2.8.4. Following this examination, four items were selected, namely *item 11 Safety practices* and *item 25 Supervision of play and learning*, which I argue ensure children's safety, and *item 16 Active physical play* and *item 30 Free play*, which I argue ensure children's need for appropriate stimulation, with a substantial relation to risky play.

Table 5
ITERS-R descriptive statistics of selected items

	N	Mean	SD	Min	Max	Skewness	Kurtosis
11. Safety practices	206	3.05	1.78	1	7	0.52	-0.65
16. Active physical play	205	4.80	1.94	1	7	-0.11	-1.29
25. Supervision of play and learning	206	4.31	2.24	1	7	-0.06	-1.52
30. Free play	206	3.75	1.53	1	7	0.48	0.04
Comprised item: Provision for risky play	206	3.62	1.98	1	7	0.34	-1.12

In general, according to the scoring criteria of Harms et al. (2006), the four items of interest score within 'minimal' (Table 5). Aspects of appropriate stimulation for risky play, as measured here with *Active physical play* and *Free play*, score mean = 4.8 and mean = 3.76, respectively. Aspects of protection of health and safety, as measured here with *Supervision of play and learning* and *Safety practices* score mean = 4.31 and mean = 3.05, respectively. (For histograms, see Figures 2-5 in appendix.). That is, the results show that one item in each aspect is in the upper spectrum of 'minimal', with *Active physical play* having the highest

score, bordering on 'good' and one item in each aspect in the lower spectrum, with *Safety practices* having the lowest score, bordering on 'inadequate'. The most surprising result is perhaps the low score on Free play, as previous literature suggests that (outdoor) free play is highly valued in Norwegian child-rearing practices (Borge et al., 2003; Little et al., 2012; New et al., 2005), also emphasized in the national framework for ECEC (Ministry of Education and Research, 2017, see for example p. 20 and p.52). In contrast, the low score on *Safety practices* might be expected, given that the ITERS-R was developed in the U.S., which might have a higher focus on safety than Scandinavian countries (New et al., 2005).

As mentioned in 2.8.4, the ITERS-R and the ECERS-R previously have been criticized for being unidimensional (Bisceglia et al., 2009; Scarr et al., 1994). These issues are discussed further in section 4.2.3. The main implication noted here is that, because of these issues, I decided to test provision for risky play in one last way. I selected 19 indicators from the 4 items as presented in section 2.8.4, to comprise a new item more likely to capture relevant information of risky play. A deviating score on this comprised item, e.g., a high or low mean score, could have indicated that a more specified measurement captured something that the existing items did not, e.g., due to redundant information in the original items. However, analysis of the new comprised item basically confirms the previous results; the item *Provision for risky play* score mean = 3.62, thus, as suggested here, indicating minimal provision for 1-3-year-olds' risky play.

For potential conflicting aspects, I examined the relationships between the four selected items through correlations and internal consistency. These items appeared to have distributions that deviated from normal, by skewness (lack of symmetry) and/or kurtosis (pointedness), both by visual appearance (Figures 2-5, appendix), and by numeric values that deviated from zero (Table 5), potentially more than acceptable for a normal distribution (Field, 2013; Ghasemi & Zahediasl, 2012). Since distribution is essential for interpretations and choice of further methods, I tested whether the distribution, i.e., the non-normality of each item, was significantly different from a normal distribution. The Shapiro-Wilk test showed that the non-normality was significant (p<0.00) in all four items.

It is worth noting that non-normal distributions in ITERS-R items are likely due to the stop-scoring rule (1.6.4. and 4.2.3.). Nevertheless, when the assumption of normality is rejected, subsequent testing should be done using methods that do not require normality (Field, 2013, p. 185). Therefore, to test the relationships between these variables, I used the Spearman's

rank correlation coefficient (rho), that is also suited for ordinal or ranked data, such as the ITERS-data (Field, 2013). Spearman's rho is expressed in values from -1 to +1, expressing strengths of correlation as 00-0.19 "very weak"; 0.20-0.39 "weak"; 0.40-0.59 "moderate"; 0.60-0.79 "strong"; 0.80-1.0 "very strong" (Weir, 2016). Hence, the analysis indicated weak or moderate, positive associations between all items (Table 6).

Table 6
Correlations between the four selected items

		Safety practices	Supervision of play and learning	Active physical play	Free play
Spearman's rho	**Safety practices**	1.00	0.46[**]	0.50[**]	0.31[**]
	Supervision of play and learning	0.46[**]	1.00	0.26[**]	0.39[**]
	Active physical play	0.50[**]	0.26[**]	1.00	0.37[**]
	Free play	0.31[**]	0.39[**]	0.37[**]	1.00

**. Correlation is significant at the 0.01 level (2-tailed*).*

The two pairs of items that I assumed would correlate strongly were the items presumed to assess the same aspects, namely *Safety* and *Supervision* and *Active physical play* and *Free play*. However, the correlation between the former pair proved moderate (rho=0.45), and the correlation between the latter proved surprisingly weak (rho=0.37) (Table 6). Further, there was a weak correlation between Safety practices and Free play (rho=0.31) and a moderate correlation between Safety practices and Active physical play (rho=0.50). The weakest correlation was between *Supervision* and *Active physical play* (rho=0.26). All correlations were statistically significant (p< 0.01, 2-tailed) and, summed up, there were weak-to-moderate, positive associations between all items, indicating no conflicting aspects.

To further test the relationship between the four selected items, I combined the items to simulate a composite subscale (*Safe stimulation*), and internal consistency was tested with Cronbach's alpha, n = 4, α = 0.69 (Table 7). For comparison, Cronbach's alpha of the a priori scale (30 items) is n = 30, α = 0.87. (*Item 23 Use of video* and *Item 32 Provision for disability* were omitted due to missing values.) Six of the original subscales (*Space and furnishing, Personal care routines, Listening and talking, Activities and Program structure*) were in the range of 0.5-0.6, only *Subscale 5 Interaction* reached a more robust 0.81. In total, the four

item "*Safe stimulation subscale"* has equal or stronger internal consistency compared to several of the original subscales, confirming the positive correlations (Table 6), thus maintaining the lack of conflicting issues. In total, these results might be surprising, contradicting the general assumption that being more supportive of active physical play could make it difficult to deal with safety.

Table 7
Reliability statistics

Subscale	Cronbach's Alpha	Number of items
Space and Furnishing	0.52	5
Personal Care Routines	0.53	6
Listening and Talking	0.66	3
Activities	0.56	9
Interaction	0.81	4
Program Structure	0.56	3
Safe stimulation	0.69	4
ITERS-R total	0.87	30

4 Discussion

In the general discussion, I will address two overarching topics: Knowledge of 1-3-year-olds' risky play and risky play in relation to quality in ECEC.

4.1 1-3 year olds risky play

First of all, in this project, I have attempted to contribute to a detailed descriptive knowledge of risky play among 1-3 year olds. The sampling strategy indicates that Norwegian 1-3 year olds engage in risky play, as defined in this thesis, in very different structural contexts, which can be interpreted in (at least) two ways: First, this playing pattern is partly unaffected by large differences in ECEC quality, as defined by the ITERS-R, or second that Norwegian ECEC provides for such experiences, unaffected by quality as measured by the ITERS-R. Both interpretations indicate consistent patterns (Gobo, 2008) or cultural consistency (Williams, 2000). Even if these interpretations are limited in terms of generalization, I suggest that the sampling strategy, observational criteria, and multi-method approach make these findings reliable, thus suited as a basis for further research.

I have tried to condense the observed general pattern into a definition, first suggested in Article I. As previously mentioned in 1.4, play is generally seen as a complex phenomenon with no unified definition (Johnson et al., 2012; Lillemyr et al., 2013). Play research also covers a wide range of approaches, ranging from a focus on varied functions, aspects and delineations, (see for example Fromberg & Bergen, 2006), such as the present study, to describing play as life-long, complex activities that generally elude stringent definition (Merleau-Ponty, 2012; Sutton-Smith, 1997). Moreover, as described in section 1.2, 'risk' is equally fraught with different meanings and little consensus; therefore, it might seem audacious to try to suggest a precise definition. I would therefore argue that the use of definitions is mainly rhetorical and practical. I have no intention of undermining or reducing the complex experience play might be for children. My intention is rather to clarify an idea. Hopefully, by being as clear as possible, in this case, by delineating a complex phenomenon to a few sentences, I consequently make my suggestions more open for critique and theoretical development. (The philosophical foundation for this approach is discussed in 5.1.) To substantiate this idea, I will discuss issues regarding my findings and suggested definition, potentially contributing to both theoretical development and practical applications, regarding 1-3-year-olds' risky play.

4.1.1 Example and interpretations of 2-3 year olds' risky play

To extend and elaborate the basic findings from the first article that sought to describe how 1-3 year olds' risky play might appear, I will in the following sections re-present some of the examples of risky play and elaborate possible aspects and relations between the concepts of play, risk and learning. The perspectives of ZPD and self-regulation are discussed in the following sections, while scaffolding is discussed independently of this example in 4.2. I will start out with a slightly extended and revised account of Example 1 from Article I (Kleppe, Melhuish, & Sandseter, 2017), where Sondre (2,9) and Daniel (3,3) are climbing and sliding on large snow boulders.

Example 1: Sondre (2.9) and Daniel (3.3) are climbing on the big snowballs, bouldering (the balls are about their size and there is a whole circle/structure of them). They climb up, try to jump from one to another or slide or jump off. Daniel jumps off several times and slides down the 'high wall'. He shouts: 'I went fast! I went the fastest! Wasn't that fun?!' Sondre climbs to the top of the wall, but says with a tiny voice 'No' and climbs down [he is discouraged]. He slides off from a lower boulder. He watches Daniel as he slides again from the higher boulder, and Daniel looks back up at him and assures: 'I didn't break my legs!' This refers to a discussion the boys had earlier about someone who had actually broke their legs (someone they had heard of). Daniel goes on to reassure Sondre that he is brave enough: 'It is not big!' and 'You can do it! You can slide there!' Sondre laboriously gets in position and mumbles to himself: 'I do it, I dare this' [meaning: I can do this. I am doing it]). He throws a quick glance over his shoulder at Daniel (maybe for reassurance), but Daniel looks away, busy with climbing the opposite side and Sondre sets off over the edge. He slides down at great speed (it takes about two seconds; the drop is almost vertical). When down, he shouts: 'I dared, I dared! [meaning: I did it!] … I dared slide down there!' He walks back into the circle of boulders while he repeats to Daniel: I dared! (Video 0016, ECEC Center 3 (Nature center), Day 3)

First, as an illustration of how I made my observations, as described in 2.5.1, I started to make notes or film when I noticed that the criteria of objective and subjective risk were present. Whether the activity could be determined to be *play* I would leave to the analysis. Previous research on children's risky play indicate that this type of play is easy to recognize by its 'loud' appearance, e.g., excited screaming and laughing (Mårtensson, 2004; Readdick & Park, 1998; Stephenson, 2003) and apparent body language of hesitation and fear (Sandseter, 2009b, 2009c). These expressions are interpreted as indications of subjective experiences of exhilaration in relation to a risk, regardless of the objective risk. In this example, I saw the two boys entering the structure of boulders and soon after heard their shouts and cheers while they climbed up and slid down, hence the typical – or expected – appearance of risky play. Following Sandseter (2009a; 2009b), I identified the objective risk as the environmental

characteristics of the situation and tried to assess as many physical facts as practical (Hansson, 2010), that entailed both a probability of – and severity of – a negative consequence. In this case, climbing up and falling from one of the boulders would hurt and potentially cause an injury, and the higher Sondre or Daniel would climb, the more severe a consequence of a fall would be. Additionally, the more unstable or unpredictable a surface, in this case, e.g., hard ice or loose snow, would increase the probability of a fall. The height of the highest boulders was about double the children's height, and the top from where they set off sliding or jumping off was somewhat round and slippery. The inclined wall they slid down was steep, almost vertical, and they gained high speed. This episode was therefore categorized with the risk-categories 'playing with heights' and 'playing with speed'.

The probability of an adverse event would change in relation to these physical conditions. For example, a lower height, a flatter surface on top and/or a less steep slide down would decrease the probability of an adverse event including the outcome severity. Falling off the top or an awry encounter with the bottom of the slide could result in a fractured bone. The boys themselves were aware of this, as they discussed the possibility of broken legs, with Daniel after his own runs reassuring Sondre that indeed he did not break his legs. The boys were right in discussing the matter; the main cause of severe physical injury in ECEC – mainly bone fractures, both in Norway and internationally, is falling, especially on outdoor playgrounds (Sando et al., 2017).

The subjective risk was identified as individual characteristics in my study, mainly how the boys expressed their experience through their body language, facial expressions, sounds and/or words (Sandseter, 2009a; 2009b). In this example, perhaps the most evident would be the exhilaration the boys expressed, how they shouted, laughed and verbally expressed their excitement. Secondly, I suggest that the two boys experienced the risk in the activity differently, hence an additional indication of a subjective risk-experience. The environmental characteristics, that was the objective risk, was the same for both boys: the height of the boulders and the obtained speed were the same. Yet, Sondre was much more hesitant and openly worried compared to Daniel. Thus, Sondre's actions indicated more strongly the purported balancing act between exhilaration and fear as a typical feature of risky play (Sandseter, 2009c).

Before the excerpt referred in the transcript above – and for some time – Sondre had been sliding from lower boulders, expressing excitement and less hesitation. Then, at one point, he

decided to try to slide from a higher point, effectively increasing the risk. On top, he first hesitated and withdrew. He expressed both with body language and in words that he could not dare. His voice was low; his face was towards the ground and back slightly sunk, which I interpreted as anxiety and/or maybe disappointment. Daniel continued to address the risk verbally and simultaneously reassured Sondre that there would be 'no broken legs' and that 'you [Sondre] can do it'. Sondre's body language continued to show hesitation, but he tried again and climbed to the top of the boulder. He mumbled to himself and repeated Daniel's words of encouragement just before going over the edge. I interpret Sondre's reaction after sliding, 'I dared [I did it]!', as a sign that he was 'close to his edge' of what he could manage, thus optimizing his exhilaration.

I interpret this episode as *play* based on its voluntary appearance and the boys' apparent intrinsic motivation for engaging in this activity that both intrigues them and scares them. Their shouts, laugh and general excitement also confirmed to me that this was a voluntary and playful experience. A situation that would *not* be play, yet entailing a similar experience of facing a risk, could be a situation where, for example, the boys needed to cross a narrow bridge on a hike. The task of crossing the bridge would possibly evoke the same emotions (e.g., fear of falling down and breaking a leg), but it would not be something the boys would seek out for its own sake. Here, in contrast, they sought out these experiences (and emotions) repeatedly; the transcript is an excerpt of an activity that went on for about 20 minutes. This type of intense repetitiveness is emphasized by Sutton-Smith (1997) as a typical trait of children's play. In total, I interpret the episode as *risky play* based on this combination of environmental characteristics (objective risk), individual characteristics (subjective risk) and typical play characteristics.

Learning. Sondre's action of increasing the risk can be interpreted in accordance with previous studies on this specific trait of risk-taking, i.e., that increasing the risk is (sometimes) necessary to maintain or optimize the rewarding thrill and exhilaration (Apter, 1992; Sandseter, 2009c). Another way to interpret Sondre's actions is through the concept of Zone of Proximal Development. For a long time, Sondre was sliding from the same (lower) level without seeking any guidance or help. That, according to ZPD theory, can thus be interpreted as his level of actual development: It is what Sondre masters without any support or guidance. This is then the basis for assuming his proximal level. The proximal level *is the distance between that level of independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more*

capable peers," (Vygotsky, 1978, p. 86). In this case, Sondre apparently determines by himself his next level of achievement. His motivation for doing so can be manifold, and apart from the suggestion that it is due to his need for maintaining a level of exhilaration as suggested by thermostat/sensation seeking theory; it could be a display of an inherent drive to learn and/or his ability to give himself a relevant, appropriate challenge, i.e., to determine his own ZPD (Johnson et al., 2012). It could also be a display of a social interest to keep up with his friend (Christensen & Morrongiello, 1997), or it could be a mix of all these factors. In all instances, Sondre succeeds in mastering his new challenge with the skillful help of his more experienced peer, as suggested by the ZPD theory.

Another indication that Sondre is exceeding his zone of mastery and enters his proximal zone (and must solve a problem) is his hesitation. First, it is his hesitant body language and his questions to Daniel that clearly indicates this, but also how he mumbles to himself while climbing to the top and prepares himself to set off. His mumbling can be interpreted as, in Vygotsky's term, private speech (Vygotsky, 1978). Vygotsky observed that children faced with a problem started to talk more to themselves and interpreted this audible self-talk as *"a radical and pervasive reorganization of children's cognition"* (Sawyer, 2017, p.84)*.* Private speech is suggested to display the mental process of developing higher thinking. This social and verbal mediation of thinking is suggested to support the ability to plan and self-regulate. The self-talk, indicative of the internal thought process, enhances the ability to reflect on the problem at hand in relation to abilities, solutions and motivation. The verbal mediation of the motivation is also suggested to develop the ability to understand the purpose of solving the problem and also its social character (Atencio & Montero, 2009). Sondre displays his thinking by speaking out loud instructions to himself of how to place his legs to get into the proper position, then he prominently repeats Daniel's words of encouragement just before going over the edge: 'I am doing this'. Sondre's reaction after sliding down does not necessarily only display his emotional exhilaration of having been 'close to the edge', but could as well be a display of satisfaction of mastering the problem at hand – he challenged himself and he managed. In conjunction with this observation, a recent study suggests that children use more private speech during playful contexts than non-playful tasks (Sawyer, 2017), thus indicating that play has optimal properties in regards to the development of advanced thinking.

In accordance with Miller and Byrnes' (1997) five self-regulating characteristics of a successful risk-takers, Sondre can, at least, tick off the first three. 1) He has knowledge of diverse strategies: he tries several times different ways of getting to the top and discusses

them with Daniel. 2) He has the ability to coordinate multiple goals: He must both climb up, position himself and slide off, he must handle his fear, and at the same time, he is probably motivated by several external and internal factors. 3) He is capable of handling uncertainty. The two following characteristics are not so expressively displayed in the example. To conclude that Sondre (4) self-corrects strategies when making mistakes (assessing tendencies, biases, and limitations), and 5) has a tendency to learn from experience, is a stretch. Albeit his careful and talkative approach indicates that he takes his own and others' experience into account before making a decision, the example is limited. However, in sum, Sondre's self-regulation appears as the theoretically suggested feedback cycle, in which external and internal information exchange and eventually lead to his decision and success. He regulates his actions according to his perception and knowledge of himself in relation to both his emotions (exhilaration/fear, "I get afraid/I get excited") and capabilities (able/unable "I can do it/I cannot do it").

To conclude, what did Sondre concretely learn? Observably, he changed his behavior: he went from one level of physical achievement to another. More speculatively, he learned something about the environment. With his body at the center of his experience, he learned about height-differences, the incline, the surface and himself in relation to all these factors: his mobility and agility, his weight and the force in which he slid and hit the ground. About the risk, he suggestively learned that he could face adversity and handle it; an experience of self-assertiveness, most prominently with the help and support from a more experienced peer. Notably, I would not interpret learning risk taking as 'the ability to take bigger risks', but, as an increasing ability to self-regulate in new situations with the ultimate goal of autonomous and realistic risk assessments, that is, an interpretation of self-regulations as necessary 'meta-skills' (Whitebread et al., 2009). For example, Sondre's weighing his options back and forth, discussing with himself and his friend can be interpreted as metacognitive regulation, a process of planning, monitoring, control and evaluation. These processes can also be typical emotional and motivational regulation, i.e., how he monitors and controls his emotions and motivation during the (learning) task. Ultimately, this 'right amount' of mild stress (Gunnar, 2016), and/or context relevant stress (Ellis, Bianchi, et al., 2017), might illustrate how play experiences strengthen children's ability to deal with problem solving in this particular (Norwegian) context.

4.1.2 Example and interpretations of 1 year olds' risky play

When observing children younger than 2 years, there were indications that they sought out and played with risks, but this sometimes appeared quite different from that of older children, for example as displayed in Example 1 (The following example is also presented in Article I (Kleppe et al., 2017):

Example 2: *The group has just finished eating and Nicolai (1.7) goes over to the 'balance bowl', a flat bowl, slightly concave, approx. 10 cm deep and approx. 50 cm across. It is now turned over on the floor, forming a low convex structure. Nicolai climbs up, hands and feet on the bowl. Safely on top, he tries to raise to a standing position, but gives up and slides off. He makes no sounds and keeps a stern face throughout. Sandra (T) puts Celine (1.3) on the floor (she has been sitting by the table). She crawls quickly and determined to the bowl, crawls up on it. When on top, she just sits there. Face blank, watches a bit around. She then crawls off after 1 min and then crawls back up. At 00:10, she almost slides off and catches herself. She then continues to climb and move around the top for a while. (Video 0031-34, Infant-toddler group, Day 1)*

This transcript is from a longer episode where children in the Infant-toddler group had been playing with the overturned bowl for a while. When I noticed some children started to climb on it again after the meal, I started to film. The children were climbing on to the bowl, some tried to stand up (like Nicolai), and those who managed, would for example stretch their arms up or even try jump carefully up and down. The environmental characteristics were the hard, smooth, slightly curved plastic bowl, about 50cm in diameter and 10 cm high, lying on the flat floor. The floor was vinyl covered concrete. A fall from the top would hurt, and a full head impact might lead to a concussion. Since the surface of the structure was slightly curved and smooth, the probability of a fall increased with the children first climbing up on the bowl and then increasing it further by standing up, then by jumping up and down. The individual characteristics of Nicolai indicates that he willingly climbed up, and his hesitation when he tried to stand up indicate that he experienced a risk of falling; he stretched his arms out in front of him trying to balance himself, he then crouched back and climbed down. The individual characteristics of Celine indicate a similar, or even stronger determination for climbing on to the bowl. She stayed on top for a while, even if she almost fell off at one point. I interpret that her catching herself on the edge, must have given her a slight jolt of fear, as she almost tipped off. The environmental characteristics, that is, the objective risk, was the same for both Celine and Nicolai: the height and surface of the bowl was the same. Yet their actions and reactions were different, thus indicating subjective risk experiences. Nicolai tried to stand up, thus increasing both the probability for falling off and the severity of a potential fall. Celine remained seated and both the probability and severity of falling was therefore

smaller or less. When Nicolai felt himself almost falling off, he withdrew, but when Celine almost fell off, she remained sitting there. However, the lack of exhilaration, and also the possibility of making an assumption of the expected balancing act between exhilaration and fear (Sandseter, 2009c), made it more difficult to categorize this as risky play. Their faces and bodies were quite stern and expressionless throughout the episode. My solution was 1) to attribute learning as a motivating factor (ZPD), elaborated below, and 2) to adjust the risk categories and general description/definition. In this case, the risk could potentially be attributed to *height* and falling off, from Celine and Nicolai's perspective. However, if 10cm was the physical fact entailing the objective risk of the situation, then so would be walking upright and the category might lose its purpose. There were similar cases with other categories such as speed and tools. I assumed it was important to maintain the distinction of these categories and therefore suggested to group together this type of play – play with particularly low objective risk – in the category of risky elements.

