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Carolin Albers

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RESEARCH ARTICLE

'The air is a little too dangerous': how children navigate between rules and risks in times of COVID-19

Carolin Albers[a,b]

[a]*Faculty of Social and Behavioural Sciences, University of Amsterdam, Amsterdam, Netherlands;* [b]*Institute for Anthropological Studies in Culture and History, University of Hamburg, Hamburg, Germany*

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Abstract

The COVID-19 pandemic and the corresponding government measures to prevent the spread of infection have affected children living in socially disadvantaged urban areas in distinctive ways. While their role and responsibility concerning contagion risks are subject to debate, the regulations impact their lives in multiple areas, including peer interactions, family life and education. Understanding their perception and navigation of pandemic risks is therefore crucial to supporting coping strategies and to fostering self-protective behaviour. By employing the concepts of social navigation and emotion – risk assemblage, this study provides a novel perspective on these children's assessment and management of contagion risks in the context of the COVID-19 pandemic. Based on a qualitative field study conducted at two elementary schools in socially disadvantaged neighbourhoods in two different cities in Germany, I show how children negotiated risk through interaction with bodies, places and materials they classified as risky or protective, and how their risk construction was shaped by social and cultural processes. I further demonstrate that uncertainties, such as contradictory information, or desires, like security and freedom, led the participants to lean on combined rational and non-rational tactics. Finally, I demonstrate how situational adjustment of risk assessment and rule adherence became a navigational tactic that allowed the children to balance safety and liberty within an environment of constant change.

Keywords: COVID-19; risk assessment; risk management; social navigation; child participatory research

Introduction

Following its onset in March 2020, the COVID-19 pandemic and the measures taken to counter the spread of infection distinctively shaped social life around the globe, placing children in a unique and contested position. For protective purposes, many countries restricted the freedom of movement and group assembly, closed schools and appealed to the public to stay at home. Although scholars from

Corresponding author. Email: carolin.albers@posteo.de,

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virology and epidemiology agreed that the primary risk group were the elderly and chronically ill, the occurrence of long-term effects among children who had contracted COVID-19 nevertheless indicated certain risks for this group (Ludvigsson, 2020; 2021). Moreover, children's contribution to the virus's spread emerged as a topic of debate since contagion among schoolchildren transpired less frequently, yet infected children seemingly had a higher viral burden and hence were more contagious than adults (Goldstein et al., 2021). As experts on children's mental health and education cautioned against the harmful effects of lockdowns and school closures early on, the emerging ethical discrepancies led to debates and protests concerning the proportionality of the measures affecting children's lives (Luijten et al., 2021).

In Germany, school closures during the first half of 2020 were longer than in other European countries, leaving children living in socially disadvantaged contexts at an even greater risk of falling behind. Parental distress due to home office or reduced work hours and lower income led to a statistically increased risk of harsh parenting and domestic violence, while the increase of sedentary indoor activities along with isolation from peers had adverse effects on children's mental health (Cuartas, 2020; Luijten et al., 2021; Mittal et al., 2020; Sari et al., 2022). Furthermore, crowded housing situations in disadvantaged urban areas resulted in relatively high COVID-19 incidences (Plümper & Neumayer, 2020). Subsequently, children here not only had an increased risk of contracting the virus and witnessing family members falling ill but also faced more prolonged school closures and harsher restrictions, isolating them even longer from education, peers and sources of external support (Ravens-Sieberer et al., 2021). Due to Germany's notoriously deficient digital infrastructure, particularly in the educational sector, children's opportunities to follow online education, reach for help and partake in social activities during school closures depended heavily on their family's digital resources and the varying regional internet provision, making this particularly difficult for children in disadvantaged contexts (González & Bonal, 2021).

In other words, children had to navigate conflicting risks and interests. On the one hand, they were considered a risk to vulnerable groups, requiring them to take responsibility and adhere to rules of protection, while risks to their own health remained only partially known. On the other hand, they faced the risk of missing out on school or losing touch with peers during lockdown, particularly when digital resources were limited – a risk many children and adolescents were personally more concerned about than contracting COVID-19 (van Loon et al., 2021). While some researchers argue that despite its constraints, the pandemic has opened up exceptional opportunities for youth participation (Faria et al., 2021), the necessary digital resources are scarce in many families living in disadvantaged contexts.

In such a complex web of risks and interests, children are often viewed as incapable of accurate risk assessment and management. Especially concerning health decisions and physical well-being, children are commonly positioned as vulnerable bodies in need of protection by adults, who try to keep risks from children (Lupton, 2013a). Interestingly, however, an increasing body of literature delineates children's ability to carefully weigh and responsibly manage everyday risks rather than '"blindly" throw[ing] themselves into risk-taking behaviours' (Christensen & Mikkelsen, 2008, p. 127). On the contrary, by 'looking after themselves, children negotiate rules of participation and they safeguard personal and collective interests' (Christensen & Mikkelsen, 2008, p. 112). Importantly, engagement with everyday risks has even been shown to be beneficial for children's

development (Christensen & Mikkelsen, 2008; Tangen et al., 2022). However, literature acknowledging children's agency in dealing with pandemic risks is largely missing.

Furthermore, a crucial aspect when trying to understand children's management of infectious risks is the underlying knowledge children base their assessment on. While Fefferman found that children aged 6 and younger already conceptualised contagion, implementation of this knowledge in protective practices only occurred a few years later and was associated with education about the underlying causal mechanisms (Fefferman et al., 2022). Notably, education requires that adults understand and be able to explain risk and safety as unambiguous categories. During the onset of the pandemic, however, the constantly evolving knowledge about COVID-19 added to the uncertainties about what constituted a risk even among adults. Studying how children navigate risks in such an environment of general uncertainty about the ever-shifting categories of safety and risk, allows exploring how they manage existing categories of risk but also how they define them in the first place.