Even if the appearance of the children and their level of physical activity deviates largely from that of Example 1, I interpret this as *play* for mainly the same reasons. It is voluntary, and the children engage with the plastic bowl for no other apparent reason than the activity itself. The repetitiveness of the children's actions enhances this assumption. Additionally, the play assertion is supported by age-related play traits by comparing the two episodes. They can be seen as examples of general trajectories of increased complexity, from partly solitary and repetitive play to predominantly social and more varied and complex play (Garner & Bergen, 2006; Goodway, Ozun, & Gallahue, 2012; Vygotsky, 1978). Considering physical play more specifically, Celine and Nicolai are at the stage of exploring gross motor movements and the early stages of what Pellegrini and Smith (1998) refer to as exercise play, i.e., gross locomotor movements in the context of play, while Sondre and Daniel are at the stage of more complex rough and tumble play, that is, not limited to play-fighting and chasing, but varied, social gross motor play.

Learning. Celine's and Nicolai's actions cannot be readily interpreted in the same way as Sondre's and Daniel's: that they sought out a risk for exhilaration and that they eventually increased the risk to maintain or optimize the rewarding thrill and exhilaration (Apter, 1992; Sandseter, 2009c). I therefore suggest applying other types of motivation for interpreting their actions. Nicolai's level of actual development, i.e., what he masters without any support or guidance, was standing and walking on the flat surface. Standing and moving on a curved, smooth, somewhat slippery surface, could thus be within his proximal level, i.e., a problem he

could solve, potentially with adult guidance or in collaboration with more capable peers. Similar to Sondre, Nicolai himself determines his next level of achievement (Johnson et al., 2012). But for lack of the apparent emotional reward, a drive to challenge himself seems like a more feasible motivation and/or he is motivated by watching the other children who previously stood up in the bowl, and even jumped up and down (Christensen & Morrongiello, 1997). In contrast to Sondre, Nicolai does not succeed in his undertaking. This is not to say that learning only takes place with external support, but, observably, in this case, Nicolay did not receive any support or guidance.

With Celine and Nicolai, there were no signs of the private speech I observed with Sondre, which could have strengthened the assumption of and ongoing mental self-regulating process. This might be a prominent display of problems researchers face while observing children with limited verbal language; even more is left up to interpretation. Applying Miller and Byrnes' (1997) five self-regulating tendencies for successful risk-takers, I suggest that Nicolai 1) had limited knowledge of diverse strategies: before this transcript, he tried a few times, but basically in the same way. 2) He might have the ability to coordinate multiple goals in a somewhat similar fashion to Sondre: He must both climb up, position himself and then stand up on the challenging curved and smooth surface; he must handle his uncertainty mix with his motivation. 3) He handles the uncertainty only up to a point, where he is overwhelmed and withdraws. I did not observe any actions by Nicolai that indicate that he (4) used self-correcting strategies when making mistakes (assessing tendencies, biases, and limitations), or that he 5) had a tendency to learn from experience.

I will make an attempt to speculate what concretely Celine and Nicolai learned. I interpret their attempts to master a new challenge as a first step of changing behavior. Even if it was a small achievement, Celine succeeds, while Nicolai withdraws. But Nicolai's eagerness indicates that he will try again and over time will adjust his expectations and actions in relation to previous experience. About the risk, he suggestively experienced fear of falling, a fear that contributed to his crouching and climbing down. Hence, Nicolai might also be said to self-regulate, that is, he related external information to his internal experience and made a decision. This might be substantiated by a speculation that this experience gave him information about himself and about the environment. He experienced his own agility, how his feet felt against the curved surface and his balance point. He regulated his actions according to his perception and knowledge of himself in relation to both his emotions (motivation/fear, "I want to stand up/I get afraid/") and capabilities (able/unable "I can do it/I

cannot do it"). As suggested in the previous section, I interpret learning about risk not as 'the ability to take bigger risks', but, as an increasing ability to self-regulate in new situations with the ultimate goal of autonomous and realistic risk assessments.

As previous literature has focused largely on fun and exhilaration, this might also be a reminder that risky play is related to possible adverse outcomes. The 'fun-and-excitement' regime might have been a reaction to the previous negative risk-regime. Researchers (me included) might have mainly focused on the "success stories" to try to display the intrinsic value of risky play. In contrast, reporting on negative outcomes might strengthen the assumption that there are real risks involved. In my data, I have not assessed the frequencies of adverse outcomes vs. positive outcomes, but in the examples presented in the articles I have attempted to include and discuss adverse outcomes, and, in the suggested definition, I have tried to balance this by including both negative and positive outcomes.

4.1.3 Are 1 year olds aware of the risk?

The slightly surprising combination of danger and absence of fearful-joy expressions raises some questions. Undoubtedly, 1 year olds are in the process of developing their ability to express themselves, and the observation that they do not express fear in a situation that they either are – or should be – feeling fear or excitement might be interpreted in two ways: Either that they 1) are not aware of the risk and consequently do not feel any fear or excitement or 2) that they are aware of the risk, but are either not fully capable of expressing the feeling, or, at least, are not expressing it as vividly as older children.

This might lead to objections to the feasibility of interpreting *willing risk-taking* into 1-year-olds' play. When there is little sign of fearful joy, is it possible to determine that they perceive the risk or are even motivated by the thrill? If "yes", then it should be possible to determine at what age the child does (actually) perceive and reflect on the risk. As described in section 1.3, there are numerous studies, with various angles, suggesting that humans – from childhood – have a propensity towards sensation-seeking and risk-taking. However, less (if any) literature specifies at what age this propensity occurs and can be observed. This might resemble the discussion of determining the age of the capacity to attribute mental states in others, referred to as *theory of mind* (Astington & Edward, 2010; Goldman, 2012). Research on theory of mind has stretched over decades and proposes that children, gradually from early infancy, start recognizing that their mothers are separate from themselves and that they have thoughts, wishes and intentions different from their own, and this capacity is well developed by the age

of 5. Yet, it seems intensely difficult to specify the necessary developmental prerequisites and, specifically, to establish exactly when the capacity to attribute mental states in others occur. Still, we know it occurs.

Regarding the debate on theory of mind, the problem is argued to be methodological. That is, researchers have depended too much on the "false belief test", which has been criticized for being unsuitable (Bloom & German, 2000). Similarly, the problem with my suggested definition of risky play might be methodological, i.e., that the focused ethnography is not suited to delineate and test the purported risk-taking sufficiently. However, the general goal of this type of ethnography is to get a sense of the (typical) meanings of the observed actions in relation to the context (Knoblauch, 2005; Knoblauch & Schnettler, 2012).

In this exploratory study, I have analyzed sequences of actions that are only meaningful in a given context. Undoubtedly, it has been difficult to determine, purely by observation, to what extent 1 year olds are aware of, or motivated by the risk itself. Still, risk sometimes comes in as an aspect, subjectively and/or objectively, of their play. Perhaps the strongest support for this observation is the Kretch and Adolph (2013) visual cliff experiment. In it, 14-month-old children withdrew from climbing across the bridge at a certain narrowness, which can be interpreted as a consideration of their chance of falling off, and that this was actually based on an assessment of the physical properties of the bridge. Corroborating this, the ability to assess likelihood, by distinguishing between two events based on their relative likelihood, is recently observed from the age 6 months by Kayhan et al. (2017). The youngest children in my dataset were also close to 14 months. However, it might not be feasible or even essential to determine the exact starting point. Previously, children's risk-taking has been observed from 3 years upwards. This project's contribution is that it occurs, as defined previously, from 2 years, and that there is a pre-phase/emerging phase from around 1 year. One-year-olds' risk awareness is admittedly uncertain, but, as defined in this project, it occurs.

4.1.5 Observing and understanding risky play with the Zone of Proximal Development (ZPD)

Additionally, I would like to add a brief discussion related to the practical and analytic potential of applying the concept of ZPD to risky play. The ZPD has previously not been utilized in relation to risky play, but I introduce it here as an analytic concept, to interpret both the motivation and the action itself, particularly related to questions of why and when children increase the risk.

During observations, I initially interpreted children's risky play with two main motivational factors: willingness and need. An intriguing aspect was how children, voluntarily and repeatedly, increased the risk in playful situations. A common scenario during observations would be that, after mastering a challenge, e.g., climbing up a climbing-frame and sliding down, children would make the challenge more difficult, e.g., by climbing up the slide (often very slippery), or make the challenge more dangerous, e.g., by sliding backwards or with eyes closed. To me, this strongly indicated their propensity towards risk-taking and that they were adjusting their exhilarating experience as suggested by theory (Adams, 2001; Apter, 2007; Sandseter, 2010a).

Previously, "thermostat" theory (Adams, 2001) has been applied to interpret the internal process of this phenomenon (Sandseter, 2010b). That is, decisions are made based on the drive to feel confident, balancing the feelings of anxiety/boredom against fear/excitement. This has been particularly applicable with the typical extrovert risky play seen with older children, where these feelings might be more apparent/observable. However, while comparing example 1 and 2, it was more difficult to apply this with the younger, more expressionless, children.

Additionally, observations indicated that there might also be other factors motivating risk-taking, Originally, in Vygotsky's theory, a drive to learn motivates children to grapple with challenges (Dixon-Krauss, 1996; Vygotsky, 1978). This might also be a motivating factor in risky play. Simply the feeling of mastering a challenge, such as climbing up a tree, might inspire the child to do so, not necessarily the rewarding pleasurable arousal. Nevertheless, by specifying the risk level, as with the ZPD, and thereby demonstrating an increase in risk, it has been possible, through observations, to establish that, the more expressionless children below 3 years of age do take risks. An additional motivational factor might increase the feasibility to assume that children take risks willingly, especially considering large individual variance in risk-tolerance and propensity (Morrongiello & Rennie, 1998; Sandseter, 2010a).

Additionally, as this study is within the field of applied ECEC research, a pedagogical perspective on risky play was useful. Propensity theory focuses largely on the reward of exhilaration as motivation, but it might be unhelpful in identifying individual children's risk levels, thereby also unhelpful in supporting children's risk-taking in general. While the concept of ZPD has been extensively applied to learning situations such as reading, assessing a child's ZPD in literacy is often a complex and resource-demanding process (Hammond, 2001). In contrast, in risky play, researchers can, more or less, observe the 'proximal risk

level' as it unfolds, in the physical environment. For example, one day a two-year-old's risk tolerance level is climbing up the first platform of the climbing frame, thereby assuming that her proximal risk level is the second platform, or more complex; e.g., standing up on the platform or climbing down backwards. As stated originally:

> *The zone of proximal development furnishes psychologists and educators with a tool through which the internal course of development can be understood. By using this method, we can take account of not only the cycles and maturation processes that have already been completed, but also those processes that are currently in a state of formation, that are just beginning to mature and develop.* […] *– that is, what a child can do with assistance today she will be able to do by herself tomorrow. (Vygotsky, 1978, p.87)*

Hypothetically, the following self-regulating process would ensue: Too much (perceived) danger, i.e., outside the child's proximal risk level, and the child will withdraw; too little (perceived) danger, i.e., 'below' the proximal risk level, and the child might get bored. Just the right amount of danger indicates the proximal risk level, and the child will be observed in autonomous play. These theoretical characteristics should be possible to observe and test.

4.1.6 The need to expand the existing definition

To reiterate, existing descriptions of older children's risky play are explicit on both excitement and dangers, summarized by Sandseter as "thrilling and exciting forms of physical play that involve uncertainty and a risk of physical injury" (2010b, p. 22). In my observations of 2- and 3 year olds their risky play resembled this description, extensively. That is, an objective risk was evident and the play signals were loud and overt, representing the state of "fearful joy" so vividly described and expressed by older children (Sandseter, 2009c). I also found all previous risk categories (height, speed, rough and tumble, etc.) (Sandseter, 2007) relevant with this age group. Notably, these characteristics make the play easy to recognize. However, some 2 year olds, but mostly 1 year olds, played with risk in subtler, less obvious ways. In particular, facial expressions and body language of thrill and excitement, i.e., the "fearful joy", were not prevalent, and there was often no apparent objective risk of injury.

Additionally, as described in more detail in Article I, the youngest children played less frequently with risk than older children; they did it more often alone, and they often repeated one activity more often than their older peers. These characteristics fit well with existing literature on infants' and toddlers' play (Garner & Bergen, 2006), but have previously not

explicitly included aspects of risk. By combining these commonly known play characteristics with risk-taking, I describe a new aspect of 1-3-year-olds' play. If one expects risky play to entail risk of injury and overt expressions of fearful joy, one would simply not include a large portion of the play observed in this study. Therefore, I suggested a new definition in Article I, for two main purposes: 1) To concisely summarize the characteristics of 1-3-year-olds' risky play and 2) to include a larger variety of risky play than what previous definitions and descriptions have (which might be relevant also for older children).

For similar reasons, I made adjustments to the existing categories of risky play. As mentioned in 3.1, the definition suggested in Article I has been discussed and changed over the course of the project. The modifications are mainly due to one major aspect: risk-awareness among the youngest children, which has had two implications for the development of the definition, discussed in the following.

4.1.7 Uncertainty and potential for both negative and positive consequences

As suggested in 1.2, risk is commonly applied as the probability and severity of a negative consequence, thereby something inherently negative. However, throughout this thesis, it is assumed that there are several positive aspects of children's risky play. This is reflected in, for example, Sandseter's definition, where both positive and negative aspects are expressed quite explicit, i.e., […] "thrilling and exciting forms of physical play" as possible positive consequences, and […] "uncertainty and a risk of physical injury" as possible negative consequences. It proved challenging to delineate and promote both negative and positive aspects of 1-3-year-olds risky play in a similar way, as both the thrill and excitement were less apparent and risk of physical injury were often absent. In Article I, we defined 1-3-year-olds' risky play as "*play that involves uncertainty and exploration – bodily, emotional, perceptional or environmental – that could lead to either negative or positive consequences*". In relation to the overarching discussion of this thesis, I will clarify three points regarding this definition.

First, I maintain that the concept of uncertainty is a fundamental element in risky play. As presented in 1.5.3, the ability to handle uncertainty is described as essential for children's successful risk-taking (Miller & Byrnes, 1997). With 1-3 year olds, uncertainty might also be seen as an inevitable part of exploration, moreover for its strong relation to play, as play is seen as an optimal arena for "training for the unexpected" (Pellegrini et al., 2007; Pellis & Pellis, 2007; Riksen-Walraven & van Aken, 1997; Spinka et al., 2001; VanderVen, 2006). How uncertainty is interpreted and related to ECEC quality is discussed further in 4.2.1 and 4.2.2. Additionally, as uncertainty and risk might appear in many types of play activities, it is

important to point out the they are aspects of the play experience, sometimes sought out deliberately, sometimes presenting as an opportunity or sometimes as a consequence of the activity.

Lastly, the proposed definition in Article I might be unclear about consequences, implied that the motivating factors of risky play are unclear, potentially questioning the viability of the definition. Regarding the possibility of a negative consequence, I will maintain that it is, paradoxically, a motivating factor. As expressed by children themselves, it is being as close to the edge of danger as possible that is the most rewarding (Sandseter, 2010a). Thereby, the two are inextricably linked, i.e., if there is no (perceived) danger, there is no thrill. Even if the awareness can be questioned (4.1.2), my distinct impression is that the potential for a negative consequence is what makes this type of play attractive, also for younger children. For clarification, I suggest that the most common negative consequences in 1-3-year-olds' risky play would be the experience of fear and/or physical harm.

Regarding the possibility of a positive consequence, I assume that exploration is an inherent drive in infants and toddlers, thus a motivating factor in itself. However, it might not seem sufficient to face overt negative consequences, and the solution is therefore to add explicitly two of the main assumed positive consequences of risky play; a thrilling and/or a mastering experience. Hence, a more specified version of the definition can be formulated as *1-3-year-olds' risky play is characterized by uncertainty and exploration – bodily, perceptual, emotional or environmental – with possible negative outcomes such as fear and/or physical harm, as well as possible positive outcomes such as mastering and/or thrilling experiences.*

4.2 Knowledge of ECEC-quality

Assuming that children engage in risky play from 1 year of age, how does this relate to concepts of ECEC quality? The three aspects of quality I selected for examination were staff-child interaction with children in risky play, physical provision for risky play and characteristics and potential contradictions between safety aspects, e.g., injury prevention, and appropriate stimulation for physical activity/risky play. Since the two first aspects are already addressed in detail in article II and III, I will discuss what these aspects might have in common. Since the last aspect (characteristics and potential contradictions between safety and stimulation) is not discussed in a separate article, I will conclude by discussing the findings presented in section 3.4 independently.

In my study, I did not observe any large variation in occurrence of risky play according to ECEC quality, nor did I see the presumed increased occurrence in nature centers. To reiterate, the reason for selecting high and low scoring centers based on ITERS-R was to utilize a unique opportunity to have an external, standardized, reliable assessment of variation of care and learning environment as a background variable. Moreover, I presumed that the care and learning environment would actually affect the occurrence and appearance of risky play, and that the potential of such an influence (Sayer, 1999) – as measured by the ITERS-R – was reasonably stable. I could therefore potentially investigate what was congruent and what could be deviating. For example, a higher frequency of risky play in the low-scoring center would have implied me to investigate if this could be due to some of the more detailed characteristics of a low-scoring center, e.g., little interaction between staff and children. On the other hand, a higher frequency in the high-scoring center would have implied a similar investigation on the other end of the scale. Yet another approach could have emerged from a higher frequency of risky play in the nature centers, which could have confirmed previous assumptions of optimal conditions for risky play. On the contrary, the frequencies of observed risky play were quite similar over the three comparable days (Table 5, Article III). This could obviously point to the methodological weakness of small sample studies and suggests that more days of observations could have revealed something different. For now, I can only use this result to the effect stated in 4.1, that this might suggest a certain consistency in the children's behavior, i.e., their engagement in risky play, and/or that of the broader (Norwegian) cultural condition in which they occurred.

Nevertheless, I could associate more specified aspects of risky play and quality, such as staff-child interaction and physical facilitation. Thus, it appeared that risky play was yet another aspect of quality, which did not differ much from other, already measured aspects. At least it did so in a Norwegian context, in this study, and this might be interpreted as a cultural phenomenon, potentially not reproduced in other countries.

4.2.1 Process quality: Scaffolding risky play – allowing uncertainty and promoting participation

As staff-child interaction is commonly seen as the core quality of ECEC (section 1.6.2 and Article II), the first aspect of ECEC quality I investigated was how staff interacted with 1-3 year olds engaged in risky play. I discussed two aspects: the application of scaffolding for assessing high-quality staff-child interaction and how it applied to the empirical findings. The conclusion can be condensed into how, from the children's perspective, scaffolding allows

them to find their 'proximal risk level,' thereby providing optimal conditions for exhilaration, physical activity and learning. Here, I will discuss whether this process depends on a necessary prerequisite of allowing uncertainty and how the scaffolding process might have the potential positive outcome of strengthening children's participation.

When observing children's risky play, I focused on the children. Additionally, I made notes whether staff were present or not, and if staff were present, I made notes of how they acted. As presented in Article II, I ended up with three categories of staff-child interaction – scaffolding, non-scaffolding and not interacting – in addition to the category of staff not being present. Firstly, I will reiterate that recent applications of scaffolding and ZPD, emphasize collaborative efforts between learner and educator (Bigelow et al., 2010; Johnson et al., 2012; Verenikina, 2003). (Generally, *educator* includes both teachers and ECEC practitioners, as well as parents or more experienced peers, but here I will continue to focus on the ECEC practitioner.) This view takes into consideration how the practitioner is not always in the best position to determine the child's next level; rather, the child him- or herself may be the best judge, which seems particularly relevant in risky play situations. Following the self-regulating model, children learn from experience; they need time and must be allowed multiple tries to adjust and self-correct when doing mistakes (Miller & Byrnes, 1997). From the child's perspective, it therefore seems intuitively reasonable to start with subtle risks, minimizing the severity of a mistake and negative consequence. From the practitioner's perspective, the appropriate response is suggested to be allowing the child to struggle, permitting uncertainty (both in the process and in the outcome: e.g., will the child fall or make it?) and not interfering unnecessarily in the child's efforts to reach a goal. Consequently, can creating and/or permitting uncertainty be seen as good ECEC quality? My answer is "yes", based on the two following considerations.

First, allowing a level of uncertainty might be better understood as important or good quality through the concept of overprotection. In the parent-child relationship, overprotection is described as unrealistic concerns with safety, with the unintentional consequence of depriving children of developmental opportunities (Clarke et al., 2013; Ungar, 2009). Overprotection might have the intention of creating certainty, or at least, avoiding uncertainties. For example, if parents stop children from climbing, one can assume that they do this to avoid the possibility of a negative outcome. Sometimes, obviously, it is the correct response: Adults might know more than the child, the probability of falling might be too high (the climbing structure is unstable) or the consequence of falling will be too severe (there are sharp rocks

underneath). On other occasions, it might simply be that the adult cannot handle the uncertainty, even if the probability of falling is small and the consequence is negligible. Stopping the child in the latter scenario would be an overprotecting response, potentially depriving the child of a valuable experience (e.g., of fun, excitement and/or mastering), but also of developmental opportunities, suggestively, because it is interfering with the self-regulating process. Generally, it is documented that overprotection has the unintentional negative consequence of increasing the probability of anxious children (Clarke et al., 2013; Kadison & DiGeronimo, 2004; Ungar, 2009), where anxiety is typically related to the ability to handle uncertainty.

In my project, what I called 'non-scaffolding' could be interpreted as overprotection, and I presented and discussed one example of 'non-scaffolding' in Article II (p. 8) in this regard. Although research on overprotection is mostly related to the parent-child relationship, I assume that there are similar relational and emotional mechanisms in staff-child relations, especially considering children's young starting age and amount of time spent in Norwegian ECEC. The relatively high frequency of scaffolding (78%), indicates that the practitioners were relatively comfortable with children in risky play, consequently that they allowed elements of uncertainty in children's life. As a parenting style, this is typically characterized by support of children's autonomy from infancy, which in turn is found to be predictive of children's resiliency in new situations in early adolescence (Brenning et al., 2015; Riksen-Walraven & van Aken, 1997). In general, the ability to handle new situations or the "unexpected" is argued to be fundamental in human life (Pellegrini et al., 2007; Pellis & Pellis, 2007; Spinka et al., 2001; VanderVen, 2006), and scaffolding risky play might constitute salient and concrete examples of how this ability is supported.

Second, I suggest that a potential outcome of appropriate support for risky play is strengthening children's ability to participate. Children's participation is seen as a fundamental aspect of quality in Norwegian ECEC (Engel et al., 2015; Ministry of Education and Research, 2017), notwithstanding it is debated what exactly constitutes infants' and toddler's participation and how their right to participate is ensured (Bae, 2010; Emilson & Johansson, 2016). In relation to risky play, I interpret children's participation as their opportunities to express themselves. Implied, I interpret children's expressions in a broad sense, particularly not limited to verbal expressions. I also imply that infants and toddlers have limited experience; they do not know from previous experience what are their opportunities, their wishes or needs. Generally, 1-3 year olds express themselves through

actions and interactions with their environment, conceptualized by Vygotsky's 'indicatory gestures' (referred to in Veraksa et al., 2016, p. 223). As an example, a 1 year old cannot simply ask for the opportunity to climb. Instead, the 1 year old will express his/her wish or need to climb through the action of climbing. The knowledgeable and sensitive practitioner will respond appropriately to this indicative gesture and engage in collaborative explorations of the child's interest and willingness to climb. At least, in Norwegian ECEC – reflecting Norwegian society – where it is documented that children's regular and unrestrained play in nature is valued (Borge et al., 2003), the risks involved are probably easier to accept and practitioners might respond – from a Norwegian point of view – appropriately. This might be seen as an individualistic form for participation, but I will argue that this is an example of relational and reciprocal participation, "forcing" practitioners to take the children's perspective (Bae, 2010).

As scaffolding requires 'the right amount of support' and appropriate withdrawal, 'no interaction' could be interpreted as the correct response, or, as stated by Trawick-Smith and Dziurgot (2011), supporting (or interfering with) autonomous play would presumably be a poor-fit response. However, in Article II, I concluded that 'no interaction' largely can be seen as poor quality based on three factors. 1) Scaffolding does not mean *laissez-faire* and that 1-3 year olds should be left alone. Scaffolding is allowing uncertainty, potentially promoting participation, by an engaged practitioner. 2) 1-3 year olds have a general need for continuous, close interaction with stable and responsive adults (Albers, Riksen-Walraven, & de Weerth, 2010; Bowlby, 1982; Helmerhorst et al., 2014; NICHD, 1996; Stern, 1986). 3) I found a high frequency of 'no interaction' in Center group 2. Based on the general descriptions of a low-scoring center, (presented in 2.4.1 and 2.4.2), we know that the care and learning environment in that center is generally lacking compared to Center group 1, both in terms of materials and environment, and staff-child interaction. I would therefore assume that the type of 'no interaction' observed there is not a result of a conscious pedagogical choice, but a situation of general low quality that influences children's risky play, by way of fewer responses to their actions, compared to a high-scoring center. Considering children's learning in that environment, they might have achieved additional challenges, had they received the appropriate support. Ultimately, I would suggest that there is a general inherent value of adults and children sharing experiences, and that examples from all centers (including Center group 2); indicate that engaging together in risky play has large potential in that regard.

4.2.2 Structural quality: Appropriate affordance – affording uncertainty and participation

Structural quality is generally seen as an aspect of quality that is easy to measure, for example, staff-child ratios or group size. In this study, I investigated structural quality in a similarly direct way, by summarizing observed instances and categories of risky play. In article III, I discussed two aspects: 1) applications of the affordance concept and how it applied to the empirical findings and 2) how the ITERS-R measurement coincided with my quantification of instances and 'risk-features' of the centers' environments. Regarding affordances, I concluded that, even if the exhilaration among 1-3 year olds in risky play might be subtle, a motivational factor is still the potential for excitement and pleasurable arousal (Apter, 1992; Lyng, 1990; Sandseter, 2009a), but that including mastering experiences as expressed in ZPD-theory, might strengthen the assumption that these young children actually seek out risk experiences and that appropriate affordance is important to keep it safe and meaningful. Can this understanding relate to the suggested fundamental aspect of uncertainty and participation, similar to scaffolding?

First, what might constitute safe uncertainty in equipment and environments? I include 'safe' here because there is a well-documented relation between child injuries and playgrounds (Ball, 2002; Sando et al., 2017), and I do not want to create the impression that some level of observed uncertainty automatically can be interpreted as good quality. At any rate, the question might be answered by looking at some common research findings related to standardized playground equipment. First, research indicates that standardized playground equipment is in little use throughout the day (Hagen, 2015; Herrington & Nicholls, 2007). This is proposed to be a result of lack of flexibility and potential for appropriate challenges and excitement (Ball, 2004). My interpretation would be that standardized playground equipment lacks affordances, i.e., that it potentially affords only limited proximal mastering levels, including risk levels. Thus, limited affordance might also be an indirect cause of playground accidents, since unintentional use of equipment is a main reason for playground injuries (Ball, 2002; Ordoñana et al., 2007). Children bored with equipment find new (unintended) ways of using it: they climb outside fences, balance on roofs and jump off where they are not intended to. Their propensity to take risks induces them to try to find their proximal risk level, to increase exhilaration or to master an appropriate challenge. Children themselves create uncertainty, which, according to injury statistics, is obviously unsafe.

In contrast, I suggest that the inherent elements of uncertainty in natural environments provide safer conditions. In article III (p. 15), I presented an example of a 'rock slide', a big rock formation in the forest. These formations are found throughout the Norwegian landscape and are smooth rock surfaces with varied degrees of incline/declines, often small cracks and different levels. In forests, they also typically include different types of surfaces with patches of moss or grass and large exposed roots. Children seemingly loved to play on these formations, and I observed a range of risk categories, such as playing with height (climbing), speed (sliding), rough and tumble, dangerous tools (whittling with sticks) and dangerous elements (balancing on edges, roots and loose rock). I did not observe similar examples of long and varied risky play on other equipment or in other environments. A recent Norwegian study also indicates similarly that both staff and children are most physically active when they are in natural environments, compared to the center environment (both indoor and outdoor) (Osnes & Skaug, 2015). Generally, natural environments change throughout the day, from day to day and from season to season. They change from cold to warm, from dry to wet, from firm to slippery, and so on, thus changing the risk factors. Changing conditions in nature affords unexpected, real-life risks, such as the changing conditions of a running stream or a hard, icy ground compared to a soft, mushy one. I suggest that these features constitute continuously unexpected events and conditions, entailing that there is 'always' some level of uncertainty, but that this uncertainty is sufficiently fine-graded and manageable to allow trial and error without severe consequences. Hence, such an environment might support the self-regulating process, even for the youngest children, albeit in company with knowledgeable and responsive practitioners. Summarized, natural environments might prove optimal for diverse experiences and the development of coping strategies, involving all the positive aspects of being able to cope with uncertainty as presented in the previous section.

I want to note that these features are not necessarily limited to natural environments but are a salient feature of nature that might inspire the development of both indoor and outdoor play environments, as well as general provision for 1-3-year-olds' risky play. Notably, while comparing the prevalence of risky play among the centers, the nature center did not provide better opportunities for risky play in general (section 3.3 and Article III, p. 19), which might undermine the argument. Another interpretation would be that, simply bringing children into nature does not automatically improve opportunities for risky play. Appropriate affordance for 1-3-year-olds in ECEC is still dependent on reflective and engaged practitioners. Similar to scaffolding, it does not mean leaving children to themselves, but it also implies the concept

of actualized affordances, i.e., what children are allowed to do, depends largely on what the culture communicate as an acceptable level of risk (Gottlieb, 2004; Hewlett, 1991; Rogoff et al., 1993). As suggested by several researchers, what the child can achieve with some help or guidance, might also be a feature of the environment – created or directed towards by the educator (Williams et al., 2010). Educators that make use of the environment or creates environments that are versatile, complex and flexible, provide – potentially safe – opportunities for children to learn about risk.

The second implication of versatile, complex and flexible environments and equipment is that more children might find risky experience that interest them and allow them find their proximal risk level. In article III, I applied the concept of actualized affordances as an expression of this. It means that the number of risk categories observed indicated how versatile environments and equipment were, and the total number of instances indicated to what extent children had opportunities (including being allowed) to engage in risky play, thus also giving an indication of the necessary complexity of the available environment and equipment. If there were no appropriate opportunity to climb or if children were not allowed to climb, there would be zero instances of 'playing with heights'. Again, the 1 year old might mainly express his/her wish or need to climb through the action of climbing, but only if s/he is given access to such an opportunity – 'access' is thus a key to children's participation. In this regard, natural environments, by their complexity, are inspirational similar to how they provide uncertainty. The total number of instances of risky play were almost the same in each of the three centers I compared, thereby indicating that the selection criteria of either high or low ITERS-R score or being a nature center, did not provide any differing information. However, when comparing risk categories, Center 1 had all categories represented (7 out of 7), while Center 2 had 5 out of 7 categories represented. The numbers are generally low and the differences might be small, but, notably, Center 2 does not have any instances of playing with heights. One explanation for this can be found by simply looking at the description of the center; although they have one small climbable feature, there is basically no opportunity to play with heights. Playing with heights is a risky play category that appeared very attractive and has several advantages regarding both physical activity (Brussoni et al., 2015) and learning aspects (Poulton et al., 1998). Instead, a lot of risky play in Center 2 was grouped into the category 'playing with risky elements', which mainly consisted of repetitive play with limited potential for development, particularly limited in terms on increasing the risk level. This indicates that children in Center 1 had more varied and more complex risk experiences

available to them. This is substantiated by the number of features in the environment that could afford different types of risk experiences. All together, 11 features were suggested (see section 3.3). In Center 1, 9 features were represented outdoors and 7 indoors (Table 2 in Article III), and in Center 2, 8 features were represented outdoors, and 4 were represented indoors (Table 3 in Article III). Additionally, the descriptions of the features show that, in Center 2, even if they had 8 out of 11 categories represented, they were generally fewer (per category) and less versatile, complex and flexible. This coincide with children's general experience according to the information collected with the ITERS-R, and also the general impression of the centers, as described in 2.4.2.

Additionally, 1-3-year-olds' risky play was clearly not limited to natural environments. In the ordinary centers, the children spent most of their awake time indoors; they spent some time on the center playground and only rarely any time in natural environments. Still, they played just as much and engaged in even more varied risky play than their peers in the nature center. Based on the findings in this study, provision for 1-3-year-olds' participation through access to risky play experiences must focus primarily on provision indoors, secondarily on the center playground and (for most centers) occasionally in natural environments. Actualized affordances in this term implies children's agency: 'what can I do'? Research indicates that children's agency is strengthened if they have the possibility to manipulate equipment and alter the environment themselves (Engelen et al., 2013).

I propose that the category of vicarious risk summarizes the two aspects of uncertainty and participation in appropriate affordances. First, watching others take risks is a safe way to approach uncertainty. It is documented that watching others take risks induces almost the same arousal as doing the actual activity (Apter, 1992, ch. 8 and 9). Providing opportunities for this means that the observing child can experience the uncertainty without being directly exposed to potential negative consequences, yet still feels the thrill of potential positive consequences.

Admittedly, watching others is a passive activity without most of the active physical characteristics generally ascribed to play. However, as a portion of 1-3-year-olds' risky play is suggested to be an emerging phase, observing others might affect play development. While observing others, children experience something that they either have not experienced before, something that they are not yet capable of, and/or something that they are interested in. Thereby, they are enabled to express themselves, of their own wishes and needs, in turn enabling them to participate. Ultimately, providing opportunities for infants and toddlers

being together with older children builds on the belief that there is an inherent value in such relational peer experiences.

4.2.3 Characteristics of safety and provision for physical activity (including aspects of risky play) in Norwegian ECEC

According to the findings presented in Article II, there were few indications that staff unnecessarily deter 1-3 year olds from risky play. To test this small-scale finding further, I examined the ITERS-R to elicit the presumed dilemma between stimulation and safety. I tested this, first, by selecting four items from the ITERS-R that, although not addressing risky play directly, would arguably affect risky play (sections 1.6.4 and 2.5.4, and 2.8.4). I tested the relationships between these items, and the analysis shows that there are positive, albeit moderate, associations between safety and stimulation aspects (Table 6). All associations were statistically significant ($p<0.01$), suggesting no conflicting aspect, or, at least, indicating that providing for one aspect is not necessarily at the expense of the other. Also, I tested the relationship between these items by creating a composite subscale, and the Cronbach's Alpha indicates moderate internal consistency ($\alpha=.69$) among the 4 items, similar or stronger than the original subscales in the ITERS-R (Table 7).

However, previous examinations of the ITERS-R and the ECERS-R reveal structural problems with these instruments. The subscales are made up of items assessing factors presumed to relate to each other, e.g., language practices or personal care routines, but in factor analysis of the instrument, these *a priori* subscales are not reproduced (Bisceglia et al., 2009). It is argued that the inclusion of both structural features (environment and equipment) and process features (staff-child interaction) in each item is a major cause of disorder in the instrument (Mayer & Beckh, 2016).[4] To exemplify this, the item *Active physical play* does not include any indicator on staff-child interaction, while the three other items in focus here include interaction in several indicators; i.e., the instrument presumes that in some aspects staff-child interaction is essential, while in others it is not. This inconsistency is suggested to cause poor factor coherence (Mayer & Beckh, 2016). The stop-scoring procedure might also cause problems, due to the non-existence of the assumed hierarchies (Barros & Peixoto, 2011), leading to lack of information about aspects that are scored at higher levels in the scale, particularly interactional aspects (Gordon et al., 2015). Summarized, associations between items might be caused by several underlying factors, and should be interpreted with

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[4] Note that Mayer and Beckh's analyze ECERS, but their criticism is valid for ITERS-R. The scales are constructed the same way, leading to the same problems.

caution. Another interpretation of poor factor coherence is that the instrument has one single factor accounting for all aspects of quality (Bisceglia et al., 2009). Viewed in this way, associations between all items are to be expected in that being good in one aspect means being good at other aspects – as measured by the ITERS-R. I have therefore analyzed the instrument in two different ways, to potentially elucidate the aspect of risky play further.

First, I have analyzed the ITERS-R results on indicator level. This method is more commonly applied in the practice field than in research, as practitioners might want more detailed feedback obtained by the instrument to, for example, improve practice, than what is possible to interpret from a general score (see for example North Carolina Rated License Assessment Project, 2012). Generally, the relatively low mean score on the item *Free play* (Figure 5 in appendix) might challenge the view that free play is a prominent feature of Norwegian ECEC. Some answers might be found through a closer examination of the item. First, the item has a high frequency on the middle value 4 (n=82, 39.8%) (Figure 5 in appendix), which means that a majority of center groups earned credit for all indicators on level 3, but for only 2 out of 3 on level 5. Specifically, most center groups (72.3%) do not earn credit for indicator *5.3 Ample and varied toys and materials and much equipment provided for free play*. This means that a lack of equipment and lack of variation in equipment and material are the reasons for the moderately low score. When examining the item *Active physical play* in the same way, there is a similar pattern (Figure 4 in appendix)). The results indicate that Norwegian ECEC have a general problem with affording appropriate stimulation through equipment for 1-3 year olds. Bjørnestad and Os (2018) address a similar finding, arguing that lack of adequate materials may impact staff-child interaction. Additionally, I would argue that a lack of adequate equipment affects 1-3-year-olds' opportunities to participate in general, as suggested in the previous section.

A low mean on *item 11 Safety practices* can be explained by the high number of center groups (n=54) obtaining 'inadequate' (Figure 2 in appendix). The highest single negative indicator is *1.3 Inadequate supervision to protect children's safety indoors and outdoors* (n=24). This coincides with the results on *item 25 Supervision for play and learning* where 53 of the center groups only obtain 'minimal' and 26 center groups obtain 'inadequate' (Figure 3 in appendix). This is congruent with findings by Bjørnestad and Os (2018). According to their study, there are several items that include supervision as safety measures (additional to item 25 are e.g., Room arrangement (3.5), Nap (3.5) and Safety practices (3.1)), but requirements were often not fulfilled by the centers. Children were sometimes observed to play without

supervision up to 20 minutes. Even if the mean score on item 25 is an acceptable 4.31, this should be taken seriously, as children under 3 years should not be left unsupervised, particularly if they are engaged in risky play.

The second way I examined appropriate affordance for risky play in the ITERS-R was through creating a new item based on indicators taken from the four items, mainly to avoid redundancies, i.e., to avoid including information that is not relevant for the aspects of risky play. The item *Provision for risky play* scored within minimal range (mean=3.6) (Figure 6 in appendix), similar to the other selected items, thus confirming the initial finding of Norwegian ECEC providing moderate-minimal for 1-3-year-olds' risky play.

Thereby, the potential areas of improvement induce a last argument of possible positive aspects of risky play, that is, the relation between risky play and vigorous physical activity. Presumably, even if it is subtler than with older children, the pleasurable arousal or the mastering experience related to risk appears to be a strong motivational factor for engaging in physical activity. Typically, vigorous physical activities, e.g., sliding, rough and tumble play, cycling fast or climbing often entails a risk of some sort. From a health and fitness perspective, moderate to vigorous physical activity is seen as vital and beneficial, and research suggests that this can be stimulated by simply providing more opportunities (Nielsen, Taylor, Williams, & Mann, 2010) or locate and relate equipment appropriately to each other (Smith et al., 2016). This is seemingly especially effective with activities that entail a slight risk, possibly for their provision for excitement (Bundy et al., 2009; Engelen et al., 2013).

Regardless, there are indications that by allowing and appropriately providing for such activities, ECEC staff feel that they inevitably increase the probability of physical injury, thus injury concerns (from both staff and parents) are reported to be a main barrier to children's physical activity in ECEC (Copeland et al., 2012). Even though it is documented that an increase in serious injuries is unlikely (Girardi, Babul, Rajabali, & Pike, 2013), ECEC-practitioners reportedly experience a dilemma while choosing between stimulating children's physical development, by allowing risky play, or preventing injuries (van Rooijen & Newstead, 2016). Moreover, playgrounds are altered, also in Norway, to deter children from activities such as climbing and sliding, because of safety issues (Sandseter & Sando, 2016).

Deterring vigorous physical activity seems counterproductive in a global situation where general obesity rates have risen dramatically over the last decades, including a doubling of rates for children below school age in some countries; i.e., approximately 20% of preschool

children are overweight or obese (Smith et al., 2016). Additionally, several studies find beneficial effects of physical activity on various aspects of cognition and mental health, suggesting that these effects continue into the school years, with physical activity and fitness relating positively to both academic achievement (Becker et al., 2014), and reduced symptoms of major depression (Zahl, Steinsbekk, & Wichstrøm, 2017). Globally, governing health authorities now recommend varied daily physical activity with moderate to high intensity in schools and ECEC centers to counter this trend. In Norway, the recommendation is currently 60 minutes per day for children and adolescents (Norwegian Institute of Public Health, 2016). It is argued that lifelong habits for physical activity are established in early childhood (Malina, 2001; Sallis et al., 1992); thus, given the situation of near universal access to ECEC, the ECEC center becomes the essential arena for providing opportunities for vigorous physical play, including risky play. If injury prevention efforts reduce children's opportunities for engaging in challenging and exhilarating activities, a natural and low-cost path to better health and well-being is potentially lost.

4.3 Implications for practice

For ECEC staff, the balance between preventing serious injuries and appropriate experience with risk is certainly not an abstract theoretical discussion. On a daily basis, they must make decisions, weighing the possibility of injuries against benefits of physical activity and risky play. Knowledge from this project might elucidate this balancing act and function as concrete proposals for improvements of play- and developmental conditions for 1-3 year olds in ECEC. However, being generated from a small-scale, exploratory study, the findings are limited in terms of rigid conclusions and generalization. Therefore, and more suggestively, findings from this study might contribute to practitioners' ability to identify, reflect and discuss whether 1-3-year-olds' engage in risky play; how they potentially act while facing a risk or what might contribute or affect the playing experience in this regard. Further, there are findings that suggest how to support or interact with children engaged in risky play, particularly with regard to when – and what type of – interaction is appropriate or inappropriate. Lastly, the findings might be informative of appropriate physical conditions in regards to both natural environments and standardized equipment – indoor and outdoor – including an elaborate understanding of safety, potentially contributing to discussions of children's needs and wishes.

5 Theoretical issues and limitations
5.1 Observations and scientific knowledge
The knowledge I presumably have generated in this study stems primarily from observations, thus the implicit assumption that these are observations of something real. This relates my research to the tradition of empiricism following John Locke (Chalmers, 2013; Taleb, 2005), basically postulating that there is an objective reality that we have direct access to through our senses. The original pure empiricism has been profoundly criticized, for several reasons, but most relevant for my project is criticism related to the presumed 'direct access' that observations might give. Prominently, it is pointed out that scientific observation is not merely sensory input, but interpretations or 'seeing with' knowledge and theoretical terms (Hanson, 1958). All observations are laden with theory and scientific observations are deeply influenced by the observer, including the observer's ability to 'see what' is hidden from view (Achinstein, 1968). To see what is hidden from view is, generally, to observe theoretical constructs, and, typically, in educational research, many observations are directed towards such constructs, e.g., 'motivation'. My study is no different, I observed constructs such as 'risk', 'ZPD', 'scaffolding' or 'affordances'. The problem is therefore that the boundary between observation and interpretation in many cases is difficult to draw.

This problem is suggested to be solved in several ways. First, the basic claim is still that there is a real world that exists largely independently of the researcher's knowledge of it (Sayer, 1999; Scott, 2005), and that this world is accessible to us through sensorial input, but, building on Hanson and Achinstein, *always* mediated through preconceptions and discourse (Fairclough, Jessop, & Sayer, 2003; Sayer, 1999). It is generally acknowledged that there is no theory-neutral observation, including interpretations, inferences and conclusions. That is, there is no unmediated access to the world. The mediation may be individual (for example, a preconception stemming from previous experience or a belief), social (for example, a discourse of a social norm) or both. Yet, it is postulated that it is possible to make reliable interpretations, but, to succeed with this, we need to be aware; clarify and discuss these preconceptions and discourses (Sayer, 1999). This stance is thus often referred to as critical realism, and what I have tried to adhere to in this study.