Finally, the absence of children's voices from the scientific and political discourse about the pandemic measures despite the numerous implications of the pandemic on their lives necessitates exploring their ways of managing this unparalleled situation to support them in adopting self-protective behaviour. Moreover, studying their perspective is crucial 'in order to develop strategies and tools that, by taking into account their concerns, will ultimately help them to overcome these unprecedented circumstances' (Idoiaga et al., 2020, p. 3). To this end, the presented research explores children's navigation tactics, employing Vigh's (2009) concept of social navigation and Lupton's (2013b) emotion – risk assemblage in an agent-centred approach, asking how children understood COVID-19 and the related measures, how they assessed risks of contagion and how they navigated these.

From risk to navigation

Within the pandemic context, a theoretical framework that regards risks and emotion as socially constructed and reciprocally influential reveals how both the social context and individual experiences shape children's perception of infectiological risks. Along these lines, Lupton's (2013b) emotion – risk assemblage helps unveil how emotion and risk are fluctuating constructs that not only mutually configure each other but are also entangled with materials, bodies and place. While news reports or parents' opinions may influence children's risk concepts, their personal experiences, such as encounters with infected relatives or friends, the obligation to self-isolate or the fear of having contracted COVID-19, influence their emotional judgement of the situation and, in turn, their definition of pandemic risks.

By understanding risk and emotion as an entangled assemblage that comes into existence through interactions between bodies and materials, Lupton's (2013b) concept renders visible that embodied experiences and communication about these are essential for the construction of risk. Claiming that '[w]e are constantly relating to and responding to other bodies, so our embodiment is never individual' (p. 639), the concept can render visible how, in the pandemic context, the body is not only a possible subject of infection but also a potentially infectious object that becomes a risk in the interaction with other bodies. Typical COVID-19 symptoms, like fever and coughing, epitomise these embodied risks, which the pandemic has taught us to avoid in order to protect ourselves. In turn, responses to symptomatic and asymptomatic bodies include physical distancing and

isolation – practices that grant safety but also separate bodies from each other. The resulting distance evokes strong emotions, ranging from anger to sadness and depression, particularly among children and adolescents (Meherali et al., 2021). Children's culture, however, comprises physical proximity in play and other forms of interaction, and peers with a runny nose were previously part of everyday school life; yet, news reports and parents were then teaching children that physical closeness and flu-like symptoms were associated with danger and, hence, must be avoided. As a result, the shifting context required children to adjust their risk assessment, incorporating their embodied experiences and knowledge into a concept in constant flux (Lupton, 2013b).

The children's dynamic assessment of infectiological risks is the foundation of navigating safely within this shifting environment by constantly adjusting to the respective situation. To analyse how their perception of risks has translated into everyday risk management, social navigation is a useful concept that assumes that actors navigate within an environment in constant flux, or 'motion within motion' (Vigh, 2009, p. 420). Arguably, the pandemic setting as a state of increased 'social volatility and opacity' (Vigh, 2009, p. 419) renders the practices relating to risk navigation particularly visible as the significant changes propel constant adaptations, such as fluctuating incidences and shifting government restrictions. In this context of relentless change, constant re-negotiation of risk serves to maintain safety and navigate towards a hoped-for future (Vigh, 2009).

Finally, to understand how children approach and manage this constant change and what part their positionality plays, it is crucial to regard them as social actors. By seeking to explore how actors 'disentangle themselves from confining structures, plot their escape and move towards better positions' (Vigh, 2009, p. 419), the concept of social navigation takes an actor-centred stance and refutes the notion of children merely being subjects to adults' actions, thereby shedding light on the relationship between structure and agency (Christensen & Prout, 2002). To further differentiate between positions of power and those subjected to it, the theoretical framework used in this paper leans on Vigh's interpretation of de Certeau (1984), distinguishing between tactics and strategies, whereby 'strategy is the process of demarcating and constituting space and tactics the process of navigating it' (Vigh, 2009, p. 424). By acknowledging children's agency despite the influence of powerful others and structures, analysing children's tactics in managing the risks of contagion contextualises their navigation.

In brief, by exploring the triadic relationship between risk, structure and agency through the lens of emotion-risk and social navigation, this combined framework provides a novel perspective on the relationship between children's management of infection risks in the volatile environment of the COVID-19 pandemic.

Methodology

The context of an unfolding pandemic presents various risk categories for children, including contagion and the impact of lockdown on their well-being and development. The dilemma between infectious and societal risks was particularly pronounced in socially disadvantaged neighbourhoods, where incidences and, thus, the likelihood of infection were highest, while opportunities for children to partake in social life and education online were scarce (Lanari et al., 2020; Plümper & Neumayer, 2020).