Further, it is pointed out that studying social interaction is meaningless without including semiosis – the making of meaning (Fairclough et al., 2003). At the same time, it is cautioned against limiting the study to the construct itself. For example, in a critical realist paradigm, risk cannot be reduced to the idea (of risk) itself, but consists also of (all feasible) factors

relevant to the concept, e.g., physical conditions of a given situation. Therefore, the social meaning of risk can only be understood in conjunction with identifying and exploring the surrounding conditions that make risk meaningful. It is thus also generally acknowledged that the development of social constructs is reciprocal, e.g., social discourses are both socially-structured and socially-structuring. This pertains not least to discourses of risk, as described in 1.3.1 and 1.3.4.

In critical realism, the aim of scientific observation is to identify and distinguish what actually influences something else, that is, 'entities' that have an effect or makes a difference (Fleetwood, 2004). By 'effect' or 'making a difference', it is implied that certain entities cause humans to act in ways they would not in the absence of these entities. Entities like risk and ZPD are not real in itself, although entities like the *discourse of risk* are real: if people think risks are real, they influence how they behave; they may undertake actions such as trying to avoid or assess them. Sayer (1999) addresses this as the *potential* of given entities, and maintains that the aim of research should be to identify such potential. In my project, I have assumed that there are several entities with the potential to influence others, but one entity with particular potential would be the care and learning environment of the ECEC centers. As I started my project, the most reliable assessment I had of that, was the assessment done with the ITERS-R. I therefore assumed that the ITERS-R scores reflected, with certain effectiveness, an environment conducive to children's opportunities to thrive and learn, and in my study specifically, how these learning environments potentially influenced or interacted with children's risky play. Note that my basic assumption was that it interacted with risky play, without referring to the direction of interaction.

Additionally, in critical realism, the choice of method is largely pragmatic, thus a relatively wide range of research methods might be applied (Fleetwood, 2004; Sayer, 1999; Scott, 2005). Research design and method should be based on knowledge and careful consideration of the topic and aims of the study and of what one wants to learn. For example, there is no preference for either quantitative and qualitative methods, as long as they are relevant to the investigation and whether either type of generated data might contribute to the interpretations and possible explanation of findings. Lastly, for sensorial impressions and their respective interpretations to transcend into knowledge, they depend on an interpersonal, coordinated discourse, i.e., a widespread, acknowledged justification. Both the interpretability and intelligibility of research findings and conclusions are grounded, to a certain degree, in shared assumptions between the researcher and the recipients (Fairclough et al., 2003).

This is an important reminder for ethnographers. As discussed in chapter 2, there are several challenges to the ethnographic 'single researcher' design. Either by influencing the behavior of the participants (section 2.7), and/or that interpretations of observations are left up to the same researcher (sections 2.7 and 2.9). In terms of interpretations, there is the typical problem of preconception; inevitably, the ethnographer comes to his research field with implicit background knowledge (Knoblauch, 2005). However, this knowledge should neither be hidden as a pretense of objectivity nor seen as a purely methodological problem, but used to the interpretations advantage, as a reflexive and heuristic process, i.e., critically discussing the sensorial data. Hopefully, such a process is displayed in the present project.

The crux of debate in philosophy of science, including critique of empiricism, is often the concept of objectivity and whether objectivity is possible or even desirable. Stands on objectivity are discussed in fundamental perspectives such as the purpose of science, e.g., debates succeeding the work of Habermas (1968/2005), science' potential for knowledge development in general, e.g., debates succeeding the work of Kuhn (1962/2012), or in terms of epistemological foundation for methodological choices, for example, of qualitative or quantitative methods (for recent reiteration see Krumsvik, 2016b, p. 111). In several scientific traditions, including educational science, there is a general skepticism towards claims of objectivity (see for example Moore & Muller, 1999; Young, 2000). In my project, I follow two notions of objectivity. First, the more general notion that objectivity is an ideal of scientific thought. Tranøy (1986) understands objectivity as both a value and a methodological norm. What objectivity does *not* mean is all-seeing, but rather a requirement that the researcher be honest, reasonable, impartial and multi-faceted. Equally, Scheffler (1982) emphasizes that objectivity is the obligation all researchers have to leave their findings and theories subject to the evaluation of others. It is a requirement for research results: they should be verifiable or possible to reject; they should be checked and discussed by others. This does not mean neutrality or distance, rather, Scheffler sees researchers as highly interested, imaginative and even passionate, and that this is consistent with, and not opposed to, objectivity. Thus, both Tranøy and Scheffler see objectivity as both desirable and possible.

The second, more specific, notion of objectivity that have guided my project is how *statements* have objective properties, particularly statements of theoretical and observational claims (Chalmers, 2013). Subjective knowledge can be said to exist only in the researcher's mind. However, from the researcher's subjective knowledge, he or she can share a knowledge statement. This statement has objective properties because it is testable and debatable (which

subjective knowledge is not). Chalmers equals this to a complex physical structure, such as a building, where there are objective relationships between parts of the structure independently of the original constructor. The same applies to abstract statements, such as methodological arguments or theoretical definitions. They no longer reside only in an individual's mind, but can be "confronted and exploited, modified and criticized by [other] individuals" (2013, p. 118). The detailed presentation and discussion of how I reached my conclusions is thus presented for examination.

5.2 Small scale and local context

One common objection to small-scale studies is their generally limited potential for generalization (Seawright & Gerring, 2008; Williams, 2000). Even if the notion has previously been dismissed or deemed irrelevant in qualitative research, attempts have been made to establish alternative frameworks for qualitative studies' validity (see for example Miles & Huberman, 1994) or, as in my study, to focus on methodological issues (see 2.9).

Ideally, I could have had a larger number of observations and a larger set of comparable data. However, the final number of observations, thus the limited sample, was, as explained in section 2.6, mainly a result of several practical elements and considerations. A larger sample might have provided stronger external validity, but, as presented in section 1.8, one main purpose of this exploratory study has been generating a foundation for further research; consequently, reliability of observations has been prioritized, hopefully providing sufficiently detailed descriptions that provide insight and knowledge of 1-3 year olds that is useful in itself and that might be utilized in further research.

A second general objection to the present study might be whether the cultural conditions in which the present study is conducted make it irrelevant in other contexts. Admittedly, it has previously been reported that Norwegian parents and ECEC staff are positive towards children's outdoor play and risk-taking. However, the basic assumption of this project is suggested to be universal: that risky play is a natural part of children's experience and development, thereby appropriate and safe ways to support and provide for children's risky play might be relevant and beneficial for children outside of Norway. Presuming that the trends of decline of free play, increased risk-aversiveness and increased ECEC attendance (section 1.3) are not limited to Norway, the knowledge developed in this thesis might inform research and public and professional discussions in various cultural contexts.

5.3 Data analysis

The multi-method approach can be argued to come at the expense of rigorous analysis, compared to single-method analysis. Even though multi-method studies are welcomed in journals, the article format is restrictive in regards to the length of the articles, thus offering limited space for elaborate reporting and analysis. Considering the qualitative descriptions, the thesis might have benefitted from utilizing more examples and more elaborate analysis, especially in regards to theory development of relations between 1-3-year-olds' risky play, ZPD and scaffolding.

Considering the quantitative sample of instances of risky play, initially, the relatively high number of instances of risky play suggested potential for more advanced statistical analysis. Therefore, I attempted several statistical approaches to extract more information from the sample. For example, I applied logistic regression to test whether gender would predict staff's interaction, e.g., if experiencing scaffolding was more probable if the child was a girl. Similar with age, I tested if a child's being 1-year-old would predict scaffolding, hypothetically because staff were more responsive to younger children, or alternatively 'no interaction', hypothetically because younger children's risky play was more subtle and easier to ignore. However, when breaking down the dataset into variables (e.g., gender or age), the sample size approximated what is acceptable, and the dataset violated several assumptions for logistic regression. Particularly this was related to fitting the model correctly, i.e., to include *all* meaningful variables, but also to include *only* meaningful variables, and issues with multicollinearity, i.e., how predictors correlate with other predictors (Tabachnick & Fidell, 2007, chapter 10). Generally, the quantified data was not sufficiently sophisticated, and the results came out as too unstable.

In summary, the multi-method approach was a pragmatic choice of exploring and examining a topic that is new and in the process of development. A single method might have offered a deeper analysis, but it was limited in terms of exploring and elucidating a topic broadly, which has been my priority.

5.4 Chosen theory

In discussing how to (best) develop new knowledge in the field of education, Young (2000) refers to Toulmin's (1996) warning against the tendency in social sciences to 'move on to theory' too soon. Rather, Toulmin encourages focusing on "*the humbler task of giving accurate descriptions of human activities [which might help us to judge when] formal theories can do us any good,*" (Toulmin in Young 2000, p. 531). However, Young points out

that this can be interpreted as simplistic and, likewise, Bae (2005) argues that there are problematic implications of such an approach. In her view, research in ECEC is characterized by careful, detailed descriptions, but it is often unable to move beyond the descriptive. As a result, the theories end up shallow or too "light", and opportunities for developing comprehensive, elaborate theories are lost. Consequently, I have tried try to balance these two views and utilize the empirical data to develop existing theories on play, risky play and quality of ECEC.

5.4.1 Comments on the literature review

Literature for this dissertation was selected based on common required criteria, i.e., suitability and quality (Boote & Beile, 2005) and each reference has been reviewed critically in these regards. The main guiding principle and inclusion criterion has been 'relevance' (Maxwell, 2006). However, the lack of literature directly related to the topic and target age group has had two main consequences in finding and applying relevant literature. First, since no studies include focus on children under 3, I have selected, utilized and made assumptions based on literature on older children. Second, since the term 'risky play' was established by Sandseter in 2007, and, even though the concept has been adapted and applied further, there is a relative limited body of literature utilizing the specific concept of risky play. Thus, it has been necessary to expand the search and inclusion criteria of literature to risk, risk-taking, risk-taking in play and children. As shown throughout the introduction and discussions, several branches emerge while examining children's risky play, such as psychology, motor development, physical activity, outdoor play, playgrounds and injury prevention, to name a few. It is thus tempting to follow many leads, as there is seemingly a considerable potential for discovering new and important aspects. It has therefore been a balancing act of deciding on what to include and what directions to take. The main guiding criteria in this aspect have been the context of ECEC and the research questions.

In this thesis, the process of reviewing each reference in detail is not presented in a separate section for two main reasons. First, because I am writing in the tradition of topic-based dissertation – a format that is widely applied in educational research, where the rhetorical structure of the dissertation relates literature to the topic throughout (Paltridge, 2002). Second, the article-based thesis prerequisites that each article is already complete with introduction, including literature review and conclusions. Additionally, the article-based dissertation is a relatively new form of doctoral thesis, still in development with little consensus in regards to style, structure and presentation (Boote & Beile, 2005; Krumsvik, 2016a). It is thus largely up

to the candidate to decide on how to structure and what to include in the extended abstract (Haara & Smith, 2011)

In choosing to present the details of the literature review incorporated in the text, I find support in Boote and Beile (2005), who assert that "*A doctoral candidate who has a thorough, sophisticated understanding of the literature should clearly be expected to demonstrate an understanding throughout the dissertation, from introduction through conclusion,*" (Boote & Beile, 2005, p. 10). Thus, I have endeavored to show the relevance of selected literature throughout the dissertation, displaying a satisfactory understanding of the research field, as well as a sufficiently detailed relevance between my research questions and the selected literature. For this purpose, I will, in the following two sections, address briefly two presumably relevant perspectives, elucidating why they were not included.

5.4.2 Why is attachment-theory and 'exploration' not applied?

Since research on staff interaction with 1-3 year olds in risky play is basically non-existent, I needed a theoretical framework to interpret the staff's actions/reactions and, specifically, to assess the appropriateness of the interaction. As mentioned in section 1.6.2 and discussed in more detail in Article II, there is a growing base of research instruments/observational tools to examine staff-child interaction quality. I reviewed several instruments, with particular attention to the Caregiver Interaction Profile (Helmerhorst et al., 2014), since it is utilized by the BePro-project (BePro, 2013). Generally, the reviewed instruments build on attachment theory, and, by a simple metaphor, attachment theory describes the essential function of adult-child interaction in 1-3-year-olds' risky play, namely "a secure base from which to explore" (Dalli et al., 2011, p. 70). Moreover, from the perspective of attachment theory, it is established that the purpose of secure attachment is exploration leading to autonomy (Jamison et al., 2014; Thomason & La Paro, 2009). Therefore, it is puzzling why the reviewed instruments pay little attention to exploration aspects. Similarly, theoretical developments have been criticized for a unidirectional focus on socio-emotional aspects, with little attention to other aspects of development (Waters & Cummings, 2000). Additionally, attachment theory is criticized for not including contextual factors (De Wolff & van Ijzendoorn, 1997). Further, the reviewed observational instruments were not relevant for two reasons. First, because they, like theoretical developments, focus on attachment aspects and largely neglect exploration aspects. The exception is the CLASS-Infant that has a scale for Facilitated exploration (Jamison et al., 2014), but which is still unsuited because of the exclusion of 2- and 3 year olds. Second, the standardized instruments, in general, with very specific

predefined observational categories, were not suitable for exploratory purposes. For these reasons, the socio-cultural concepts of ZPD and scaffolding, which also is linked more closely to the educational research tradition, was chosen over attachment theory.

The concept of exploration is also examined in play theory. However, as has often been the situation with central concepts in this thesis, there seems to be little consensus and clarity on how to understand 'exploration' in relation to play. Moreover, the potential for a clarified understanding of exploration seemed particularly little promising within play theory, as this section from Fromberg and Bergen (2006), might illustrate (as they attempt to clarify a distinction between exploration and play): "*Power is the central distinction between exploration and play, although both experiences may look playful to an observer. A widely-held view (Hutt, 1976, p. 211) suggests that exploration deals with how objects or interpersonal situations function (What can it/they do?). Play, in contrast, deals with what the player can do (What can I do?). A related interpretation is that exploration is an opportunity to learn about perceptual properties, whereas play is an occasion for learning about the functional properties of objects (Collard, 1979, p. 52). Children at play have the power to control a situation in proactive ways.*" (Fromberg & Bergen, 2006, p. xix)

To my understanding, these proposed distinctions are, at best, unclear. Rather, it would suggest what Bakeman and Gottman (1997) characterize as *"categorical overkill"* [which] *seems to inundate investigators in tedious and not very fruitful detail, whereas studies involving clearly stated questions and tightly focused coding schemes seem far more productive,"* (p. 16). How the distinction between exploration and play could, for example, guide observational studies, e.g., as two observational categories, seems intricately complex and difficult. It also seems impractical for explaining behavior, since it is unclear what purpose separating play and exploration would serve. Based on such initial considerations, I therefore minimized the use of 'exploration', but included it in the definition, mainly for its easy-to-recognize colloquial meaning with regard to 1-3 year olds.

Lastly, it might be questioned why I included 'play' and not simply examined risk-taking. This might be a timely objection in regards to the general lack of consensus and a precise definition of *play.* Moreover, is the behavior I observed actually play? First of all, the link between *risk* and *play* has been thoroughly established by Sandseter (Sandseter, 2010a, 2010b; Sandseter & Kennair, 2011) and applied and developed further in several studies (Engelen et al., 2013; Hill & Bundy, 2014; Lavrysen et al., 2015). Applying risk to 1-3-year-olds' play allowed me to apply established characteristics of play, which importantly,

elucidates the volunteer and intrinsic aspects of risk-taking. Without this understanding, risk-taking might have seemed like a very strange and contradictory activity indeed, especially with these young children, where the risk awareness is uncertain (section 4.1.2). Separating risk-taking from play might have created intricate defining problems such as Fromberg and Bergen's (2006) struggle with 'exploration'. Play is seen as something children do naturally, and I am not sure what I would have gained by assuming that 'the child is taking risks – not playing'. Instead, and hopefully, the risky play observed in this study is described in sufficient detail to help future researchers who might try to either criticize and/or reproduce – and thus develop – my findings. Not least this might inform practitioners, who already have a common professional language for play. For them, including risk as an aspect while they observe, interact and discuss 1-3-year-olds' play-repertoire might come easy and become fruitful – or, at least, it might be easier than introducing a new concept and arguing that it happens 'outside' children's play.

5.4.3 Why is gender not addressed?

Previous research suggests that gender plays a central role in the development of risk-taking among older children and adolescents, that is a prevalence to higher risk taking in boys compared with girls (Morrongiello & Rennie, 1998; Morrongiello, Zdzieborski, & Normand, 2010; Smith, 1998). Similarly, research indicates that fathers are more accepting towards children's exploration and physical risk taking than mothers (Holmbeck et al., 2002; Lindsey & Mize, 2001), with the same pattern found comparing male and female ECEC practitioners (Sandseter, 2014). In general, males have stronger risk-taking tendencies throughout (Byrnes, Miller, & Schafer, 1999). Subsequently, it might be natural to include the role of gender in any study examining risk-taking. Therefore, gender, of both children and staff involved in instances of risky play, was noted during data collection and coded in the analysis. However, during analysis, no clear indications of gender-related patterns emerged, neither in occurrence among the children nor in relation to aspects of staff behavior or staff-child interaction. This might be an interesting finding in itself and could arguably have been presented and discussed, but, due to limited space in the journal article formats, these 'zero-findings', were not prioritized. The 'zero-finding' might be (preliminary) interpreted in two ways. First, it could be a result of limited sample size and observations. While breaking down the 198 instances of risky play into gender, and then further into, e.g., risk categories, the number of observations lost feasible comparability. To adequately investigate gender, I would have required a larger sample than was practical (section 2.6), also considering the main focus of the thesis. Second – and suggestive – the lack of gender differences coincides with previous

research indicating that differences in engagement in vigorous physical play, especially rough and tumble play, on a group level, appear around 3 years of age (Geary, Byrd-Craven, Hoard, Vigil, & Numtee, 2003), potentially due to biological factors that affect physical activity and risk-taking appearing at the same time, such as the increase of testosterone levels in boys (Eide-Midtsand, 2007) or higher metabolic levels (Maccoby, 1998, p. 99). The lack of typical gender-related risk-taking tendencies might therefore be age related, i.e., not prevalent in a group of 1-3 year olds. Regardless, these are aspects that could be investigated in future studies. Lastly, my opportunities for investigating gender aspects were also limited due to restricted permissions to collect data on individual children and staff in my project approval from the research authorities (NSD) (Appendix).

6 Final comments and suggestions for future research

In this thesis, I have focused predominantly on trying to establish a feasible interpretation of willing risk-taking in 1-3-year-olds' risky play, with special attention to 1 year olds. Thus, several aspects have been omitted, for example, social aspects such as peer relations or friendship. In my view, peer relations and friendship are immensely important in human life right from infancy, so I would rather not 'scratch the surface' of this topic, but instead stayed within my main focus. Nevertheless, based on observations and findings presented in all three articles, especially in Article I and II, it is apparent that social aspects are just as important in risky play as in any other type of children's play. Moreover, previous research suggests that certain types of risky play, especially rough and tumble play, are arenas where children develop their social skills and tie tight emotional bonds (Pellegrini, 1988; Pellis & Pellis, 2007). A 'light' form of rough and tumble might also be interpreted as a prominent feature of the 'toddling style' (Løkken, 2000a, 2000b), hence a typical way of being and playing together for children under 3 years. Therefore, I suggest that social dimensions of risky play, potentially in relation to peer group effects, friendship or well-being might be interesting and important aspects for future studies.

The importance of emotional relations is certainly not limited to peers, but, despite investigating staff-child interaction, this study had a rather limited, one might say instrumental, view on adult-child relationships, focusing on appropriate support and learning. Again, this has come as a consequence of the intended purpose of this in-depth study, and it is by no means intended to undermine the complex, and potentially essential, emotional relations between ECEC practitioners and children. In this study, I observed a relatively large amount of warm and responsive interaction. Especially while engaged in risky play together, staff and children seemed to thoroughly enjoy each other's company. It could be interesting to know more about the importance of staff's involvement from the child's perspective. For example, do 1-3 year olds actively try to engage staff in their risky play? If so, what are their strategies? And how would, for example, an intervention, where practitioners engaged more in risky play, affect the frequency and quality of risky play?

One main assumption in the research field of risky play relates to functional aspects. That is whether engagement in risky play in childhood affects the ability to assess risk – thereby reducing negative consequences – later in life (introduced in 1.3.2). More precisely, the assumption is that higher engagement in risky play in childhood predicts lower injury rates/better health in adolescence and adulthood. Even if this is implicit in several theoretical

approaches, this assumption has rarely been tested empirically. (For recent efforts, albeit with older children, see Lavrysen et al. (2015) who found that risk-assessment skills were improved by introducing an intensive package of risky play activities at school. See also the systematic review of Brussoni et al. (2015) that found overall positive effects of risky outdoor play on a variety of health indicators and behaviors, most commonly physical activity, but also social health, injuries, and aggression.) The first required step to test this assumption with 1-3 year olds would be to measure the frequency and quality of play with a reliable measurement. Elements from this thesis could be used to develop a new set of observational criteria, either as behavior mapping, new scales or other types of quantifiable measurements suited for longitudinal studies. At present, one option is to utilize the new ITERS-R item, *Provision for risky play.* This is somewhat similar to my question regarding potential conflicts between appropriate provision for safety and active physical play. Therefore, potential follow-up studies of the BePro data might be able to relate provision for physical activity and safety, including risky play in the early years to later health aspects, e.g., injury rates or even wider aspects of coping skills.

Likewise, the criteria for affordances, developed in Article III, might be used to examine to what extent provision for risky play is associated to physical activity. As argued in 4.2.3, the potential for exhilaration might be conducive to engagement in vigorous physical activity. To improve affordance for such vigorous play, it is first required to determine more precisely the proportion of vigorous physical activity that include objective and/or subjective risk. As the criteria for appropriate affordance are quite concrete (for example, number of risk categories provided on the playground), and methods for measuring physical activity are equally direct (for example, with accelerometers), measuring relations could be quite straightforward. It could possibly be tested with a randomized trial where one compares experimental and control groups with varying exposure to varying environments.

Summarized it is apparent that risky play touches on fundamental aspects of children's life; how children are perceived and what opportunities they are provided in society. Further research is therefore vital, both for our general understanding and to ensure safe and stimulating conditions for 1-3 year olds in their everyday lives.

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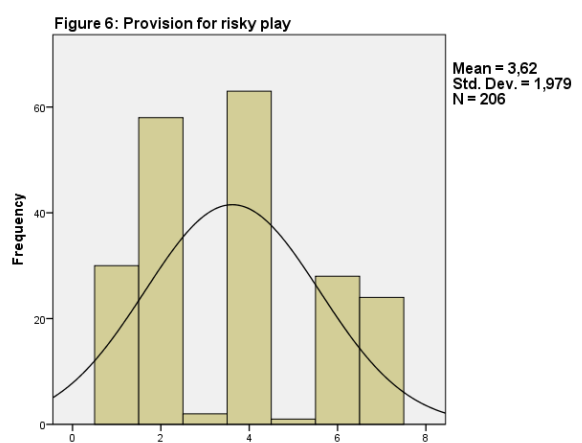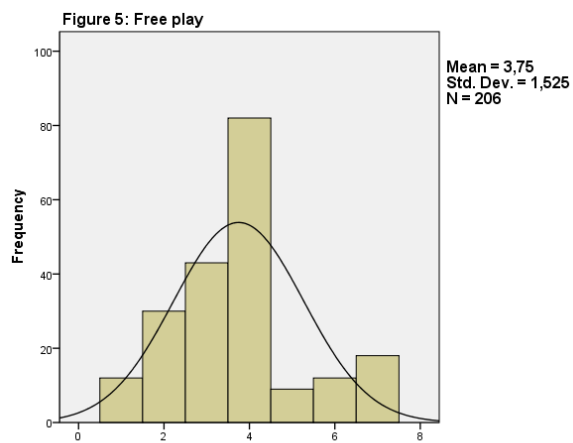Sutton-Smith, B. (1997). *The Ambiguity of Play*. London: Harvard University Press.

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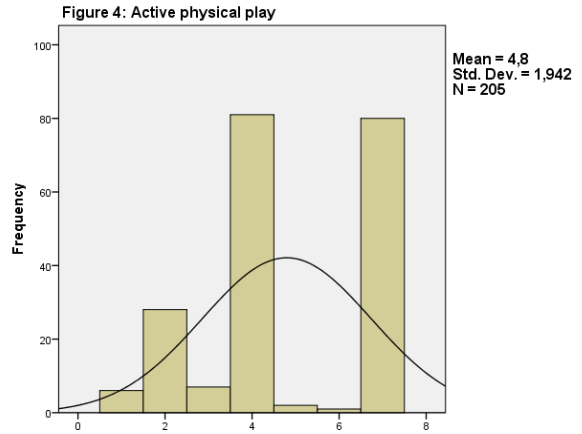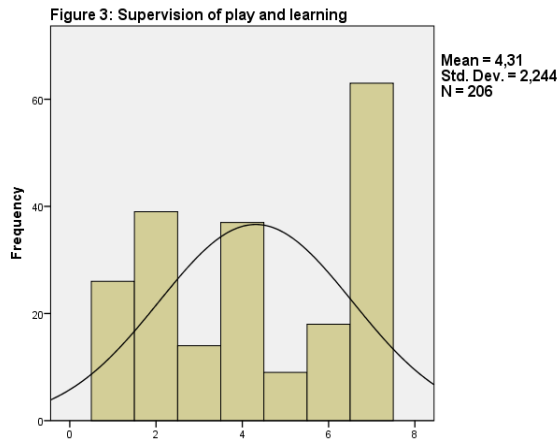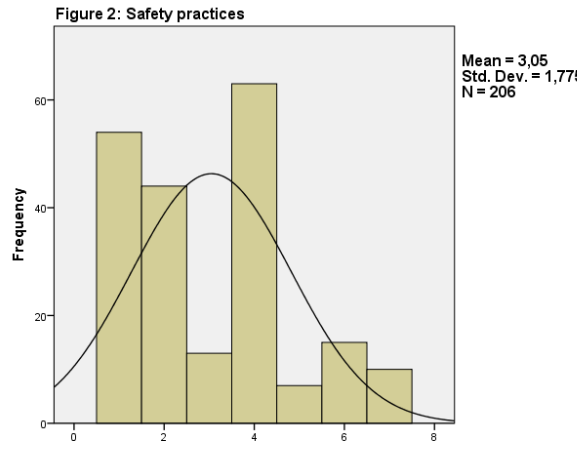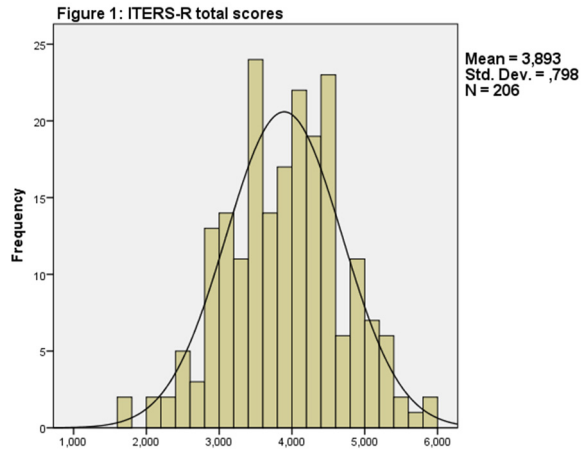
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Appendices
Statistical figures 1-6

Figure 1: ITERS-R total scores

Mean = 3,893
Std. Dev. = ,798
N = 206

Figure 2: Safety practices

Mean = 3,05
Std. Dev. = 1,77
N = 206

Figure 3: Supervision of play and learning

Mean = 4,31
Std. Dev. = 2,244
N = 206

Figure 4: Active physical play

Mean = 4,8
Std. Dev. = 1,942
N = 205

Figure 5: Free play

Mean = 3,75
Std. Dev. = 1,525
N = 206

Figure 6: Provision for risky play

Mean = 3,62
Std. Dev. = 1,979
N = 206

Stipendiat Rasmus Kleppe

Høgskolen i Oslo og Akershus
Postboks 4, St Olavs Plass, N-0130 Oslo

Information letter including declaration of consent

Til barnehageansatte/foreldre
ved xxx barnehage

Dato:
19.01.2015

Forespørsel om DELTAKELSE I FORSKNINGSPROSJEKTET «Risikolek blant barn i alderen 1-3 år»

Denne henvendelsen er en forespørsel om å delta i studien "Risikolek blant barn i alderen 1-3 år". En studie av risikolek som fenomen blant 1-3-åringer i barnehagen.

Studien er en del av forskningsprosjektet GoBaN ("Gode barnehager for barn i Norge"). GoBaN er det største forskningsprosjektet innen barnehagefeltet noensinne og er det første i sitt slag til å ta for seg kvaliteten i norske barnehager og dens innvirkning på barn i barnehagen. Prosjektet vil undersøke hva som karakteriserer en god barnehage og hvilke faktorer som påvirker barnas trivsel, måloppnåelse og utvikling. GoBaN er et nasjonalt og internasjonalt samarbeidsprosjekt med forskere fra ulike forskningsinstitutter: Høgskolen i Oslo og Akershus (HiOA); Norsk institutt for forskning om oppvekst, velferd og aldring (NOVA); Universitetet i Stavanger (UiS); Høgskolen i Vestfold (HiVe); Birkbeck, University of London; og Dutch Child Research Consortium, Netherlands (NCKO). I tillegg bidrar en rekke studenter og yrkesutøvere fra barnehagefeltet.

Dybdeundersøkelsen

Målsettingen med dette kvalitative delprosjektet er å undersøke hvordan barn i denne aldersgruppen leker såkalt risikolek, lek der barna utfordrer seg selv fysisk og følelsesmessig. Studien vil se på hvordan de voksne forholder seg og hvordan forskjellige typer barnehager og ulike organiseringer er tilrettelagt for slik lek. Datainnsamling vil foregå gjennom videofilming, feltnotater og kartleggingsverktøy som blant annet ser på barnehagens fysiske organisering, sikkerhet og tilrettelegging for lek og læring. Det vil også innhentes informasjon gjennom gruppeintervju av de ansatte. Det vil ikke være fokus på enkeltbarn i denne studien, men kartlegging av leken som fenomen gjennom hverdagen.

Konkret ønsker jeg å besøke barnehagen ca 4 ganger for å danne et bilde av hvordan leken arter seg innendørs og utendørs. Studien kommer til å gjennomføres av undertegnede Rasmus Kleppe, stipendiat ved Høgskolen i Oslo og Akershus.

Dataene fra denne undersøkelsen vil knyttes til hovedstudien del 1 (kartlegging av kvalitet). Dette for å kunne gi et best mulig bilde av det komplekse dagliglivet i en barnehage. Innsamlede data vil bli lagret og oppbevart i samme database som hovedprosjektet.

Delprosjektet "Risikolek blant barn i alderen 1-3 år» avsluttes 31.12.2017, men innsamlete og anonymiserte opplysninger vil bli overført hovedprosjektet "34301_GoBaN". Innsamlete opplysninger i hovedprosjektet vil bli slettet senest ved utgangen av 2053.

All informasjon som vil framkomme vil bli behandlet konfidensielt, og det samles ikke inn opplysninger om enkeltbarn i denne studien.

Det er frivillig å delta i delprosjektet og du/dere kan når som helst trekke samtykket til deltakelse tilbake uten å oppgi noen grunn. Dersom du/dere trekker barnet deres, vil alle allerede innsamlete opplysninger bli anonymisert.

Dersom du/dere ønsker at deres barn kan delta skriver under og returnerer svarslippen til barnehagen.

Prosjektet er meldt til personvernombudet for forskning ved samfunnsvitenskapelig datatjeneste (NSD)
Spørsmål kan rettes til undertegnede

Stipendiat Rasmus Kleppe
tlf 915 40 613
Epostadresse: rasmus.kleppe@hioa.no
Høgskolen i Oslo og Akershus

Samtykkeerklæring

Jeg/vi har fått og lest informasjon om prosjektet «Risikolek blant barn i alderen 1-3 år» og samtykker til deltakelse i prosjektet «Risikolek blant barn i alderen 1-3 år»

Sted og dato:

_____, den ____,_____20____

Underskrift (signatur skrives med blokkbokstaver)

_____

Prosjektet ønsker å kunne bruke deler av videomaterialet for å kunne dokumentere god praksis i undervisningsøyemed. Dette er det mulig å reservere seg mot.

☐ Vi reserverer oss mot at videomaterialet blir benyttet til opplæringsformål

Confirmation letter NSD

Rasmus Glærum Kleppe
Institutt for barnehagelærerutdanning Høgskolen i Oslo og Akershus
Postboks 4 St Olavsplass
0130 OSLO

Vår dato: 10.04.2014   Vår ref: 38386 / 3 / LT   Deres dato: Deres ref:

TILBAKEMELDING PÅ MELDING OM BEHANDLING AV PERSONOPPLYSNINGER

Vi viser til melding om behandling av personopplysninger, mottatt 31.03.2014. Meldingen gjelder prosjektet:

38386	*Risikolek blant barn i alderen 2-3 år*
Behandlingsansvarlig	*Høgskolen i Oslo og Akershus, ved institusjonens øverste leder*
Daglig ansvarlig	*Rasmus Glærum Kleppe*

Personvernombudet har vurdert prosjektet og finner at behandlingen av personopplysninger er meldepliktig i henhold til personopplysningsloven § 31. Behandlingen tilfredsstiller kravene i personopplysningsloven.

Personvernombudets vurdering forutsetter at prosjektet gjennomføres i tråd med opplysningene gitt i meldeskjemaet, korrespondanse med ombudet, ombudets kommentarer samt personopplysningsloven og helseregisterloven med forskrifter. Behandlingen av personopplysninger kan settes i gang.

Det gjøres oppmerksom på at det skal gis ny melding dersom behandlingen endres i forhold til de opplysninger som ligger til grunn for personvernombudets vurdering. Endringsmeldinger gis via et eget skjema, http://www.nsd.uib.no/personvern/meldeplikt/skjema.html. Det skal også gis melding etter tre år dersom prosjektet fortsatt pågår. Meldinger skal skje skriftlig til ombudet.

Personvernombudet har lagt ut opplysninger om prosjektet i en offentlig database,
http://pvo.nsd.no/prosjekt.

Personvernombudet vil ved prosjektets avslutning, 31.12.2018, rette en henvendelse angående status for behandlingen av personopplysninger.

Vennlig hilsen

Katrine Utaaker Segadal

Lis Tenold

Kontaktperson: Lis Tenold tlf: 55 58 33 77
Vedlegg: Prosjektvurdering

General summary of a high ITERS-R score - Infant/Toddler Environment Rating Scale - Revised edition (ITERS-R)

The following are brief summaries of required indicators to obtain a score in the range of 5 (Good) to 7 (Excellent), in 32 items of the ITERS-R (Harms et al, 2006). The summaries are based on descriptions in the ITERS-R manual and provided here to give an impression of the atmosphere and the care and learning environment in a high-scoring ECEC-center.

Space and Furnishings
1. Indoor Space
Children have sufficient space (relative to the number of children enrolled in the group) that is well lit and has a comfortable temperature for learning and playing. The indoor space is generally in good repair and generally allows movement and play.

2. Furnishings for routine care and play
Furnishings are provided for use by both children and staff. Routine care furnishings (for meals, sleeping, diapering, and storage of children's possessions) are comfortable, supportive, appropriate to the size of children, to support the development of self-help skills.

3. Provision for relaxation and comfort
There are soft furnishings and toys that allow children opportunities for daily relaxation and comfort. Cozy areas and soft toys are accessible much of the day, and provide a place that are protected from active play so children can rest, read or play quietly.

4. Room arrangement.
Room arrangement provide opportunities for varied play. Toys and materials are placed so that children can access them easily. Areas and materials are arranged (for example thematically) so that it encourages play and independent choice. Routine care areas conveniently arranged. Areas for quiet and active play are separated, but still allow free movement. Space is arranged to promote safe care so that all children can easily be supervised at all times.

5. Display for children
Colorful pictures and mobiles are displayed at child eye-level and play items are within easy reach of the children. The displays, particularly art work by the children and photos of children and, for example family members, are used for meaningful conversations between staff and children. New materials and/or displays are added or changed regularly (monthly).

Personal Care Routines
6. Greeting/Departing
In the daily greeting and departing routine, parents and children are met with a warm, welcoming, and pleasant atmosphere. Parents are welcomed to enter and spend time in the classroom with their child. Staff are sensitive to separation anxiety by parents and children alike. Staff inform the parents about the children's daily schedule and about how their day have been.

7. Meals/Snacks
Meals and snacks meet individual needs and are relaxed and pleasant. Basic sanitary procedures, particularly hand washing, are carefully practiced. Staff sit with children to make the meal enjoyable and meaningful, and cooperate with parents to develop good food and meal habits.

8. Nap
Supervision is continuous during rest/nap time. Each child has his/her own crib, mat or pram with his/her own blanket or cuddly toy. Supervision is pleasant, warm and responsive and help to provide a

peaceful rest/nap time. Naptime is scheduled to suit the individual needs of children and there are alternative activities for children not resting.

9. Diapering/Toileting
Sanitary conditions are good and easy to maintain. Provisions, such as soap and steps near the sink, are convenient and accessible so that children can have their hands washed or wash their own hands, after toileting. Staff-child interaction is pleasant and support self-help skills and good personal hygiene.

10. Health practices
Staff take action to prevent potential health problems and promote positive health habits, indoor and outdoor. Preventative measures include consistent hand-washing routines. The spread of germs is minimized by providing e.g. clean toys, contaminate free sandboxes, and clean classroom surfaces. Staff are role models and encourage self-help skills through activities and play and children are actively involved.

11. Safety practice
Children's safety is protected both through adequate supervision and minimizing hazards both indoors and outdoors. Staff anticipate potential safety problems and demonstrate, model, and teach children safe practices.

Listening and Talking
12. Helping children understand language.
Staff talk with children frequently throughout the day and use personalized, simple, descriptive words and engage in verbal play with children. Staff use a wide range of words and engage in meaningful conversations on various topics, for example describe what children are doing and potentially feeling.

13. Helping children use language
Staff respond in a timely and positive way to children's attempt to communicate. They add words to their actions and are skillful at interpreting children's communication. Staff have many turn-taking conversations with children; they add words, ask questions and maintain a good balance between listening and talking.

14. Using books
A wide selection of appropriate books is accessible in sufficient number for both independent use and use by a staff with the children. Reading sessions are warm and interactive. Books are kept in good repair and regularly added or changed to maintain interest.

Activities
15. Fine motor
The children have access to a variety of age-appropriate fine motor toys and materials that they can manipulate and play with at will. Materials are in good repair, organized for play, and stimulate children at different skill and developmental levels.

16. Active physical play
The children have ample opportunities to exercise their gross motor skills daily, both indoors and outdoors. There is an easily accessible outdoor area. Age-appropriate equipment and materials provide varied and challenging opportunities.

17. Art
The children have regular opportunities for art activities (at least three times per week). Individual expression is encouraged and staff provide appropriate materials. A variety of materials and opportunities to create art are introduced as children are developmentally ready for them.

18. Music and movement
Many musical toys and/or instruments are accessible for the children's independent use, daily. Toys

and instruments are rotated regularly to provide variety. Staff sing, dance and play music, on a daily basis. Recorded music is used purposefully (not as background noise). Staff encourage children's self-expression and introduce various types of music.

19. Blocks
At least 2 sets of blocks, with a variety of blocks and accessories, are accessible for children's independent use, daily. Block play have sufficient space in a protected area and staff play with children.

20. Dramatic play
There are many and varied age-appropriate dramatic play materials accessible daily, both indoors and outdoors. Materials are well organized, well maintained and give children opportunity to play with a variety of roles. Materials and props represent diversity and staff play and pretend with children.

21. Sand and water play
Sand and water play with a variety of toys and different activities, available at least weekly (snow can replace sand in Norway). Sand and water facilities are sufficiently spaced and set up for play and exploration.

22. Nature/ science
Children are offered experiences with nature at least two times a week. The center provides daily experiences with living plants or animals both indoors and outdoors, and staff are engaged with the children talking about what they see and experience. Materials are well organized and staff show interest and respect for nature.

23. Use of TV, video, and/ or computer
TV, video, and/or computers are used for – and with – active involvement from both staff and children. Media is used to extend children's current interests and experiences.

24. Promoting acceptance of diversity
Diversity in culture, age, ability and gender is promoted through pictures, books, play materials, activities and social interaction. Cultural awareness is promoted through a variety of activities, for example through music, food, celebrating different holidays and customs.

Interaction
25. Supervision of play and learning
Staff show awareness of – and provide for both individual needs and needs of the group. Supervision is flexible and appropriate according to different activities and individual needs. Staff play with children, show interest and resolve problems effectively and in comforting and supportive ways.

26. Peer interaction
Staff facilitate positive peer interaction much of the day, children are allowed to choose friends and activities. Staff are models by being warm and supportive, they explain children's actions and point out and reinforce positive social interaction.

27. Staff-child interaction
There is frequent positive staff-child interaction throughout the day and there is much holding, patting, and physical warmth between staff and children. Staff are sensitive and responsive toward children's physical and emotional needs.

28. Discipline
Children are met with appropriate and realistic expectations and they experience consistency in disciplinary care. Children are helped to understand the effects of their own actions and helped to use communication instead of aggression to solve problems. Rules are simple and possible to explain to

children. Positive methods are used effectively, for example redirecting children from negative situations and staff frequently show enjoyment and interest in what children do.

Program Structure

29. Schedule

The schedule for basic routines is flexible and individualized to meet each child's needs and provide for both indoor and outdoor activities. Staff adjust schedule of play activities throughout the day to meet varying needs of children and transitions between activities are smooth (there are no long periods of waiting).

30. Free play

Free play occurs much of the day, both indoor and outdoor, and children are allowed to select materials and friends and to manage play independently. There are ample and varied toys and materials accessible and staff are actively involved in facilitating children's play. Staff's interactions are engaged and educational to expand and stimulate free play.

31. Group play activities

Group play activities are flexible and appropriate, i.e. planned and done in accordance to both group and individual needs. They are preferably limited to a small number of children, limited in time, and flexible to allow for the individual interests of all children. Alternative activities are accessible.

32. Provisions for children with disabilities

If the group has children with disabilities or special needs, staff display knowledge and collaborate with parents and other professionals to adapt routine care needs, individual assessments and developmental levels to the individual child. Modifications are made as needed in the environment, program and schedule to allow the child to participate and ensure the integration of the child in activities and the group as a whole.

Article I

Identifying and characterizing risky play in the age one-to-three years

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ABSTRACT

While research has investigated risk-taking in play for children from the age of four years upwards, less is known of risky play with children under four years. A small-scale observational study with children from five childcare settings with differing characteristics was undertaken to explore the occurrence and characteristics of risky play for children under four years of age, in relation to the current understanding of risky play. The study found similarities across the different contexts, which seem to reflect the characteristics of risky play for children aged one to three years. The findings suggest that the existing definition and characteristics of risky play are appropriate for two- and three-year-old children, but for one-year-olds, the study found discrepancies indicating deviations from existing definitions, indicating that the concept may not be so useful for this age group. To develop understanding of risky play, this article suggests new categories and an adapted definition.

Introduction

There has been growing interest in why children take risks and what the effects might be (Aldis 1975; Boyer 2006; Byrnes, Miller, and Schafer 1999; Christensen and Mikkelsen 2008; Christensen and Morrongiello 1997; Pellegrini and Smith 1998; Readdick and Park 1998; Sandseter 2010b; Sandseter and Kennair 2011; Smith 1998; Stephenson 2003). The literature defines risk-taking as actions with a probability for undesirable results or negative consequences, and suggests that the ability to understand situations, to assess own capabilities, and to avoid excessive risks are important for development. Children express and practice these abilities typically as play, hence the term risky play (Sandseter 2007). Consequently, the intrinsic value of play must also be considered (Lillemyr 2009; Sutton-Smith 1997).

Although it is well established that children from four years and up take risks in play, little is known of younger children's risky play (Pramling Samuelsson, Bjørnestad, and Bae 2012, 21). With a global increase in enrollment of children under three in Early Childhood

Education and Care (ECEC) (Engel et al. 2015), we need knowledge of all aspects of children's play. Hence, this article investigates the occurrence and characteristics of risky play by children in the age range one to three years and considers whether existing definitions of risky play apply or if alternative definitions or adaptations are necessary.