To analyse how children in underprivileged contexts approached this dilemma, I conducted 10 weeks of ethnographic fieldwork at two primary schools in socially

deprived areas in the cities of Berlin and Stade, Germany, during the second wave of the pandemic in spring 2021 (Albers, 2021). During this period, COVID-19 incidences in both districts were among the highest in Germany (Dammann, 2021; Kelishadi, 2020; Plümper & Neumayer, 2020). While both schools are in neighbourhoods with a similar social structure, the two groups of participants differed in their composition. At the school in Stade, 85 per cent of the students are non-native German speakers, and for many of them, language represents a barrier to education and social participation. Furthermore, as the school is located in an area with a comparatively high proportion of welfare recipients (15 per cent), access to digital resources was limited for most families (Landesamt für Statistik Niedersachsen, 2020). Similarly, the school in Berlin-Neukölln is situated in a district where up to 70 per cent of the child population have a migration history (Für Statistik Berlin-Brandenburg, 2021). Moreover, Neukölln has the second-highest number of welfare recipients of any Berlin district (Amt für Statistik Berlin-Brandenburg, 2021). Yet, since the closure of the Berlin-Tempelhof airport led to improved living conditions, Neukölln has been subject to increasing gentrification (Tize & Reis, 2019). The body of students at the school is representative of the subsequent shift in the composition of the population, with a higher proportion of children from an educated middle class.

The choice of two field sites was the product of several stages of seeking field access, turning out to be highly valuable. The primary reason for seeking access to both schools was the uncertainty about access given the unpredictability of school closures and the strict requirements for research approval by the school authorities. Even after obtaining approval for both schools, it remained uncertain how many students I would be able to recruit. Thus, conducting fieldwork at both schools enabled me to broaden the dataset. A final but crucial value of researching two similar field sites with a different composition of participants was the possibility of comparisons despite the constraints of data collection by the school authorities limiting profound comparison of the groups.

The research involved 20 children aged between 9 and 12 years, whom I recruited as voluntary participants through their schools. Exclusion criteria comprised mental health problems and traumatic events related to COVID-19. Prior to conducting the interviews, the participants and their legal guardians were informed about the research via video call (Berlin) or phone call (Stade), allowing them to ask questions and reconsider their participation. Double consent, by the participants and their guardians, was a prerequisite for the research. For this research, ethical approval was granted by the *University of Amsterdam Ethics Committee of the Master's in Medical Anthropology and Sociology*, the *Berliner Senatsverwaltung für Bildung, Jugend und Familie* and the *Regionales Landesamt für Schule und Bildung Lüneburg*.

In Stade, a teacher I had known for several years served as a mediator between the children, their parents, the school and me. To allow children from all backgrounds to partake in the study, he actively encouraged children with language barriers and limited resources. In contrast, participation in Berlin depended entirely on the families' initiative to sign up. These different strategies resulted in the two groups differing significantly. While data protection protocol prohibited collecting any information on the participants' backgrounds, most children in Stade had a language barrier, whereas none of the children in Berlin did. Moreover, the differences in available digital resources suggested a generally higher socio-economic status in the Berlin group.

To uncover the children's views as well as their everyday practices within their social context (Green & Thorogood, 2018), I employed qualitative research methods including semi-structured online interviews and participant observation. Interviews were conducted online via Zoom (Berlin) or IServ (Stade) and recorded via Microsoft OBS to comply with the relevant COVID-19 restrictions. Each participant was invited to two interviews. In Stade, the first round of interviews took place in a room next to the classroom, granting the children both privacy and the reassuring closeness of a teacher they knew and trusted. After the school closed during the second half of the fieldwork period, the children joined the second round of interviews from home. To enable all children's participation, the school in Stade provided tablet computers for the interviews. However, in one case, an insufficient internet connection at home prevented the participant's attendance. In Berlin, all partaking children had sufficient digital facilities to join both interview rounds from home.

The initial round of interviews aimed at building rapport with the children and getting a general idea of their everyday routines and practices at school or in home-schooling. In the second interview, I addressed questions relating to the children's assessment and management of contagion risks in the context of COVID-19. The interview questions were grouped around the research questions (including Corona virus knowledge, risk perception, awareness of public health containment rules) and formulated in an open-ended manner ('What is Corona?', 'What makes you feel safe?'). Vignettes and examples served to clarify questions where necessary ('Imagine you took the Corona-test in the morning at school and it was positive. What would that be like for you?'). To engage in a reflexive dialogue and counter power asymmetries, I further encouraged the children to address issues they found important regarding their experiences around COVID-19 (Christensen & Prout, 2002).

While the COVID-19 restrictions required most data collection to occur online, the regulations in Stade allowed for three days of participant observation on a school day and during the introduction of in-school self-tests. Here, observing the children's routines at the school allowed for triangulation of their interview accounts and facilitated a better understanding of the spatial dimensions and context of their explanations (Alderson, 2008).

Transcription and translation of the interviews were conducted by the author. To grant anonymity and confidentiality, all identifying information was removed from the transcripts and replaced with pseudonyms in the written text. Where pseudonyms alone did not sufficiently conceal the participants' identity, other identifying characteristics were changed. After transcription, all non-anonymised data were removed from the author's private device and stored on an end-to-end encrypted hard drive until the end of the school year.

Coding was conducted abductively with the research questions being based on the conceptual framework outlined above. Codes and themes were derived from the data and an excel spreadsheet was used to group summaries of each participant's quotes into the emerging themes (Corona knowledge; risk assessment; navigation tactics) and sub-themes (knowledge about the virus, transmission, the measures; bodies at risk; symptoms; implementation of rules; temporal argumentation; uncertainties; trust; magical thinking; dilemmas of interest; positive aspects). In the spreadsheet, each participant's account of any identified theme was listed, allowing for a comparison between the participants' accounts. Furthermore, in this coding matrix, differences and similarities between the accounts of the two groups of children became more visible. Novel themes emerging from the first round of interviews were incorporated in the interview guide for the second round of interviews. To stay as close as possible to the children's accounts, no distinction was made between COVID-19 (the disease) and SARS-CoV-2 (the virus) in

the presentation of the findings. Instead, the word *Corona* is used as this was the emic term used by participants.