Previous research

Children's risk-taking in play has been studied since the 1970s (Aldis 1975; Bruner 1976), but it is under-developed with limited consensus on definitions. However, the literature indicates that children's risk-taking in play has common characteristics. Generally, research suggests that risk-taking in play imitates real-life risks through play (Aldis 1975; Sandseter and Kennair 2011), and includes curiosity, exploration, deep concentration, fear and excitement. Children explore their surroundings and their capabilities through trial and error, and their behavior involves a balancing act between exhilaration and fear, as the child either masters the challenge or withdraws because of fear (Christensen and Mikkelsen 2008; Cook, Peterson, and DiLillo 1999; Sandseter 2010a). This 'edge-work' (Lyng 1990) involves the child increasing the risk, e.g. climbs a little higher each time or ventures further from the adult (Aldis 1975; Smith 1998). Although fear has its natural place in risky play, the literature tends to focus on fun and thrill, with overt sounds and body language such as screams, laughs and big movements (Mårtensson 2004; Readdick and Park 1998; Sandseter 2007). Sutton-Smith (1997) sees fun and exhilaration as strong motivational factors conducive to repetition of some risky play. In this vein, risky play is linked with vigorous physical activity, specifically sliding, swinging, climbing, bike riding, balancing over drops, jumping down, chasing and play-fighting, shooting with bows and arrows, rolling on the ground and whittling sticks (Hughes 2012; Kaarby 2005; Sandseter 2010b; Smith 1998; Stephenson 2003). Notably, research suggests that such vigorous physical activities happens more outdoors (Aarts et al. 2010; Cosco, Moore, and Islam 2010; Storli and Hagen 2010), and risky play is seen typically as outdoor play (Stephenson 2003). Rough-and-tumble play is regarded as risky play by researchers as it has the potential for (unintentional) harm (Blurton-Jones 1976; Humphreys and Smith 1984; Pellegrini and Smith 1998; Smith 2005). Bringing these perspectives together, Sandseter (2010b) offers this definition: '[risky play] involves thrilling and exciting forms of physical play that involve uncertainty and a risk of physical injury' (22). Additionally, she identifies six categories of risky play: (1) Play with great heights (danger of injury from falling); (2) play with high speed (uncontrolled speed that can lead to collision); (3) play with dangerous tools (that can lead to injuries); (4) play near dangerous elements (such as fire, water or heights); (5) rough-and-tumble play (where children can harm each other); and (6) play where the children can get lost.

Thus, research links risky play to exploratory behavior and an observable balancing act between fear and exhilaration. There is an emphasis on vigorous physical activity, overt bodily expressions, fun and thrill, mostly outdoor activities and risk of physical injury.

Conceptualizing risk and play

Historically, risk-taking behavior is regarded as something to be avoided (Boyer 2006; Lyng 1990; Malaby 2002). Certainly, risk-management per se is not concerned with balancing

cost and benefit but with *reducing* risk (Adams 2001, 16). Similarly, risk-taking from a psychological perspective has focused largely on maladaptive social functions named 'the prevailing developmental psychopathology model' (Ellis et al. 2012, 598). In contrast, literature on risky *play* focuses largely on the intrinsic value and learning potential of the behavior. This notion, that risk-taking is part of life and has both positive and negative effects, and should therefore be investigated more comprehensively, seems now to have wider influence (Boyer 2006; Christensen and Mikkelsen 2008; Ellis et al. 2012). Adams (2001) suggests expanding the understanding of risk by distinguishing between objective and subjective risk. Objective risk involves pre-defined, observable or measurable risk, while subjective risk involves how individuals perceive risk in different situations. Sandseter (2009a) suggest that objective risk can be observed as the *environmental characteristics* of the situation, e.g. height, speed, unstable surfaces, etc. Subjective risk can be observed as *individual characteristics*, i.e. how the child expresses its experience through body language, facial expressions, sounds or words. While exploring objective risks, the child will adjust its subjective experience and expressions (Aldis 1975; Apter 1992; Sandseter 2009b), a process that can be interpreted as self-regulation (Byrnes 2013). Applications of Vygotsky's concept of *zone of proximal development* (1978, 84), resonate with this, as children explore their surroundings, and, by giving themselves increased challenges, create their own zone of proximal development (Johnson, Sevimli-Celik, and Al-Mansour 2012).

While there are conflicting perspectives (Lillemyr, Dockett, and Perry 2013), there are common characteristics in play theories, namely that play is intrinsically motivated, voluntary and 'purposeless', meaning that the activity in itself is more important than its ends (Johnson et al. 2012; Lillemyr et al. 2013). This links play and *learning*, with the implication that an activity can be simultaneously purposeless and functional. This paradox (Martin and Caro 1985) can be resolved in recognizing that play has both immediate and mediate effects, simultaneously bearing intrinsic value and learning potential (Lillemyr 2009; Pellegrini, Dupuis, and Smith 2007). Additionally, for lack of research under four years, this study needs terminology for play in relation to age. As with play and learning, this dimension yields conflicting theoretical positions, such as the assumption that play follows a universal, sequential, age-related developmental trajectory (Pellegrini and Smith 1998; Piaget 1954; Smith 2005), as opposed to the concept of play as a culturally situated and complex phenomenon (Engdahl 2007; Løkken 2000; Merleau-Ponty 2012). This complex debate is omitted here, and, rather, both perspectives are applied pragmatically, in aiming at descriptive identification and characterization of play at certain ages.

Generally, we need to be circumspect regarding any preconceptions from previous research on older children. Thus interpretations of observations here are based on a basic understanding of risky play: ' … risk taking involves the implementation of options that could lead to negative consequences.' (Byrnes et al. 1999, 367). Risk is unavoidable, and has both negative and positive effects, so, risk-taking *in play* can be potentially valuable, for the child to both experience the potential excitement and joy, and providing practice in dealing with risky situations, which are sometimes inevitable.

Method

In exploring a new phenomenon, qualitative approaches with few participants are often recommended (Johannessen, Tufte, and Christoffersen 2010) and the ethnographic role

as *participant observer* is emphasized as particularly suitable to gain insight into children's lives (Corsaro 2003; Gulløv and Højlund 2003; James and Prout 1997; Lange and Mierendorff 2009). Hence, in this study, so-called short-term ethnography (Pink and Morgan 2013) was chosen as the main data-collection technique. Pink and Morgan (2013) suggest that this method is especially appropriate within theoretically informed, applied research. In contrast to traditional ethnography, where the ideal is long-term participation, this exploratory study has a narrow focus, and applies less intrusive and time-consuming data-collection (Knoblauch 2005; Millen 2000). Still, the purpose of the ethnography is to obtain rich or thick descriptions (Geertz 1994). To achieve this, observations should include many situations, also situations normally occurring outside of the staff's view, and Corsaro (2003) suggests that this can be obtained by behaving differently from regular staff. From the start, the staff generally appeared playful and involved with the children and the role of 'detached observer' was chosen (Gulløv and Højlund 2003, 40). Carrying a notebook and a video camera strengthened the position as both different and detached. On day three of data collection, Daniel (three-years-old) indicated the achievement of this role: ' … points at me and shouts: Look! He's not an adult! Because … he does not have children! He is a child! He does not have children, hah!' (Video 0016, ECEC Center 3 (Nature center), Day 3).

In line with recommendations for short-term ethnography, multiple data collection techniques are utilized. Together with ethnography, mapping is applied to provide an overview of complex situations and comparable data on extent and context (Cosco, Moore, and Islam 2010). Video is applied to increase the level of detail in descriptions (Knoblauch and Schnettler 2012).

Participants

There are several ways to select participants for a qualitative study. According to Seawright and Gerring (2008), selecting qualitative samples has the same 'twin objectives as random sampling; that is, one desires: (1) a representative sample; and (2) useful variation on the dimensions of theoretical interest.' (2008, 296). In this study, it was realistic to prioritize the latter and five ECEC center groups were included. Two ECEC center groups were selected from the BePro-sample (BePro 2013) (Norwegian longitudinal study, including 206 ECEC center groups) based on their varied scores (high and low) on the Infant Toddler Environmental Rating Scale (ITERS-R) (Harms, Cryer, and Clifford 2006).[1] The ITERS-R does not address risky play directly, but several items touch on the topic, such as physical activity, supervision and safety. The kindergartens' varied scores strengthen the potential for generalization, meaning that similarities in different contexts are more likely to represent general patterns (Gobo 2008). For similar purposive sampling reasons (Teddlie and Yu 2007), two forest kindergartens were included, where children spend most of their time outdoors, in a natural environment, and offer increased probability of relevant observations. Research suggests that vigorous physical activity, and therefore risky play, will occur more often outdoors (Aarts et al. 2010; Cosco et al. 2010; Sando and Lysklett 2012; Storli and Hagen 2010). For similar reasons, one infant-toddler group was included. After the first seven days of data-collection, the observations indicated deviations amongst one-year-olds from the predominant understanding of risky

play. Therefore, to strengthen detailed descriptions, it was decided to observe only one-year-olds for parts of the remaining data-collection.

Groups consisting of one-to-three-year-olds were observed for ten days. One-year-olds were observed for four additional days. The groups were observed between August and February the following year and the participants consists of 28 boys and 25 girls, with 26 one-year-olds, 20 two-year-olds and seven three-year-olds. The low number of three-year-olds reflects Norwegian practice, where children move to the older age group within the semester they turn three.

Ethical considerations

Research is necessary to obtain knowledge for the welfare of children. Observing children is therefore sometimes necessary, but measures should be made to secure the rights and integrity of study participants. The study adheres to all ethical standards and privacy policies of the Norwegian Social Science Data Service and Norwegian Data Protection Authority, which ensures participants' confidentiality and anonymity. The approval presupposes informed consent from all parents of children, which was obtained. Still, children themselves should have a say, and the possible experience of intrusiveness was of high priority. The staff would inform the children of a visit by a stranger and the purpose of this visit, to the best of the children's comprehension. Most importantly, the children could give 'ongoing consent' (Flewitt 2005, 556), meaning that if a child showed signs of discomfort related to the presence of the observer, the observer would withdraw. In addition, the study's focus is risky play and there would be occasions where children might be physically injured. In such cases, continuous judgement was necessary to decide whether to intervene, and avoiding injury was given priority over the role as detached observer. No such situations occurred during the observations.

Observations

The groups were normally observed throughout the day, for about seven hours. With few children in each group and/or physical limitations, e.g. fences or closed doors, it was possible to observe all children most of the time. In all five kindergartens, children's everyday life had several routines, such as diaper change, meals and naps. The children were observed in all activities and transitions between activities. However, the major issue was to determine whether a behavior could be characterized as risky play, so describing all activities would be infeasible and unnecessary. Therefore, any situation that was perceived potentially dangerous, either by the child, staff or the observer was mapped and described to answer two basic questions: Are there environmental or individual characteristics in the situation that indicates risk? And: Can the child's behavior be characterized as play? For the sake of interpretations, the descriptions elaborate on actions, facial expressions, body language, voice/sounds and verbal expressions of both staff and children. In addition, the following information was collected for each instance of risky play.

- *Who* – with codes for individuals, gender and age. In this article, children have a pseudonym and their age is given in brackets, e.g. Lene (1.5).
- *What* – with descriptions of activities leading to coded categories.

- *Staff reactions/involvement* – with description of interaction to be coded for later analysis. Here staff have a fictitious name and staff level in brackets. Teacher = (T), Assistant = (A), e.g. Espen (T).
- *Location* – with codes for Inside/outside
- *Sociability* – with codes for Alone/Together
- *Duration* – with codes for Long/Short

Video-recordings were done for two days, one day in a forest kindergarten and one day in the infant-toddler group. The videos were coded similarly to the field notes (Knoblauch and Schnettler 2012).

Mapping

The purpose of the mapping is to provide supplementary information to the qualitative descriptions; to establish to what extent risky play occurred and to collect comparable, contextual data (Cosco et al. 2010). Several mapping tools were reviewed, but all instruments were missing terminology related to risky play. Alternatively, risky play could be defined as *vigorous physical play*, a category in several instruments. However, if the children in focus would display other types of risky play, relevant observations would be missed. Therefore, a mapping tool was developed for the present study. The categories of the mapping reflect the codes described earlier, and could be represented quantitatively.

The mapping was piloted in two kindergartens to investigate the relevance of the codes and the usefulness for observations and analysis. Small adjustments were made to the mapping format throughout without altering the basic content so that early and later mappings are comparable. Since the mapping has not been subjected to inter-rater reliability, the mapping will not be emphasized as evidence as such, but as support for the general patterns and descriptions.

Analysis

From the first days of observations, children were observed playing in ways that could be identified within existing definitions of risky play, but there were also observations of children in similar play without experiencing any risk, and sometimes vice versa; children experienced risk without showing any thrill or there was no risk of injury. To determine whether the play could be characterized as risky, the two criteria of environmental and individual characteristics (objective and subjective risk) were applied in the analysis. This was combined with previous observations of children's behavior in similar situations. Staff reactions were considered in assessing environmental characteristics, as an outside observer might overlook some risky aspects of a situation.

Analytic sample

This article's basic variable for analysis is *Instances of risky play*. One 'play' or game counts as one instance and can include many children and/or repeated risk-taking. For example, if a group of children were chasing each other, and at the same time climbing and play fighting with sticks, this would count as one instance. Repetitive play such as sliding or

swinging would also count as one instance. All instances were coded as described earlier with *Who*, *What*, *Staff reactions/involvement*, *Location*, *Sociability*, *Duration,* for statistical analysis.

This gives a sample where *n* represents the total number of instances of risky play observed in 12 days. Comparison of these instances across different contexts is made feasible through precise observational criteria and coding (Gobo 2008). As mentioned, on three of the days, only one-year-olds' risky play was observed and mapped, even if there were two- and three-year-olds present. If summed together, this would over-estimate one-year-olds' number of instances compared with older peers. Therefore, these three days cannot be compared statistically with the observations of the full groups, and are considered as a separate sample. This gives two samples of instances of risky play: Sample 1, including children one-to-three years ($N = 198$), Sample 2, with one-year-olds only ($N = 46$).

Individual children were described and mapped in detail, including age in months. However, in the statistical analysis, age categories are one, two and three years. Individual differences in age-related development are more nuanced than this, but splitting age into months in the statistical analysis would give very small numbers in each age group. Moreover, one main finding is related to the ability to walk. Since this ability normally is developed in the second year and stabilizes in the third year (Goodway, Ozun, and Gallahue 2012), this categorization was considered sufficiently detailed.

Findings and discussion

Regarding appearance and content of play, there are variations when it comes to how each child expresses itself and engages in risky play. However, based on the described criteria, risky play was observed in the age group one to three years in all five ECEC center groups on all days of observation. The mapping and descriptive similarities found across different contexts, suggest consistent patterns. These patterns can be regarded as characteristics of risky play in the age group one to three years.

Common characteristics of risky play in the age group two-to-three years

According to the predominant understanding, playing with risk involves a thrill or excitement, described by the children themselves as 'it tickles in the tummy' (Sandseter 2010a, 76). It can also be identified through overt expressions of excitement, fear or exhilaration (Aldis 1975; Sandseter 2009b; Stephenson 2003). These characteristics make risky play relatively easy to identify, also in the present study:

> Example 1: *Sondre (2.9) and Daniel (3.3) are climbing on the big snowballs, bouldering (the balls are about their size and there is a whole circle/structure of them). They climb up, try to jump from one to another or slide or jump off. Daniel jumps off several times and slides down the 'high wall'. He shouts: I drove fast! I drove the fastest! Wasn't that fun?! Sondre climbs to the top of the wall, but says with a tiny voice 'No' and climbs down [he is discouraged]. He slides off from a lower boulder. He watches Daniel as he slides again from the higher boulder, and Daniel looks back up at him and assures: I didn't break my legs! Daniel goes on to reassure Sondre that he dares: 'It is not big!' Sondre laboriously gets in position and mumbles to himself (I do it, I dare this) and off he goes. At the bottom he shouts: I*

dared, I dared! … I dared slide down there! He walks back into the circle of boulders while he repeats to Daniel: I dared! (Video 0016, ECEC Center 3 (Nature center), Day 3)

This episode is interpreted as play based on its voluntary appearance, exhilaration and repetitiveness; the play goes on for more than 20 minutes. Moreover, it is interpreted as risky play based on the combination of environmental characteristics (objective risk), individual characteristics (subjective risk) and increase of risk. The environmental characteristics are the height of the boulders (double the children's height) and the steep incline, which gives high speed. The risk of physical injury is even addressed by the children. The individual characteristics are firstly attributed to the fun and thrill the boys express through their body language and excited cheers. Secondly, the subjective risk can be observed as Sondre is balancing between exhilaration and fear. First, he slides from a lower boulder, and while increasing the risk, by going higher, he hesitates and withdraws with fear. He expresses both with body language and in words that he does not dare. His voice is low; his face is towards the ground and back slightly sunk, which indicates anxiety and maybe disappointment. Daniel continues to address the risk and simultaneously reassures Sondre that there will be 'no broken legs' and 'you dare'. Sondre's body language continues to show hesitation, but he moves into position on top of the boulder. What he mumbles to himself is interpreted as his mental approach; he repeats Daniel's words of encouragement just before going over the edge. Sondre's reaction after sliding down confirms his exhilaration and reward of mastering the challenge: 'I dared!'

As both individual and environmental characteristics confirm the situation as risky play, the aspect of increasing the risk is interesting. The rewarding thrill and exhilaration of mastering seem to be a strong motivational factor in risky play (Sandseter 2009b). As the child progressively masters an increased objective risk, the subjective risk and therefore the exhilaration decreases. Consequently, the objective risk is increased, to optimize exhilaration (Apter 1992; Sandseter 2009b). This is typically observed as children each time climb a little higher or venture further from the staff (Sandseter 2009a). As in Sondre's example, children were observed doing this throughout the observations. For example, while sliding, they would start out sliding sitting upright, and then continue to slide on their back and eventually on their stomachs, head first. This can also be interpreted as a learning aspect of risky play, where the child is motivated (and where the environment allows), to constantly increase the challenges within the changing zone of proximal development.

Duration and sociability – short and long play

A prominent finding is the briefness of many instances of risky play. These instances put the observer to the test because the situations are literally over in a few seconds. One typical example of such play would be:

> Example 2: *Fredrik (2.1) is walking around by himself next to the fireplace outside the main building. He walks carefully up a rock on the ground; the rock is pointy and about 30 cm high. He gets to the top and says 'Ooooi', stands up and stretches his arms out to the side. He has a big smile. He loses his balance slightly, catches himself by crouching quickly, and then jumps off.* (Field notes, ECEC Center 3 (Nature center), Day 1)

This way of playing and using the environment seems typical for the age group. Parts of the day, the children wander about, and they engage with anything they might come

across. In most of the established categories, be it playing with height, speed, tools, elements and even rough and tumble, risky play comes in these brief intermezzos, as part of exploring or engaging with their surroundings. It is identified as risky play mainly due to the individual characteristics, for example, the thrill the child expresses. In Example 2, Daniel is careful when walking up the rock and the reward of reaching the top is obvious in his big smile. While a fall from this height might not lead to injury, he would probably feel pain, and the risk is apparent by him almost falling and catching himself on the way down. This situation lasted just under 30 seconds.

The rule for coding an instance *short* was that it lasted approximately one minute or less. Any play lasting longer than one minute was coded as *long*. The reason for this was the distinct briefness of many situations. Situations lasting for two minutes and longer, even up to 30 minutes, had more similarities between them than with the very short ones. The similarities include that they often involve two or more children and sometimes staff; the play often has components of role play, and rough and tumble. There are also longer sessions with more repetitive play such as swinging or sliding. This type of play does not have the social features of role play or rough and tumble, but is often sociable, meaning the children play two or more together, for example swinging. The mapping shows that long sessions of play are dominantly social (71%), while few of the short sessions are social (19%).

In summation, two- to three-year-olds exhibit risky play in much the same way as described in previous research. Both the objective risk is apparent in the environmental features and the subjective risk is apparent in the individual bodily expressions; overt and easy to identify. When given the opportunity, they engage in play with height, speed, dangerous tools and elements, rough and tumble play and a few instances of running away or hiding from the staff (disappear/get lost). Three categories stand out: Playing with speed (25%), Rough and tumble play (12%) and Playing near dangerous elements (39%) (Table 1).

Common characteristics of one-year-olds risky play

Where two- to three-year-olds' risky play largely resembles previous research, similar situations involving one-year-olds could appear different, either based on the environmental or the individual characteristics, or both:

Example 3: *The group has just finished eating and Nicolai (1.7) goes over to the 'balance bowl', it is a flat bowl, slightly concave, approx. 10 cm deep and approx. 50 cm across. It is now turned*

Table 1. Categories of play for one- to three-year-olds (Sample 1).

		Frequency	Percent
Valid	Height	15	7.6
	Speed	49	24.7
	Impact	15	7.6
	Rough'n'Tumble	24	12.1
	Tools	8	4
	Elements	77	38.9
	Run_away	4	2
	Vicarous risk	3	1.5
	Other	3	1.5
	Total	198	100

over on the floor, forming a low convex structure. Nicolai climbs up, hands and feet on the bowl. Safely on top, he tries to raise to a standing position, but gives up and slides off. He makes no sounds and keeps a stern face throughout. Sandra (T) puts Celine (1.3) on the floor (she has been sitting by the table). She crawls quickly and determined to the bowl, crawls up on it. When on top, she just sits there. Face blank, watches a bit around. She then crawls off after 1 min and then crawls back up. At 00:10, she almost slides off and catches herself. She then continues to climb and move around the top for a while. (Video 0031-34, Infant-toddler group, Day 1)

Throughout the observations, children under two years of age were in situations where the objective risk could be identified, but where the individual characteristics were not observed as expected. Children would climb, slide or swing with very little overt body language of hesitation, thrill and excitement. Sometimes, also the objective risk, observed as the environmental characteristics in Example 3, proved difficult to identify. Here, the low, slightly convex structure can easily be overlooked as representing any risk, certainly no risk of injury. Rather, the risk is attributed to two individual characteristics in the example. Firstly, Nicolai is a steady walker, but as he increases the risk by trying to stand up on the bowl, he withdraws. Several other one-year-olds attempted this and some succeeded. Secondly, when Celine is put on the floor she crawls (she cannot walk) directly and eagerly to the bowl and on to the top, i.e. she seems highly motivated. Whether she is experiencing fear is impossible to interpret from her body language until she almost falls off. She catches herself quickly and moves to safety on top. She then continues to move around on the bowl. The movement of catching herself is interpreted as a subjective risk, an experience of fear, even if the experience is very brief and the fear probably not strong.