Findings

Ostensible unambiguity: knowing, assessing and managing risk

When asked about Corona and the corresponding measures, the children's accounts comprised astounding precision and complexity, initially seeming surprisingly unambiguous and leaving no doubts about how to navigate safely through the pandemic. Most of their accounts included highly scientific concepts and vocabulary commonly found in the pandemic media coverage. While the group in Berlin tended to use more elaborate concepts of disease and medical jargon, most participants in Stade used simpler language, describing Corona as 'a virus. … It makes people sick' (Lisa, Stade) or simply a 'stupid sick-thingy' (Saada, Stade). In turn, many of the accounts in the Berlin group were more detailed:

> Corona is a virus that doesn't infect young people as much … , they don't get as sick as older people, for example. And now there are also mutants, Corona mutants … . And Corona is – can transmit a disease called COVID-19. (Lukas, Berlin)

Interestingly, the eloquence and complexity of the children's accounts corresponded to the assumed differences between the socio-economic backgrounds of the two participant groups; yet all children grasped a sophisticated notion of a tiny, invisible agent infecting people and causing a disease. Metaphors and visual representations found in the public media reports on COVID-19 were among the first things the children mentioned in their explanations of the virus: 'Corona are little things; I saw them on TV' (Elif, Stade). Like it has been described in the context of infectious diseases among adults, these visual representations helped the children grasp the existence of the otherwise invisible virus (Lee et al., 2010; Peretti-Watel et al., 2019). Like Elif suggested, many of the children drew on media reports on COVID-19, remembering not only images but also employing metaphors used here to explain scientific concepts such as ascribing the virus with the anthropomorphic features of a strategic villain (Ejaz et al., 2021; Semino, 2021): '[Corona] adapts to the defence system of your body, so it can attack you better' (Clemens, Berlin).

Decisive for their risk assessment, most children drew a causal connection between symptoms and viral transmission, grounding the need for protective practices in risks of contagion. The symptoms described by the children were typically in line with the information circulated in mainstream media, including headaches and flu-like symptoms, but also loss of gustatory and olfactory sense or dangerous respiratory complications: 'It's … like when you're choking alive' (Antonia, Berlin). Notably, the children explained transmission in practical terms, linking them to practices they assessed as risky: 'When someone coughs or sneezes or something, and you inhale it … then the virus comes' (Alina, Berlin). Besides airborne transmission, touching contaminated surfaces was a risky practice many mentioned: 'If someone has Corona, he gives me a pen, and then I infect myself' (Saada, Stade). Consistent with this knowledge about transmission, most participants agreed that following rules like hand hygiene were crucial and that those disregarding these rules were risky bodies:

> One gets Corona … if one does not wash hands and goes very close to others and … if I now [come] to you, some of my air comes to you because maybe I have Corona, and you have it now, too. (Saada, Stade)

To avoid such dangerous encounters, Liam highlighted the importance of wearing a mask: 'When someone does not have a mask, and then they cough, then the bacteria come out of their mouth; then someone else breathes it in' (Liam, Berlin), demonstrating how risk was configured by interactions between material and human bodies (Lupton, 2013b).

Using their knowledge about transmission and symptoms, the children identified risky bodies, objects and places that they sought to avoid. With regard to risky bodies, observable symptoms played a decisive role. For example, given that she and her family 'had no pain … we were healthy and so on' (Elif, Stade), Elif explained that they did not constitute a risk for her grandmother when visiting her. Similarly, Lisa laid out that she felt reassured when meeting her best friend as she could see that 'she doesn't cough, she doesn't have a runny nose' (Lisa, Stade), whereas Sinan worried about his safety when his friend 'had to cough all the time' (Sinan, Stade) while they were playing together. In other words, the interaction with other bodies was decisive for the children's construction of risk (Lupton, 2013b).

Correspondingly, interactions with place were a crucial basis for the configuration of risk (ibid.). Thus, places where it was challenging to follow the rules, like crowded shops or the city centre, were risky 'because when there are many people, you can't keep your distance' (Yara, Stade). Moreover, several children were concerned about the risk of contagious surfaces in the supermarket or playground since 'there are many people who touch everything; for example, now, they look, "What is this?" and then they put it back' (Saada, Stade) and 'there are a lot of bacteria on these things' (Zeynep, Stade).

As an alternative to simply avoiding risks, the interaction with protective materials was a crucial part negotiating risks. Protective materials were ascribed the potential to mitigate the dangers of exposure to risky materials, places or bodies. In this regard, masks were a salient example, having the power to protect against both flying saliva and risky air:

> If, for example, you are somehow in a shop or here at school and cough, that would be a bit worse and can also develop into Corona. And that's why it's better to wear the mask so that the virus doesn't fly there and infect the people. (Amal, Stade)

Similarly, technology played a decisive role in this negotiation process. During the initial phase of my fieldwork, Corona antigen self-tests were introduced as a safety measure in the schools and quickly imbued with high expectations of protective powers. Interestingly, the children employed a specific temporal argumentation that was decisive of the test's power. Along these lines, a negative test result confirmed that the children's past navigation of the rules must have been safe and thus was proved to be a valid strategy in the future. For example, Jan explained feeling reassured that meeting his relatives without taking precautions was safe, 'because I was with them and the test is now negative' (Jan, Stade). Correspondingly, several children justified habitually meeting a defined group of Corona friends without precautions 'because we just think that if one of us has Corona, then we've already caught it anyway' (Bela, Berlin). By illustrating the situated character of risk and its construction through the interaction with bodies the children felt a close connection to, this example indicates the collective as well as the fluid quality of their risk conceptualisation (Lupton, 2013b).

Although in line with their scientific understanding of the virus and their corresponding risk assessment, it was astounding that almost all children claimed to always abide by the rules. As several children from both schools expounded, this behaviour served to protect themselves and others, allowing them to 'move towards better' (Vigh, 2009, p. 419), in this case, safer 'positions': 'When I do these things, keep my distance, wear a mask, wash my hands, I feel safe at school' (Sophia, Berlin). In addition, complying with the measures avoided conflicts with adults, such as teachers, parents or other authority figures. For instance, Zeynep and Yara worried about getting in trouble for not complying with the Corona measures when they saw the police 'drive around in police cars and check whether children keep their distance' (Zeynep, Stade). To avoid a conflict, they pre-emptively put on their masks until the car had passed by.

Most importantly, however, the children actively took responsibility not only by adhering to protective measures but also by distinguishing themselves from at-risk groups, thereby reversing the common narrative of children as vulnerable and in need of protection. Arguing that 'Corona is actually just like the flu for children' (Yara, Stade), they positioned themselves as responsible for the protection of vulnerable others rather than themselves, since 'older people are vulnerable and … we could infect them' (Clemens, Berlin).

Correspondingly, it is remarkable that within my data there were only a few children who showed open defiance against the rules. This is particularly noteworthy as rule adherence restricted the children's daily activities, such as meeting friends indoors and playing football: 'We were playing [football]; I was really sweating; my friend couldn't breathe because of the mask' (Cem, Stade). While several children acknowledged such difficulties, Liam was among the few participants who openly admitted breaking the rules and thereby 'disentangle … [himself] from confining structures' (Vigh, 2009, p. 419):

> In the courtyard, we never wear a mask. You don't always notice it because we play football, then there are so many of us that you can't really see. (Liam, Berlin)

Of course, the asymmetry between the children and myself, an adult interviewer and a stranger to the children, may have impeded them from disclosing disobedience openly. However, the consistency of their accounts and my observations in school suggested that their navigation did indeed rarely involve outright rebellion against the rules. On the rare occasions that participants did admit to consciously defying the rules, their secretive demeanour indeed made clear that they knew non-compliance was risky business, either regarding contagion or potential punishment. Furthermore, despite some difficulties in following the rules and their situational modification, open disobedience contradicted their risk assessment, creating tension between their desire for personal liberties and their intention to protect others from contracting Corona.

Viral uncertainties: timing, locating, trusting

Given the ostensible certainty with which the children explained the pandemic or assessed and navigated the related risks in the first place, the uncertainties some children observed drew my attention. One hesitation in their risk assessment was rooted in an apparent uncertainty about time. This was partly due to the concept of age remaining rather vague to some children. While the participants generally agreed on 'the elderly' being at risk, some considered everyone over 30 years old to be elderly and, hence, at

risk, while others specified their grandparents to be elderly, but not their parents. Furthermore, time was decisive for the Corona test's validity:

> 'You can only tell after 13 days if you have Corona. With a test. And that's why it might be of no use to do a test; you'd have to do another test 13 days later'. (Mathilda, Berlin)

Another ambiguity concerned place. As locating an invisible virus was difficult, some felt that 'this virus is almost everywhere we go' (Amal, Stade) and that 'the air is a little too dangerous' (Meera, Stade). While these examples demonstrate that the children captured scientific concepts like incubation, mutation and aerosols, the ambiguities and generalisations within their explanations challenged their initially unequivocal risk assessment. In other words, the children's scientific Corona knowledge did not always coincide with feelings of safety or risk, particularly with regard to the unstable character of the pandemic environment, where evolving knowledge about the virus constantly called into question what had previously been known with supposed certainty (Vigh, 2009).

As a result of these 'social and cultural processes' (Lupton, 2013b, p. 644) that constitute negotiating risk, trust emerged as a crucial element in the risk assessment of uncertainties. Saada, for example, based her risk assessment on honesty and, in turn, found dishonest people risky:

> For example, now a child comes and says, 'I washed hands' or 'I stayed [with my] mask all the time', but he sometimes lies or something. (Saada, Stade)

While she trusted her family and friends to obey the rules, those she distrusted became risky bodies due to uncertainties about their previous behaviour and, thus, were to be avoided. Similarly, Fynn argued that he worried most about contracting Corona when encountering unfamiliar adolescents on the playground:

> **F:** . . . when I go to the playground or to the football field, there are . . . a few people where I think I should pay a bit more attention.
> **CA (Carolin Albers)**:Why with them?
> **F:** Well, it's more the teenagers who have a lot of parties, and I am a little bit concerned about that . . .
> **CA:** What kind of concerns do you have?
> **F:** . . . I wonder whether they keep the rules and whether I should get so close to them.
> **CA:** . . . Do you think they might have Corona and infect you?
> **F:** Not really, but I'd rather be safe.
> (Fynn, Berlin)

Deciding that the interaction with these bodies constituted a risk, Fynn tried to avoid contact with them, thereby moving towards a position he felt was safe (Lupton, 2013b; Vigh, 2009). Conceptualising the Other as an outsider to her ingroup and thus risky (Lupton, 2013b), Yara expounded that strangers were generally riskier 'because they are strangers. And . . . I've known my friends for a long time' (Yara, Stade). However, even this credit of trust for friends became more complex when doubts about the validity of one's own judgement arose:

> **L:** So, actually, I feel quite safe [when I meet my friend] . . .
> **CA:** . . . How do you know that it's safe with your friend?