As in Example 1 and 2, Nicolai's and Celine's behavior is interpreted as play based on its voluntary appearance and intrinsic motivation. However, the excitement described in Example 1, is not observed. This resonates with age-related theories of physical development and play. Pellegrini and Smith (1998) describes this sequential; starting in infancy with *rhythmic stereotypes*, i.e. gross motor movements with no apparent purpose. In the preschool age, *exercise play, i.e.* gross locomotor movements in the context of play, is predominant, while *rough and tumble play* occurs increasingly in the late preschool years and is seen as the predominant physical play in the primary school age. While exercise play can be both solitary and social, rough and tumble has a distinct social character. This describes a general trend in age-related play development; from partly solitary and repetitive play to predominantly social and more complex play (Goodway et al. 2012; Smith 2005; Sutton-Smith 1997). Seen this way, risky play follows a general pattern, and Celine's and Nicolai's play can be observed as subtle, i.e. less sociable, less extrovert, more repetitive and more focused because of their age, specifically related to their agility. The more agile a child would be, the more his/her risky play would resemble the existing definition. The mapping supports the assumption of age-related play, suggesting that children, with age, increasingly engage more in long and social play. However, one- and two-year-olds were observed involved in long sessions of social risky play, such as rough and tumble, and the play appears both social and complex. Therefore, the concept of *exercise play* seems too narrow, and, rather, the social *toddling style,* as described by Løkken (2000) and Engdahl (2007), seems a more appropriate description of under-three's risky play, including one-year-olds.

Extent of risky play

The mapping also suggests differences between one-year-olds and two- to three-year-olds regarding the extent of involvement in risky play. Of the 198 instances of risky play in Sample 1, one-year-olds were involved in approximately 25% of the instances and two- and three-year-olds were involved in the remaining 75% (Table 2). Similarly, involvement is highest among two- and three-year-olds, with involvement up to 17 instances in a day. No one-year-old was observed being involved in more than 10 instances in a day. Additionally, among the one-year-olds there were several that did not involve in risky play, while among the two- and three-year-olds there was no individual with less than two instances in a day. These figures are skewed in favor of the older children due to higher presence on days of observation, not only because of fewer one-year-old participants in Sample 1, but also because one-year-olds sleep and participate in more routine care. The one-year-olds simply have less time to play. Still, the differences in frequency of risky play in Sample 1 remain large. Comparing the average occurrence of risky play per day in Sample 1 and Sample 2 suggests the same, 25 instances per day in Sample 1 and 15 instances per day in Sample 2.

Adaptation of categories

Initially it was presumed that existing categories might be inappropriate, therefore, categorizing was avoided until the in-depth analysis. Indeed, in contrast to the two- and three-year-olds, one-year-olds' play proved difficult to categorize. As described above, much observed play could not be identified within existing categories based on environmental or individual characteristics. However, the observations indicated *subjective* risk, albeit subtle. Therefore, in line with the short duration of many instances (Example 2), the exploration of objects/surroundings was added as an individual characteristic, and the name of the category was changed from Playing *near* dangerous elements to Playing *with* dangerous elements. Elements that could be perceived as dangerous were also extended, including elements such as darkness, loud sounds/voices and unknown objects or environments. Playing with dangerous elements fits with Lyng's terminology *edgework* (1990), which includes interpreting behavior as testing boundaries, literally or emotionally/mentally, and approaching the edge of ones abilities. This can be applied to all types of risky play, but with regards to one-year-olds, dangerous elements, as defined here, are probably more within their zone of proximal development, rather than, for example, high speed or dangerous tools. This decreases also the aspect of risk of physical injury, as in Example 2 and 3. When separating one-year-olds in Sample 1, two categories stand out: Speed (17%) and Elements (63%). In Sample 2, the proportion of *Playing with elements* is even higher (69%).

Table 2. Involvement/age (Sample 1).

	Frequency	Percent
1 year	40	20.2
2–3 year	140	70.7
Mixed group	18	9.1
Total	198	100

Finally, some instances eluded existing categories. One type of play had the common individual characteristics of crashing, either themselves or an object, into something. 'Impact' is defined as 'the action of one object coming forcibly into contact with another' (Oxford Dictionaries 2015), which seems a good description of the children's play; either if they repeatedly threw themselves onto a mattress or crashed their tricycle into a fence. A new category was therefore named *playing with impact*. The staff's reactions were used as an environmental characteristic as they sometimes reacted with frightened surprise.

Some observations had elements of fear, tension or excitement that were categorized as *Other*. The analysis showed that some of these observations had common characteristics. These were situations where the risk was only observed by the children. When a ski-jump was to take place, a group of two-year-olds would sit down next to the jump and watch. Similarly, one-year-olds were observed watching through the window older children slide or play rough and tumble outside. This is suggested here as an emergent category named 'Vicarious risk'. According to Apter (1992), this experience can have the same arousing effect as a 'real' experience, and in this context is additionally interpreted as a pre-phase of risk-taking, with a potential learning aspect.

Conclusion

This article suggests that the existing definition and characteristics of risky play are appropriate for two- and three-year-old children. Regarding one-year-olds, the study suggests several deviations from the existing understanding of risky play. In this context, the term one-year-old must be seen in relation to motor development and in particular, the ability to walk. One-year-olds show less risky play than older peers, and when playing, they express less emotion, especially while alone. They do not show the same overt, easy-to-identify body language and facial expressions as their older peers. Typically, one-year-olds' risky play is more brief and solitary compared to two- and three-year-olds. One-year-olds' main risky activity is playing with dangerous elements, where the term dangerous must be emphasized as subjective. Their risky play involves exploring and testing their surroundings and their bodies in relation to these. To expand the understanding of risky play, this article suggests adding 'Playing with impact' and 'Vicarious risk' as new categories and an adapted definition – *play that involves uncertainty and exploration – bodily, emotional, perceptual or environmental – that could lead to either positive or negative consequences.*

Being an exploratory study with a low number of participants, the study has limitations. However, the number of instances observed and similarities across the different contexts suggest the potential for generalizability of the findings. The validity of the suggested definition and characteristics will be further tested by future studies' ability to utilize or reproduce these findings. Taking the rapid, global expansion of childcare into consideration, equally important would be how childcare centers deal with this type of play, e.g. creating zones of proximal development for all children. The described behavior among one-year-olds, presumes high levels of attention and sensitivity among caregivers and research should elucidate how caregivers observe, structure and/or engage in this type of play.

Note

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Article II

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Characteristics of staff–child interaction in 1–3-year-olds' risky play in early childhood education and care

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ABSTRACT

Despite increased interest in children's risk-taking in play, little is known of this aspect considering children under three years. Therefore, this study aimed to investigate the concept of scaffolding to potentially describe patterns in staff–child interaction in 1–3-year-olds' risky play. Empirical data were taken from an exploratory study, executed as a focused ethnography with multiple data collecting techniques, resulting in a sample of 198 instances of risky play. Findings indicate that scaffolding is a pertinent theoretical foundation for describing high-quality staff–child interaction in risky play, leading to increased opportunities for developmentally appropriate stimulation. Of the 171 instances where staff were present, staff did not interact at all in 70 of the instances (41%). Staff–child interaction, directly related to children's risky play, occurred in the remaining 101 instances. Of these 101 instances, 'Scaffolding'- and 'Non-scaffolding'-interaction were observed in 78% and 22% of the instances, respectively. Implications are discussed.

Introduction

The rapid global increase in enrolment of children under three in early childhood education and care (ECEC) (Engel, Barnett, Anders, & Taguma, 2015) entails a growing concern whether children are allowed diverse play opportunities in institutionalized settings:

> Creating and sustaining the conditions for spontaneous free play in the increasingly formalized environments in which early experience unfolds presents significant challenges for early childhood educators. (Hewes, 2014, p. 296)

Of specific interest for this study is play that involves risk and how such play is met in ECEC-institutions. It is already documented that older children's risky play is met with ambiguity, and often deterred because of concerns with safety (Brussoni, Olsen, Pike, & Sleet, 2012; Gill, 2007; Wyver et al., 2010). In the parent–child relationship, this is often described as overprotection, with the unintentional consequence of depriving children of developmental opportunities (Clarke, Cooper, & Creswell, 2013; Ungar, 2009).

Considering the increasing population of children under three in ECEC and that previous related research only includes older children (Bjørnestad et al., 2012, p. 21), the purpose of this article is to investigate the characteristics of ECEC-practitioners' interaction with children aged 1–3 years, in risky play. The aim of this article is two-fold: (1) to examine the pertinence of the concept of

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scaffolding in relation to staff–child interaction and risky play and (2) to examine patterns in staff–child interaction in risky play. This article is based on an exploratory study investigating a range of aspects of risky play in the under-three age group.

Risky play

The literature identifies risk-taking as actions with a probability for undesirable results or negative consequences (Byrnes, Miller, & Schafer, 1999), and maintains that approaching and comprehending risks gradually through play enables children to understand situations, assess their own capabilities, and avoid future excessive risks (Adams, 2001; Ball, 2004; Byrnes, Miller, & Reynolds, 1999; Sandseter & Kennair, 2011).

This notion derives from several disciplines and suggests that the ability to handle dangerous or risky situations is, from infancy, a combination of instincts and learning. For example, several adaptations of the 'visual cliff experiment' show that fear of height is partly innate and that the protective function of fear is combined with learning through experience (Adolph, Kretch, & LoBue, 2014). To make a comprehensive risk assessment, one must appropriately assess both probability *and* severity of consequence, and studies show how this ability exists, albeit not yet fully developed, with infants (≤14 months) (Kretch & Adolph, 2013). Another way to view the usefulness of gradual and playful experience with risk is how play might function as 'training for the unexpected' (Spinka, Newberry, & Bekoff, 2001). For example, studies indicate that fear of novel situations is a hindrance for optimal performance, but that play experiences in childhood might dampen such fear, mainly by improving self-regulation (Pellis & Pellis, 2007; Riksen-Walraven & van Aken, 1997).

Children's risk-taking can be related to the concept of play, hence the concept *risky play*, which Sandseter (2010) describes with these characteristics: '[risky play] involves thrilling and exciting forms of physical play that involve uncertainty and a risk of physical injury' (2010, p. 22). Additionally, she identifies six categories of risky play: (1) Play with great heights (danger of injury from falling), (2) play with high speed (uncontrolled speed that can lead to collision), (3) play with dangerous tools (that can lead to injuries), (4) play near dangerous elements (such as fire, water, or heights), (5) rough-and-tumble play (where children can harm each other), and (6) play where the children can get lost. To adapt the understanding of risky play to children under three years, Kleppe, Melhuish, and Sandseter (In press) suggest that 1–3-year-olds engage in subtler forms of risky play; particularly less physical and where the objective risk of injury is not apparent. For example, the category 'playing with dangerous elements' is expanded to include a wider range of elements, focusing on the subjective risk, i.e. if the child perceives a risk in the situation, rather than an objective risk of injury. Additionally, two new categories are suggested, namely playing with impact (e.g. children throwing themselves onto mattresses or crashing bikes into walls) and vicarious risk (where children watch other children play risky, e.g. ski jump). Thus modified, 1–3-year-olds' risky play can be characterized as play that involves uncertainty and exploration – bodily, perceptional or environmental – that could lead to negative consequences.

If we accept these notions, it becomes important for ECEC-staff to allow children to experience new situations, involving a range of emotions (including fear) and facilitating the development of risk assessment skills. Naturally, such practises are influenced by a complex set of personal and contextual factors (Hughes, 2010; Little, Wyver, & Gibson, 2011; van Rooijen & Newstead, 2016). It should therefore be noted that this study is executed in Norway and that previous studies indicate a relatively high tolerance by Norwegian practitioners for such play (Borge, Nordhagen, & Lie, 2003; Little, Sandseter, & Wyver, 2012; New, Mardell, & Robinson, 2005). Whether this challenges the transferability of potential findings in this study will be discussed.

Ultimately, regardless of developmental outcome, play is a natural part of children's experience and children do not play consciously for learning purposes, rather, from the child's perspective, the experience of play has intrinsic value (Hewes, 2014; Lillemyr, 2009; Sutton-Smith, 2009). Therefore,

in this study, children's play is interpreted as both an activity that is valuable in its own right and as an activity with potential benefits for development and/or learning.

Theoretical concepts of interaction in ECEC

It is widely acknowledged that staff–child interaction represents the core aspect of process quality in any ECEC context (Dalli et al., 2011; Helmerhorst, Riksen-Walraven, Vermeer, Fukkink, & Tavecchio, 2014; Lamb, 2009; NICHD, 1996). ECEC-practitioners have a key role in establishing a sense of security, and promoting well-being and development. Consequently, there is a growing base of research, theoretical concepts and observational tools to assess and interpret staff–child interaction. Despite the growing interest, there is limited research looking into interaction with children under three, and none in relation to risky play. Therefore, the first aim of this article is to investigate the relevance of existing theoretical concepts and the potential adaptation of observational methods.

Historically, ECEC-research builds largely on two approaches to adult–child interaction. One emphasizes caregiving aspects from the perspective of attachment theory (Ainsworth, Blehar, Waters, & Wall, 2014; Bowlby, 1982); and another emphasizes educational purposes (Fröbel & Hailmann, 2005; Piaget, 1954; Vygotsky, 1978). Notably, attachment theory provides an excellent metaphor for interaction in risky play, namely 'a secure base from which to explore' (Dalli et al., 2011, p. 70). This also captures two main aspects of so-called holistic pedagogy in ECEC, i.e. a combination of both the caregiving aspect (a secure base) and the educational aspect (exploration). However, attachment theory, and later developments, are criticized for not including contextual factors (De Wolff & van Ijzendoorn, 1997), and tend to focus on socio-emotional aspects, with little attention to other aspects of development (Waters & Cummings, 2000).

A recent wave of research in ECEC, influenced by both above-mentioned theoretical strands, takes a so-called bottom-up approach, i.e. emphasizes the child's perspective in interaction (Bae, 2012; Hallam, Fouts, Bargreen, & Caudle, 2009). In this vein, there are several instruments assessing process quality from the child's perspective, e.g. the Observational Record of the Care Giving Environment (ORCE/M-ORCE) (Kryzer, Kovan, Phillips, Domagall, & Gunnar, 2007; NICHD, 1996), the Caregiver Interaction Profile (CIP) (Helmerhorst et al., 2014), the Classroom Assessment Scoring System (CLASS) (Jamison, Cabell, LoCasale-Crouch, Hamre, & Pianta, 2014; La Paro, Hamre, & Pianta, 2009), or the Parenting Interactions with Children: Checklist of Observations Linked to Outcomes (PICCOLO) (Norman & Christiansen, 2013). Such instruments have shown strong associations between scores on the respective instruments and children's well-being and development (La Paro, Williamson, & Hatfield, 2014; NICHD, 2001). Inevitably, several of these instruments were considered for this study, but, since they typically assess interaction in a broad perspective using established ideas, they were found not appropriate for exploring 'new' phenomena such as risky play[1]. In general, however, the (often) coinciding detailed descriptions of high-quality care extracted from these instruments, specifically the caregiver's *warmth, sensitivity and responsiveness*, have influenced this article's interpretations and analysis.

Interaction as scaffolding children's play

As suggested by Kleppe et al. (In press), the Zone of Proximal Development (ZPD) is a theoretical concept suited to understand risky play. The ZPD is what lies just beyond the learners' current knowledge or experience. In risky play this zone is related to the level of risk and can be observed as three basic choices: increase, decrease, or maintain the risk (e.g. climb higher in the tree, climb lower, or stay where you are). The crucial assessment the ECEC-practitioner must make is to determine how much guidance the child needs at any given moment in play. That is, regarding the risk, how to support the increase, decrease, or status quo. In this way a response from the practitioner can be observed and interpreted as either a good or a poor fit in response to the child's play needs

(Trawick-Smith & Dziurgot, 2011). Several maintain that a good way to describe a good fit response is with a set of skills referred to as *scaffolding*:

> The concept of pedagogy as providing a scaffolding for learning has been important for informing instruction in the early years. Scaffolding derives from Vygotsky's notion of the 'zone of proximal development', a zone that includes everything that is achievable with assistance, which would otherwise lay beyond individual capability. This zone varies with culture, society, and experience but it must be fostered in joint activity that creates a context for child and expert interaction within a social context. (Siraj-Blatchford, Muttock, Sylva, Gilden, & Bell, 2002, p. 34)

Although broadly applied in ECEC-research, scholars more or less agree on three central aspects of scaffolding. First, *intersubjectivity* refers to the establishment of a shared understanding between the actors, specifically defined by Wertsch (1998) as '[…] the degree to which interlocutors in a communicative situation share a perspective' (p. 112). Intersubjectivity is therefore seen as a prerequisite for – and a fundamental aspect of – interaction between caregiver and infant (Stern, 1986; Trevarthen & Aitken, 2001). In this line, Dalli et al. (2011) suggest intersubjectivity as the core pedagogical strategy in ECEC for infant/toddlers and is closely linked to descriptions such as *warmth, sensitivity, and responsiveness*. These terms operationalize how intersubjectivity is made possible and is presented as optimal behaviour in detail in standardized tools (see for example Helmerhorst et al., 2014; Norman & Christiansen, 2013). Consequently, intersubjectivity can be seen as a prerequisite for successful scaffolding.

Next, *joint problem solving* addresses concrete learning as a focus for intersubjectivity: What is the child's interest and how should the child be supported (Trawick-Smith & Dziurgot, 2011)? Most researchers agree that optimal learning takes place when the adult/more-experienced peer and the learner together explicitly define the problem and work towards a common goal (Berk & Winsler, 1995; Siraj-Blatchford et al., 2002). Trawick-Smith and Dziurgot (2011) outline specific categories of problem-solving in order to determine the appropriate adult response to child's play, of which *Task completion/performance* (for example 'Actively seeking help in performing or completing a task') and *Thinking/constructing knowledge* (for example 'Requesting help in problem solving' or 'Failing to notice or attend to important aspects of a problem') are relevant for risk-taking in play.

Last, the concept of *self-regulation* addresses a crucial aspect of the learning process. Notably, some theories focus on self-regulation in terms of *social adjustment in relation to others,* to the extent that a more appropriate term would be 'other-regulation' (Bodrova, 2008; Schunk & Zimmerman, 1994). In contrast, this article focuses on self-regulation as self-adjustments in relation *to own feelings and capabilities,* inspired by conceptualizations such as Byrnes' Self-Regulation Model (SRM) (Miller & Byrnes, 1997). Summarized, five self-regulatory tendencies are seen asessential for risk takers to succeed in a given situation: (1) knowledge of diverse strategies, (2) the ability to coordinate multiple goals, (3) being capable of handling uncertainty, (4) self-correcting strategies when doing mistakes (assess tendencies, biases, and limitations), and (5) a tendency to learn from experience. In this view, both climbing higher up in the tree or climbing down can be interpreted as self-regulation, i.e. the child regulates its actions according to his/her perception and knowledge of self in relation to both emotions (exhilaration/fear) and capabilities (able/unable).

To externally support such processes, the ECEC-practitioner is required to relinquish control as soon as the child can work independently. Paradoxically, the practitioner must make an active choice of *not acting* (further). This entails that he/she should observe the children and permit them to grapple with challenges and intervene only when they are truly stuck (Berk & Winsler, 1995; Trawick-Smith & Dziurgot, 2011). If interacting, an indirect level of intervention – hint-giving, question-asking, modelling, and other subtler forms of support – is seen as optimal for children's development while in the zone of proximal development (Trawick-Smith & Dziurgot, 2011). When these requirements are met, children are permitted to stay largely responsible for

making decisions. Following Vygotsky and neo-Vygotskian in this vein, *autonomous play* would be considered the ultimate goal of scaffolding. As soon as the child can regulate his/her behaviour and work independently, the adult/teacher should withdraw. Consequently, the optimal play situation in this study would be independent risky play, albeit with observing/supervising staff.

Method

Participants

In total, five ECEC-centres participated, with 53 children (between 1 and 3 years of age) and 21 staff (15 female and 6 male). Children were 28 boys and 25 girls, with 26 one-year-olds, 20 two-year-olds, and 7 three-year-olds. The low number of three-year-olds reflects Norwegian practise, where children move to the older age group within the semester they turn three.

The centres were selected from BePro's representative sample of 207 Norwegian ECEC-centre groups, which are mapped and measured with several standardized instruments, e.g. the Infant-Toddler Environment Rating Scale - Revised edition (ITERS-R) (Harms, Cryer, & Clifford, 2003). The centres were selected with three criteria. First, two centres were selected based on their respective scores on the ITERS-R, enabling comparisons and examination of *variation* on dimensions of theoretical interest (Seawright & Gerring, 2008), in this case, variations in the general quality of adult–child interaction (as measured by ITERS-R) and latent variations in interaction in risky play. For potential contrasting effects, one centre from the highest scoring portion of centres (ITERS-R > 5.5) and one from the lowest scoring portion were selected (ITERS-R < 2.5). Further, two forest/nature ECEC-centres were selected based on previous research indicating a bigger chance of getting relevant observations *outdoors* (Aarts, Wendel-Vos, van Oers, van de Goor, & Schuit, 2010; Cosco, Moore, & Islam, 2010; Sando & Lysklett, 2012; Storli & Hagen, 2010). Last, one ECEC-group of only one-year-old was selected to get more detailed observations of that specific age group.

Data collection

The data collection was planned and executed in cooperation with the large scale longitudinal project Better Provision for Norwegian Children in ECEC (BePro, 2013).[2] The study has obtained the required approval from the Norwegian Social Science Data Service and Norwegian Data Protection Authority, and adheres to all ethical standards and privacy policies that ensure participants' confidentiality and anonymity.

The main data collecting strategy was focused ethnography (Knoblauch, 2005), meaning that the researcher took part in children's everyday life, but recorded only selected aspects or phenomena, in this case, activities involving risk (criteria for observations are further specified below). This method is considered appropriate for collecting data on specific phenomena with as little intrusion as possible. Similarly, the role of detached observer was chosen for its non-intrusiveness, but also because it is generally regarded as well suited for ethnographic studies with children (Gulløv & Højlund, 2003) and for exploratory, descriptive purposes (Lange & Mierendorff, 2009).

Observations were directed by two main criteria: the subjective and the objective risk in a given situation (Adams, 2001; Sandseter, 2009b), thus following Bakeman and Gottman's (1997) suggestion for obtaining information on interaction by defining various forms of behaviour beforehand. Objective risk involves pre-defined, observable or measurable risk factors, while subjective risk involves how individuals perceive these factors differently in different situations. Sandseter (2009a) maintains that objective risk can be observed as the *environmental characteristics* of the situation, e.g. height, speed, unstable surfaces, etc., while the subjective risk can be observed as *individual characteristics*, i.e. how the children expresses their experience through body language, facial expressions, sounds, or words. Observations were made each time these criteria were met, resulting in a dataset made up of

units of behaviour, i.e. the smallest possible but still meaningful piece of information (Lincoln & Guba, 1985, p. 345). In this article, this unit is called 'Instance of risky play'.