> **L:** Well, she's not sick, so of course, I don't know that, but she's not coughing; she doesn't have a runny nose.
> (Lisa, Stade)

While Lisa trusted her friend to tell the truth, she knew about the uncertainties of symptoms as a marker of contagiousness, thus questioning whether she could be entirely sure about her friend's health. This example shows how the construction of risk shifted in moments of uncertainty according to familiarity with the Other's body, yet, when designated signs of risk were observable, the children fell back on the conceptualisation of risk they had previously socially negotiated (Lupton, 2013b). This situational shifting allowed them to move from a risky to a safe position, depending on what the greater risk was at that precise moment: contagion or isolation from peers (Vigh, 2009). Notably, trust in others and the safety measures was also a decisive element in the children's perception of the safety of schools. While most children considered school to be a safe place 'because of all the security measures' (Paula, Berlin), many were torn between their desire to return to school and the risks of contagion: 'I think that [school] is a pretty big risk of infection, because many people don't stick to the rules' (Alina, Berlin). Moreover, several children expressed doubts about the self-tests' trustworthiness:

> If you try a device [the test], sometimes it's maybe broken, or it's not real, or you also don't know exactly. … it also always turns out negative if it is nothing, but maybe I have [Corona], and I don't know it. (Saada, Stade)

In brief, the children saw their ostensibly clear understanding and management of pandemic risks challenged by uncertainties. In these situations, the fluidity of the emotion-risk-assemblage became particularly visible as the children's construction of risk shifted from purely science-based to more intuitive tactics to resolve the resulting tensions (Lupton, 2013b).

Situated solutions: navigating rules, risks and uncertainties

Resolving these tensions often involved tactics that could not be explained using the same scientific logic the children had initially employed to describe the pandemic. With a stunning similarity to findings among adults in the pandemic context including health care professionals (see for example van der Molen & Brown, 2021), the children's tactics were neither purely rational nor non-rational but involved 'in-between strategies' (Zinn, 2016, p. 348) like trust. Adding a second layer of understanding to the basis of the children's risk assessment, trust was decisive for their navigation tactics, shaping decisions about rule adherence or defiance. For example, Saada explained how her distrust of others made their claim to adhere to the rules invalid, thus making the other person unsafe to meet. As a result, she felt it was safer not to meet dishonest people anymore. Similarly, Alina described feeling at risk when she encountered fellow students gathering in a group larger than she considered safe. As she disliked and distrusted this group anyhow, she crossed to the other side of the street to protect herself from having to come too close. However, she admitted that:

> If it had been my friends, I don't think I would have really done that because then they would think I was angry at them. (Alina, Berlin)

In other words, social desirability and interaction norms would have stood in the way of a choice she considered safer, leading her to shift the focus of her risk assessment towards social exclusion and adjust her (imagined) navigation tactic accordingly. In turn, she described how she and her two 'Corona friends' (Alina, Berlin) had created a safe space within a group they trusted, meeting exclusively with the respective other two girls indoors and without masks. Here, her construction of risk was in line with her conduct as she considered her interaction with these bodies safe. In contrast to Alina's inner conflict between staying safe and offending her peers, Sinan opted for a protective measure without having to refrain from social activities:

> [My] friend, had a cough all the time . . . I was a bit scared, and so I put on a mask . . . . Then, well, I told him to put it on, too, before we would get infected, and then we continued playing normally. (Sinan, Stade)

In general, Sinan was a remarkably cautious child when meeting peers. As he was never sure about who might pass Corona to him and his family, he decided to wear a mask in the playground even despite his negative self-test 'because otherwise . . . there are friends who talk to us' (Sinan, Stade), potentially posing a contagion risk. For Sinan, the interaction with symptomatic or uncertain bodies constituted a risk, which he navigated by using a protective material (the mask) to interact with a risky body (his friend) and still feel safe – or in other words, move towards a safer, position (Lupton, 2013b; Vigh, 2009). Like Sinan, several children felt ambivalent about the tests as a protective material, leading them to remain precautious after receiving a negative result:

> I actually stick to the rules all the time. Even when I've done a test with a doctor . . . Firstly because you have to, and secondly, because there is always the danger that the test went wrong. (Bela, Berlin)

Notably, despite these doubts, the tests created a sense of safety about activities that Bela otherwise perceived to be risky, such as visiting his grandparents: 'I knew . . . that nothing could happen because we did a test at the beginning, and it was negative' (Bela, Berlin).

This illustrates how, besides trustworthiness being decisive for the tests' validity, the impressive power the children ascribed to them had almost magical qualities. This process was not exclusive to the antigen tests, but, for instance, also included avoiding risky air in situations when measures like distance or masks were not feasible:

> **A:** Well, I always think it's weird when you're walking along the street, and then someone comes along, they don't have masks on, and they're walking next to each other, so there's hardly any space. And then they don't make any room, which means that I have to squeeze past without keeping the distance, and that's not so nice.
> **CA:** . . . And what do you do then?
> **A:** Um, well, I just keep walking? . . . and sometimes I hold my breath.
> (Alina, Berlin)

For others, protective qualities magically extended to specific spaces or materials. Elif, for instance, suggested staying close to parents to feel protected from contagious risks in crowded situations. Others considered materials safe that belonged to and stayed at the school, projecting the safety they associated with the institution to the materials that belonged to it. For example, Saada reasoned that papers belonging to the school were

surely not contagious as they remained in the facility and no one touched them, in contrast to materials belonging to her peers, which were forbidden to exchange since they took them home. While this argument was in line with the children's knowledge of the virus and its spread according to news reports and scientific standards, Saada and Meera concluded that exchanging notes written on school paper must be safe from an infectious disease perspective. Instead, they argued that prohibiting them being passed around in class was unrelated to the pandemic and rather merely a general school requirement to ensure the children would pay attention. Since, in Saada's and Meera's understanding, exchanging notes thus did not put anyone else at risk, they considered breaking this rule only a minor infringement. A similar example was Sinan's explanation of why he felt safe meeting his friends at the ice cream van despite his usual caution. He reasoned that the potentially contagious dispersal of saliva could only occur while talking, but while his friend 'eats his ice cream, how should he speak to me?' (Sinan, Stade). To protect themselves, they would only talk after finishing their ice cream and putting their masks back on. In contrast to his previous account of how wearing a mask under all circumstances granted him security, this example renders the fluidity and situational adaptability of Sinan's risk construction visible (Lupton, 2013b).

As these examples illustrate, the children's protective practices had a situational character as they combined and alternated between adherence, defiance and modification of the measures depending on the context. At the same time, they were always able to designate the risks they weighed against each other, constantly balancing infectious and social priorities. Likewise, the children combined rational and non-rational argumentations in their risk assessment (Zinn, 2008). In terms of Lupton's (2013b) emotion – risk assemblage, emotional and rational approaches to risk assessment in the children's weighting of risks and pleasure, responsibility and insouciance, influenced one another; they were not separate but entwined.

Discussion

In this study my intention was to include the understudied voices of children from socially disadvantaged urban areas in Germany in the pandemic discourse, given that their positionality puts them in a particular dilemma between avoiding high risks of infection and dealing with more limited opportunities to participate remotely in social and educational activities. In researching two groups from similar contexts, yet of different compositions, the study provides a rare opportunity to compare the risk understandings and practices of children from families with migration history and low socio-economic status to non-migrant middle-class families living in socially disadvantaged urban areas. Surprisingly, perhaps, children from both groups showed barely any differences in the complexity of their understanding and their navigational tactics. Here, the study findings represent a novel perspective on the interplay of risk, health-protective behaviour and children's positionality in society, within the specific context of the COVID-19 pandemic and more generally, in a context of social volatility, in which even adults could not provide knowledge with certainty.

Limitations in the data sampling because of the small number of participants and a selection bias due to the access to the families involved limit the possibilities for generalising these findings beyond the sample. Further restrictions on data collection included the lack of more precise information on the children's socio-economic

background as well as the primarily oral account and limited observational data (Green & Thorogood, 2018).

Nevertheless, by showing how children from different backgrounds living in socially disadvantaged urban areas weighed various pandemic risks, handled uncertainties and took responsibility for the protection of others and themselves, this study significantly contributes to the broader literature on children's risk management in an environment of rapid and perpetual change.

As the findings of this study indicate, the children presented an astoundingly complex understanding of Corona, which propelled their risk assessment and navigation tactics. To obtain this knowledge, they relied on access to information which depended on factors like their parents' educational status, language barriers and digital resources. However, despite differences in the sophistication of their accounts corresponding to the presumed socio-economic and linguistic backgrounds of the two participant groups, all children described pathophysiological mechanisms of infection and related these to the necessity of COVID-19 measures. The participants' accurate understanding and claims of high compliance with protective measures being associated with feeling safe resemble findings among adults (Abeysinghe et al., 2022) and likely reflect that the children derived their knowledge from the media as well as adults, who in turn were reproducing the media discourse. Correspondingly, the children's accounts contained a complex combination of intuitive and biomedical knowledge, which they employed as the basis of their risk assessment, similar to adults' and healthcare professionals' management of pandemic risks involving rational and non-rational tactics (see for example van der Molen & Brown, 2021). These findings can be explained by the disease explanatory model proposed by Sigelman et al. (1996) in the context of the flu, in which the authors claim that children's conceptualisation of disease is decisively shaped by the information they receive rather than their age. Similar to the influence of health interventions on children's understanding of disease described by Onyango-Ouma et al. (2004), the currently ubiquitous pandemic media education provides children with this kind of information and shapes their disease knowledge.

Notably, however, in instances of uncertainty and ambiguity, the children based their decisions no longer on purely 'rational' knowledge but involved 'in-between strategies' (Zinn, 2016, p. 348). In contrast to Slovic et al. (2007) affect heuristic as a non-rational strategy to assess risk, Zinn (2016) distinguishes these 'in-between strategies' (p.348) from rational and non-rational approaches. The former includes, for instance, emotion, intuition and trust, all of which were salient in the children's accounts. While Slovic et al. (2007) model is problematic when the actors lack sufficient past experiences to draw on, Zinn's (2016) strategies are crucial precisely when decisions are based on limited information or time. In line with this argument, the participants in the present study tended to assess risk based on such 'in-between strategies' (Zinn, 2016, p. 348), for example, trust, when uncertainties arose in the form of conflicting or limited knowledge. Put differently, the children associated the unfamiliar or 'the Other' (Lupton, 2013b, p. 639) with risk, whereas they trusted the familiar and associated it with safety.