For each such unit, a set of contextual information was collected and coded accordingly, namely time, place, who (including age and gender composition of the children, and the gender of staff), and interaction (either child–child or adult–child). Interaction was defined as verbal or non-verbal action within an adult–child play situation. This mapping provides a record of the frequency of behaviour and contextual relations, permitting statistical analysis. Video was applied for two days, to increase the level of detail in the qualitative descriptions (Knoblauch & Schnettler, 2012). Similar to the field notes, video-recordings were cued by any potential subjective or objective risk, resulting in ∼4 hours of recordings. Recordings were coded similar to the field notes. In this article the data were analysed to assess whether the observed adult responses matched children's needs in risky play, and hence categorized as scaffolding.

Groups consisting of 1–3-year-olds were observed for 10 days, giving a sample of 198 instances of risky play. Initial observations indicated deviations in how children under two years played, so groups of one-year-olds only, aged 1.1–1.11 years, were observed additionally for 4 days. Observations of one-year-olds only were also quantified, but these instances are not merged with the sample of 1–3-year-olds, and only included in the qualitative analysis. The groups were observed indoors and outdoors, between August and February the following year, to examine varying environmental conditions.

Analytic criteria

For staff–child interaction, the instances with 1–3-year-olds ($n = 198$) were coded as four mutually exclusive categories; 'Alone', 'No interaction', 'Scaffolding-' or 'Non-scaffolding interaction'. 'Alone' means that staff were not in plain view at the time/place of that specific instance of risky play. 'No interaction' means that staff were present, but show no sign of interacting with the child. As theories of scaffolding adheres special significance to no interaction, challenges regarding this category are discussed below. Criteria for coding an instance as 'Scaffolding' are based on the initial theoretical assumptions, and include the following three aspects.

Warmth and responsiveness should be observed as the ECEC-practitioner consistently acknowledges children's individual emotional and physical needs in a warm and forthcoming way and responds appropriately and promptly to their cues and signals. The behaviour should also be observed as engaged and with a certain level of energy.

Joint problem-solving should be observed and should contain a risk, either or both a subjective and/or an objective risk. The observations should identify *with what* do children actually need scaffolding, how the practitioner shows genuine interest in the child's risk-taking, and how this experience is shared with the child through looks, facial expressions, body language, and/or words.

Promoting self-regulation should be observed as the ECEC-practitioner shows an appropriate response to the child's need, i.e. an appropriate action in relation to how much guidance children need at that moment in play. The practitioner's behaviour must be interpreted as an intentional choice of relinquishing control, leaving the further choices of action up to the child. Observations should show how the pedagogue communicates this to the child through looks, facial expressions, body language, and/or words.

Typically, observational tools utilize ordinal scales to assess quality, i.e. a high score indicates good quality and a low score indicates poor quality. In this study, this is simplified with a categorical variable. If the interaction in an instance is characterized with all three criteria, it was coded as *scaffolding* (which indicates a good fit response/high quality). If the interaction cannot be characterized with all three criteria, it was coded as *non-scaffolding* (which indicates a poor fit response/low quality). Hypothetically, Scaffolding and Non-Scaffolding interaction can occur in the same sequence, especially in longer sequences of play, but on a regular basis, the interaction could be deemed either /or. Therefore, in the analysis, these categories are mutually exclusive.

Findings and interpretations

The findings are split into two sections following the article's two main questions. First, the relationship of scaffolding to risky play is presented based on qualitative interpretations. Second, patterns in the staff–child interaction in risky play are presented based on descriptive statistics, and triangulated with ITERS-R scores.

The relationship of scaffolding to risky play

To investigate the relationship of scaffolding in risky play, qualitative interpretations of two episodes are presented to answer the following questions: (1) Is it play? (2) What is the risk involved? (3) With what do the children need support? (4) Can the response be characterized as appropriate to the child's need? (5) Can the adult response be characterized with all three criteria for scaffolding? The first example is chosen from the category of playing with speed, which was the category linked with the most scaffolding (37%):

Example 1

Thomas (teacher) is sliding/sledging with a group of 8–9 children, aged 2 to 6 years. (The day before, the teachers made huge piles of snow on the slope, which now have hardened and they have dug holes through the piles, acting as tunnels to slide through.) They slide on large soft mats. Thomas is sliding for about an hour and his behavior is consistent throughout. At the top, he waits for everyone that wants to join the 'train' (two-three mats joined/held together). He addresses each one individually, 'do you want to join?' etc. To Elias (3,1)[3]: Do you want to sit here (on his lap)? Elias points to the rear. Thomas lets out a small laugh: 'To avoid snow in the face?' (Refers to the previous slide, where Elias got snow in the face and started to cry). You should sit in front of Emil then. This means Elias sits behind Thomas, and therefore is more shielded from the blowing snow. Everyone is seated (Thomas and four children), but they wait patiently for Sondre (2,6). He wants to run together with an older child in front of the sliders (like a 'bull run'). Thomas: 'Sondre? Will you be able to get away? … Are you ready?' Sondre:'Yes, we are ready!' Thomas: 'Ok, here we come!' Off they go. They almost catch up with Sondre at the bottom, Thomas brakes carefully with his hands and Sondre throws himself to the one side, avoiding being hit. They all laugh. (Nature ECERS-center 3, Day 4)

This episode is characterized as *play* based on its voluntary nature and apparent intrinsic value. All children involved seem highly motivated for the repeated walking up and sliding down with no other external reward than the activity itself. Further, it is categorized with the risk category 'playing with speed' based on the objective risk of potential pain and injury in case of an unfortunate impact. There are also displays of subjective risk, such as the cheers of exhilaration sliding down the slope, crying while getting covered in snow, hesitation before the next run, and increasing the risk by running in front of the sliding 'train'. What are Elias' and Sondre's needs at those specific moments? Seemingly, Elias wants to reduce the risk (for example to avoid snow in the face), and Thomas' comfort, support and suggestion for an additional measurement for safety (sitting behind the teacher and together with an older boy) is interpreted as an appropriate response. Indeed, the consequence is that Elias joins for another run, and does not cry. Sondre, on the other hand, apparently wants to increase the risk (by running in front of the ride and avoid being hit), and he seemingly awaits Thomas' response. Thomas' questions ('Will you be able to get away?', 'Are you ready?') are interpreted as indirect guidance, and this level of support is a good fit to Sondre's needs. Indeed, he goes ahead with running in front, falls and laughs with the others at the bottom of the hill. Showing with his tone of voice and approach in general, he shows that the ultimate decision of further actions is up to the child, hence it is interpreted as fulfilling the third criteria of scaffolding, supporting children's self-regulation.

Additionally, considering Thomas' interaction in general, the two first criteria are also met, facilitating intersubjectivity and creating an atmosphere where fun, exciting experiences, and learning is possible. Thomas' interaction is interpreted as *warm and responsive* throughout. He is calm and patient and handles the different situations – from crying and comforting to fun and laughter – with sincerity and engagement. The episode indicates that *joint attention*, rather than joint *problem-solving* is an appropriate term to describe the several foci of interaction between Thomas and the children. Even if the children give themselves tough challenges, and such challenges can be defined as problems, the children themselves probably do not perceive them as such. Rather, it seems they are highly motivated for experiencing risk in such ways, not (only) to solve the challenges, but simply by increasing or maintaining the risk, they increase the possibility of a fun and thrilling experience, which is an end in itself.

Notably, in this episode the ultimate goal of scaffolding, autonomous play, as prescribed originally, is not observed. But considering the young age of the children, the literature suggests that close and continuous interaction is desirable, even when children are able to play independently (Albers, Riksen-Walraven, & de Weerth, 2010; Bowlby, 1982; Helmerhorst et al., 2014; NICHD, 1996; Stern, 1986). The crucial aspect – whether the interaction supports self-regulation or not – remains related to how the teacher supports each child's decisions to continue the activity on their chosen risk level (increase, maintain or status quo).

To substantiate the concept of scaffolding further, Thomas' example is contrasted with three rapid, consecutive examples where the (totality of) criteria are not met:

Example 2

13:31. Emma (1,2) climbs up on a children's chair. Liz (teacher): 'Emma? (Very friendly). Liz gets up from the corner mattress, walks over to Emma: 'You? – Little climber!' She lifts her down. Holds her fingers, helping her to walk across the floor, away from the table.

13:46. Emma climbs up on a children's chair and further up on the children's table (approx. 50 cm high). Helen (practitioner) comes over and lifts her down: 'You're not allowed to climb up on the table, you know.' Puts her on the chair, starts playing 'away-boo'. Then she says: Do you need a new diaper? Come let's change your diaper." Walks off to the bathroom.

13:51. Coming back from diaper change, Helen puts her down on the floor. Emma crawls directly to the chairs next to the table, starts to climb on the chair. Liz comes after 15 seconds, stands next to her. When Emma is up, Liz lifts her up, carries her out to the wardrobe/dressing room, singing to her.

These episodes are categorized as 'playing with heights', whereas the table's relative height to the child (50 cm) represents an objective risk of physical injury. Seemingly, both Liz and Helen consider this objective risk and deter Emma from continuing the activity, and their actions are interpreted as active and intentional. This is also why non-scaffolding is interpreted as being different to no interaction.

Does Emma actually need scaffolding? Emma displays an apparent motivation and ability to climb, and according to Trawick-Smith and Dziurgot (2011), a 'good-fit' response would be to leave her handling this on her own. However, entailing a slight risk of injury, staff choose to intervene, stopping the activity by physically removing Emma from the spot and distracting her attention. Although there is warmth in their interaction, the strategy of distracting attention is not interpreted as sensitive towards her interest, rather as avoiding taking Emma's perspective. One way of establishing joint problem-solving (or perhaps also here: joint attention) in these episodes could be to acknowledge Emma's interest in climbing, but consecutively communicate, with words and body language, that there is a risk of injury and rather propose an alternative spot for climbing.

Here the practitioners deprive Emma of a fun and exhilarating experience, all safety-issues considered. This has relevance for self-regulation, as they miss the opportunity to address Emma's potential ambiguous feelings of fear and excitement, and by doing so, they miss the opportunity to connect words to her emotions and experience and thus help her to self-regulate. Their actions remove an

opportunity to allow Emma to ultimately decide for herself whether to continue or withdraw, which would further strengthen self-regulation. Specifically for coping with heights, Poulton and Menzies (2002) have shown that experience with falling in childhood predicts less fear of heights in adulthood. Kretch and Adolph's (2013) experiments also indicate that experience is necessary to develop comprehensive risk assessment competence. In this vein, Emma can be said to be deprived of an opportunity to habituate fear and to learn comprehensive risk assessment, hence a 'poor fit response' to Emma's needs.

While their responses fit professional norms they can be regarded as leading to overprotection, with the potential negative consequences for development as described by, for example, Ungar (2009). Children with overprotecting parents tend to become anxious and perceive the world around them as dangerous, consequently failing to assess risks appropriately. Admittedly, literature on overprotection focuses largely on the parent–child relationship, and one can assume that a phenomenon like anxiety acquisition is more likely to occur in close emotional relationships. Nevertheless, indications of a more general risk-averse society suggest additional effects, where many similar experiences add up to a general feeling of anxiety (see for example Kadison & DiGeronimo, 2004). In general, by overprotecting, one misses a fundamental aspect of learning through play, namely stimulating the ability to handle the unexpected (Pellis & Pellis, 2007; Spinka et al., 2001).

Characteristics from the mapping

Early observations indicated that children sometimes would play without staff supervision entirely. These instances were coded 'no staff present' to assess how often risky play would occur out of staff's view altogether. One assumption would be that if staff inhibit risky play, e.g. if they were inclined to often stop or discourage such play, children would seek opportunities for such play outside of staff view. The mapping shows that children engage in risky play with no staff present in 27 of 198 (13.6%) (Table 1), so the occurrence was relatively rare, and the analysis does not give any clear indication whether playing with no staff present is connected to some specific characteristics.

Of the remaining 171 instances staff were present, there was no interaction in 70 of the instances (40.9%) (Table 1). Staff–child interaction, directly related to the child's risky play, was observed in the remaining 101 instances. Of these 101 instances, 'Scaffolding'- and 'Non-scaffolding'-interaction was observed in 78.2 and 21.8% of the instances, respectively (Table 1). This indicates that it would be approximately equally probable that children who were engaged in risky play would experience either no interaction or scaffolding, while it would be moderately rare that they were met with non-scaffolding interaction.

The frequencies of each interaction category (*no interaction, scaffolding, and non-scaffolding*) where triangulated with ITERS-R-data from the two ordinary ECEC-centres selected from the BePro sample (Table 2). Only the two ordinary centres were feasibly comparable in this regard, and therefore the other centres have been excluded from the ITERS-R-triangulation. Notably, Centres 1 and 2 were selected based on their respective high and low general ITERS-R score for contrasting effects, and this contrast is apparent in their respective score on Interaction (Subscale #5). The aim was to

Table 1. Staff–child interaction in risky play.

Staff characteristic	All instances of risky play frequency/percent	Instances with staff present frequency/percent	Instances with staff interacting frequency/percent
No staff present	27/13.6	–	–
No Interaction	70/35.4	70/40.9	–
Scaffolding	79/39.9	79/46.2	79/78.2
Non-scaffolding	22/11.1	22/12.9	22/21.8
Total	198/100	171/100	101/100

Table 2. Cross-tabulation: staff's interaction in ECEC-centre.

Staff's interaction		Centre 1	Centre 2	Total
No interaction	Count	14	34	48
	% within staff's interaction	29.2%	70.8%	100.0%
	% within ECEC-centre	25.5%	56.7%	41.7%
Scaffolding	Count	35	17	52
	% within staff's interaction	67.3%	32.7%	100.0%
	% within ECEC-centre	63.6%	28.3%	45.2%
Non-scaffolding	Count	6	9	15
	% within Staff's interaction	40.0%	60.0%	100.0%
	% within ECEC-centre	10.9%	15.0%	13.0%
Total	Count	55	60	115
	% within staff's interaction	47.8%	52.2%	100.0%
	% within ECEC-centre	100.0%	100.0%	100.0%

investigate if this variance would be reflected in aspects not examined by the standardized instrument.

Centres 1 and 2 were observed for three days each and have approximately the same total number of instances of risky play with staff present (Centre 1: *n* = 55, Centre 2: *n* = 60). Between the two centres, Centre 2 has 34 instances of no reaction, compared to Centre 1's 14. Of scaffolding interaction, Centre 1 has 35 instances, compared to Centre 2's 17. Of the relative few instances of non-scaffolding interaction, Centre 2 has 9 instances, compared to 6 in Centre 1.

Discussion

Three aspects emerge from the findings regarding the potential adaption of scaffolding to risky play. First, both historically and concurrently, scaffolding relates to cognitive and social aspects of development, such as language development, cognitive problem solving and dramatic-, make-believe- or rule play (Berk & Winsler, 1995; Bodrova, 2008; Bodrova & Leong, 2006; Hammond, 2001; Siraj-Blatchford et al., 2002). As there are obvious bodily aspects of risky play, a more holistic view of learning processes needs to be applied. Second, *joint problem solving* seems not always to be involved in interactions related to risky play. In this study, children do not necessarily experience the risk as a 'problem', rather it could be perceived as something fun and exciting (Sandseter, 2010). Therefore, *joint attention* – together with other required criteria for high-quality interaction – appears to be a sufficient prerequisite to establish scaffolding. Third, according to the original concept of scaffolding, appropriate and timely withdrawal is an essential part of scaffolding. As maintained by e.g. Trawick-Smith and Dziurgot (2011), when children play autonomously, no interaction is needed, moreover, interaction would be considered a 'poor fit' response. Consequently, in this study, consciously chosen *no interaction* can be interpreted in general as a situation of trust and confidence between staff and children, and indeed, the children actively seek out risks to a large extent in staff's presence (35.4%, Table 1).

However, this interpretation poses several challenges. First, we must ask what staff are doing while not interacting. For example, are they observing the children (which would be positive) or are they busy with other tasks (which would be negative)? This distinction is previously made only by a few, e.g. Trawick-Smith and Dziurgot (2011) who distinguish 'observation' and 'no interaction'. This distinction is not made in this article, first because priority is given to detailed description of the actual interaction, and second, based on pure observations, it is difficult to interpret and categorize variations of no interaction. For example: If a practitioner is sitting in the room with six or seven children, looking around, sometimes making a comment to another staff and sometimes to a child: Is she (intentionally) observing, supervising, or ignoring? As pointed out by Bakeman and Gottman (1997), interaction should be observed as a sequence in time. In this study, appropriate withdrawal is part of a sequence of scaffolding, while no interaction is when staff do not interact in relation to the risky play (at all) in one sequence.

Still, if *no interaction* could be interpreted as a good fit response (hence high quality), there are several challenges. First, most previous research on scaffolding focuses on children from three years and up and the expectations for autonomous play are obviously related to this age. The literature maintains that infant/toddlers need close relations and interaction with their caregivers (Albers et al., 2010; Bowlby, 1982; Helmerhorst et al., 2014; NICHD, 1996; Stern, 1986), and autonomous play cannot be given the same value as with older children. Second, this study focuses on play with a probability of potential harmful consequences, but from the analysis, it is not clear whether children's need for protection is best safeguarded by attentive, supervising staff (no interaction), or, from participating staff, 'inside' the play (scaffolding). Regardless, it would seem appropriate that ECEC-practitioners should strike a balance between participation and observation. Therefore, as the third point, although autonomous play is seen as valuable, there are several reasons why practitioners should be involved in play; even in play that does not need support. Such reasons could be that the play context is ideal for taking the children's perspective and getting to know the individual child (Corsaro, 2003; Degotardi, 2010), with a range of potential positive developmental effects (Albers, Riksen-Walraven, & de Weerth, 2007). Close participation might also increase the chance of detecting unwanted behaviour such as 'subtle bullying', which could be difficult to identify by simply observing (Alsaker & Valkanover, 2012). There is also an intrinsic value of adults and children sharing experiences (Hewes, 2014).

Hence, common play experiences and continued scaffolding are interpreted as high-quality staff–child interaction, and, as shown, the total portion of scaffolding *while interacting* is large (78.2%) (and non-scaffolding low) (Table 1). This might imply that the practitioners in this study are aware of the intrinsic value and developmental benefits of exploration and risky play, and/or that they operate within a cultural context with some tolerance for risk-taking (Borge et al., 2003; Little et al., 2012; New et al., 2005). This last interpretation proposes that the high portion of scaffolding is only transferable to similar contexts, e.g. in this case, Nordic countries. However, the finding might have a wider relevance since there are indications that the Nordic countries are gradually entering a more risk averse paradigm (Sandseter & Sando, 2016). More importantly, the potential transferability for this finding lies with two other aspects. First, the observed age-related play behaviour is interpreted as universal: the basic need for exploration and risk-taking is a natural and essential part of well-being and development (Mayer & Beckh, 2016; Miller & Byrnes, 1997; Ryan & Deci, 2000), hence practitioners' ability to respond appropriately to this is interpreted as high quality. This interpretation is supported by the triangulation with ITERS-R; Centre 1 (with the highest ITERS-R score) has the highest portion of scaffolding (Table 2). Second, the objective risks, hence the probability of injury, observed in this study is generally low. Therefore, risky play, as defined here, would presumably not trigger neither the fear of actual injuries nor legal consequences related to child injuries in ECEC.

Last, can *no interaction* be interpreted as low quality? This would seem to depend on the situational context. The finding of a high level of no interaction is in line with other studies, indicating low levels of interaction between staff and infants/toddlers throughout the day (Hallam et al., 2009; Zanolli, Saudargas, & Twardosz, 1997). For one, this can be related to structural prerequisites, associating low frequencies of interaction to low staff-to-child ratios or large group sizes (NICHD, 1996). However, the staff–child ratios and group sizes in this sample do not deviate from the national norms (Gulbrandsen & Eliassen, 2013). A suggestive interpretation can be drawn from the triangulation with data from the ITERS-R, where the ECEC-centre with the lowest scores has the highest frequency of no interaction (Table 2). Generally, preliminary findings from the BePro study indicate that negative, potentially harmful, interaction (such as intrusive, permissive, or punitive behaviour) is rare in Norwegian ECEC. Rather, low quality is manifested as lack of interaction (Bjørnestad, Os, & Hegna, 2015). This indicates that risky play is not very different from the types of play specified in the ITERS-R and that it requires the same sensitivity and responsiveness from staff. Moreover, a prominent characteristic of risky play in this age group is its subtleness and briefness (Kleppe et al., In press), and one can speculate that such play is more likely to go 'off the radar'. Staff with generally poor interaction

skills might also lack the necessary knowledge of the individual child and therefore ignore or misinterpret such brief and subtle behaviour.

Conclusion

While interacting, ECEC-practitioners in this study respond to young children's risky play extensively in a good way. This might indicate that these practitioners have knowledge and acceptance of a wide range of children's needs and behaviour, and/or it might indicate that they are working within a cultural context that allows them to act appropriately on this knowledge. This article suggests further that high-quality staff–child interaction in risky play fits the concept of scaffolding, with some adaptations. While triangulated with the ITERS-R, a high frequency of scaffolding in a centre concurs with high process quality as measured by this instrument. The moderately large proportion of no interaction is more difficult to interpret. It might be interpreted as autonomous play with no need for adult intervention and/or reflect a situation of trust between staff and children. However, this would probably not be regarded as high quality in various ways, particularly in relation to the children's age, but also related to the intrinsic value of staff and children sharing play experiences and the many potential positive outcomes. To that effect, a high frequency of no interaction in a centre concurs with low process quality as measured by the ITERS-R.

While this study relates several theoretical constructs to observations of risky play, it is a small scale, exploratory study. Hence, further discussions and developments of the theoretical framework are needed to examine the validity of scaffolding as a fruitful theoretical approach to understand interaction in risky play. For ECEC-practise, further investigations are needed to examine whether the lack of interaction actually reflects a good fit response or, alternatively, put children at risk of injury. Ultimately, studies should explore whether these findings can be reproduced on a larger scale, especially the high proportion of scaffolding, and how this might vary in different cultural contexts.

Notes

1. Although the CLASS-Infant incorporate an aspect of children's exploration (Facilitated exploration) (Jamison et al., 2014), it would not be suitable for older children, and there would potentially be several challenges assessing subjective and objective risk as described in the Method-section of this article.
2. The ITERS-R data used in this article are acquired through two projects funded by the Research Council of Norway, 'Better Provision for Norway's Children in ECEC' and 'Searching for Qualities'.
3. Age in (year, month).

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