The children's embodied knowledge made this relationship between familiarity and the corresponding notion of safety particularly clear, exposing the body as a locus of social norms. In the pandemic context, the children identified the symptom-free body as a form of embodiment representing safety, whereas symptoms indicated risk. Put differently, by substantiating contagion risks with 'Otherness' (Lupton, 2013b, p. 639), the children identified a 'norm of accepted embodiment' (Lupton, 2013b, p. 640), which was

decisive for the distinction between safety and risk. Consequently, the children avoided symptomatic, or *deviant*, bodies for protective reasons. Given the children's high sense of responsibility for others, this tactic served to protect not only themselves but also others in their family and social circles. Thus, by maintaining a clear border between safety and risk and by avoiding risky bodies, the children sought to protect the group and its boundaries (Alaszewski, 2015; Douglas, 1966).

In moments of ambiguity, the children developed tactics that allowed them to refrain from openly contravening the group's norms and thereby put others at risk. These tactics included for instance specific rituals which, similar to findings by van der Molen and Brown (2021) among healthcare professionals, often revolved around dirt and hygiene and were imbued with magical protective qualities beyond their scientifically proven benefit (Douglas, 1966). An important ritual with remarkable powers to allow otherwise risky behaviour related to Corona self-tests. Thus, activities like meeting vulnerable grandparents magically became safe after receiving a negative Corona test result. Similar to the role of HIV self-tests that Lupton et al. (1995) investigated, the Corona antigen tests served to control a potentially dangerous future, thereby *pro*tecting those who had taken them instead of merely *de*tecting a COVID-19 infection.

Subsequently, the children's risk assessments did not merely involve abstract notions but directly implicated their health-protective behaviours, which in turn were also influenced by their positionality within social settings and networks. On the one hand, their cognitive understanding of the virus' adaptation in terms of mutation and their acquaintance with the constantly contested and revised measures meant that they frequently had to adjust their risk assessment and risk management to 'move towards better positions' (Vigh, 2009, p. 419). On the other hand, their positionality as children impacted their options to do so as they were 'constantly adjusting tactics in response to the social . . . opportunities and constraints' (Utas, 2005, p. 426). In other words, while their knowledge and evaluation influenced what they considered a good decision to protect themselves and others, their agency was situated and constrained. At the same time, the participants considered themselves as being in agentic positions, less threatened by the virus than other more vulnerable groups for whose protection they felt responsible. Notably, this self-perception of being accountable for the protection of adults rather than being at risk and in need of protection by adults contradicts a common modern notion of children as vulnerable bodies (Lupton, 2013a). Having observed a similarly reversed responsibility for adult at-risk groups among young girls in Russia, Zdravomyslova and Onegina (2020) argue that the children's awareness of and adherence to rules reflects this notion of being responsible for others.

Accordingly, the children rarely solved conflicting risk assessments by disobeying the rules entirely, but instead shifted between rule adherence and defiance depending on the context and, often carefully, weighing different risks. As Fefferman et al. (2022) argue, a profound understanding of the causality between pathogen, transmission and disease like the children in this study demonstrated was decisive for their engagement with protective practices. Indeed, following their knowledge and notion of responsibility for others, the children generally agreed that complying with the COVID-19 measures was crucial to protect others and avoid conflicts. Accordingly, only a few participants admitted to disobeying the rules openly in the presence of adults. However, given that they considered themselves and other children at low risk of severe illness, the children seemed to feel more comfortable breaking rules with peers, particularly when they trusted these other children. Nonetheless, when disobeying the rules with peers, they

still worried about passing Corona to their families afterwards, so complete disobedience remained a rare tactic.

More frequently, the children modified the rules in ways that still seemed safe according to the logic of their Corona knowledge while allowing them to navigate towards positions with increased liberties. Such tactics included, for instance, identifying Corona friends, whom they considered trustworthy enough to interact with while refraining from any Corona precautions. In turn, when the children's efforts to achieve more liberties put those around them at risk, rule adaptations served to dissolve the resulting predicament. In this way, washing hands or wearing a face mask in specific situations produced a notion or feeling of safety that allowed the children to still engage in activities that were important to them. This in-between navigation epitomises how the children balanced the seemingly mutually exclusive concepts of freedom and safety to improve their position (Bauman, 2006; Vigh, 2009; Zdravomyslova & Onegina, 2020). In other words, the children constantly navigated between being 'at risk and a risk' (Lindegaard, 2009, p. 20), and, by shifting between adherence and defiance of the rules, aimed to avoid both. The fluidity of their risk assessment allowed them to adjust to an environment of constant change and thereby to seek better, that is safer, positions, weighing up risks of contagion and restricted freedom (Lupton, 2013b; Vigh, 2009).

Conclusion

In this article, I have offered a novel stance on the assessment and navigation of contagion risks among children living in socially disadvantaged urban areas in Germany in the context of the COVID-19 pandemic. I have demonstrated that the children drew upon combined intuitive and complex scientific explanations, ranging from biomedical concepts to war allegories. Furthermore, I have shown that their risk assessment was shaped by interactions with materials, places and bodies, which they categorised as safe and risky, attributing magical powers to mitigate risks of exposure to some of these materials. According to their disease explanatory model, rule adherence was the tactic the children primarily chose to protect others and avoid conflicts with adults. However, this ostensibly unambiguous risk management was challenged when the children experienced uncertainties caused by conflicting knowledge or desires. In these incidences, the children negotiated risk more complexly through social bonds and cultural practices, employing 'in-between strategies' (Zinn, 2016, p. 348), such as trust in others or in materials. Navigating these ambiguities further involved context-bound shifting between adherence and defiance as well as rule modification and ritualised practices, allowing the children to balance social and infection-related priorities within the constantly changing landscape of pandemic rules and risks.

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