UNVEILING THE UNSEEN STRUGGLE: UNDERPANTS SHOPPING FOR CHILDREN WITH SENSORY HYPERREACTIVITY

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ABSTRACT

Many people, specifically children, experience sensory hyperreactivity. This entails an oversensitivity to sensory input, such as tactile sensitivity. It is prone to coincide with developmental disorders such as Autism Spectrum Disorder (ASD) and attentiondeficit/hyperactivity disorder (ADHD). Often, clothing, especially underwear, as the first layer next to the skin, irritates and can trigger fight-or-flight reactions such as tantrums and meltdowns. This places a lot of pressure on a parent to select the most appropriate items when shopping for clothing. The focus of this study was specifically on the perceived risks parents associate with purchasing underpants. The study was qualitative, and eleven parents of children with sensory hyperreactivity were individually interviewed. The parents' difficulties were categorised into four types of perceived risk: functional, time and effort, financial, and social risk. This article presents recommendations for retailers to enable inclusive retailing and to sensitise retailers to be more cognisant of vulnerable consumers.

KEYWORDS

consumer decision-making, clothing retailing, perceived risk, sensory hyperreactivity, underpants, underwear

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INTRODUCTION

Many people live with sensory hyperreactivity, where a person experiences a heightened response to sensory stimuli (like touch) (Ohanneson et al. 2023). This can profoundly influence the day-to-day activities of children,

leading to distractibility, lack of focus, and academic underachievement (Ayres Robbins 2005). When confronted with excessive/irritating sensory stimuli, the brain initiates a fight-or-flight reaction, potentially resulting in irritability, social withdrawal, and episodes of emotional distress (Ohanneson et al. 2023). Sensory hyperreactivity is more prevalent among children diagnosed with conditions such as attention-deficit/ hyperactivity disorder (ADHD) and Autism Spectrum Disorder (ASD) but can also occur in typically developing children (Salkic et al. 2022). In the US, it is estimated that 16% of all sensory processing children face integration challenges (Ohanneson et al. 2023). Of the population of children with ASD, it is estimated that 74%-94% experience sensory processing and integration challenges (Chen et al. 2024; Kirby et al. 2022). Sensory challenges therefore affect many children and, in terms of retail, is indeed a market segment to be cognisant of.

Clothing may assume a significant role in intensifying sensory issues due to continuous contact with the skin, contributing to sensory overload (Datta & Seal 2022). People struggling with sensory hyperreactivity often find underwear uncomfortable since it is the first layer of clothing next to the skin (Datta & Seal 2022). It is, therefore, essential to purchase comfortable underwear to minimise sensory irritation as much as possible. Parents of children with sensory-related difficulties are usually under a lot of pressure when purchasing clothing for their children (Kabel et al. 2016). They must constantly evaluate options through their child's eyes to gauge whether the clothing item will be rejected (Kabel et al. 2016). Thus, these parents feel significant pressure to purchase the correct underwear. Therefore, this study aimed to explore the perceived experienced by parents when underwear shopping for their children with sensory hyperreactivity.

JUSTIFICATION OF THE STUDY

study academic This makes an and managerial contribution. To the authors' knowledge, no research exists on perceived risks of underwear shopping for children with sensory-related difficulties. In addition, this study provides valuable insight for clothing retailers. If a retailer understands the perceived risks that act as barriers to purchasing behaviour, the retailer can adapt its offering and retail experience to decrease the perceived risk (Schiffman & Wisenblit 2019). This may entice repurchases and can even result in consumer loyalty with monetary implications.

LITERATURE REVIEW

Sensory hyperreactivity

The brain receives and organises responses from the sensory receptors in order to respond to the sensory stimulus appropriately (Ayres & Robbins 2005). Sometimes, the brain cannot properly analyse, filter, and organise sensory input, resulting in difficulties in sensory integration (Ayres & Robbins 2005). A person can either be under-responsive towards sensory stimuli (referred to as hypo-reactivity), or hyper-responsive (Ayres & Tickle 1980), also referred to as hyper- or overreactivity. Children with sensory hyperreactivity experience sensory sensations more intensely, and when overstimulated, they typically respond with fight-or-flight reactions such as outbursts, crying and withdrawal (Ohanneson et al. 2023). Many children with sensory hyperreactivity experience an atypical response to being touched, wearing certain clothing items, listening to loud music and may even avoid bright or flashing lights (Kyriacou et al. 2023). It is widely recognised that clothing properties can instigate sensory hyperreactivity (Asmika et al. 2018; Roy et al. 2018) that can act as a barrier to the

participation of the wearer with sensory hyperreactivity (Kabel et al. 2016), in age-appropriate activities. This ultimately influences the wearer's well-being (Kabel et al. 2016).

Underwear

Underwear is defined as clothing items that are worn close to the skin underneath outer layers of clothing to protect the body from friction and provide concealment. Underwear consists of underpants, vests, socks and bras (Datta & Seal 2022). However, this study focused solely on essential undergarments for both girls and boys, specifically underpants. It is important to note that the term "underpants" has a different meaning in the United States than in the United Kingdom. In the United female underpants States, "panties" (Datta & Seal 2022). For consistency within this study, the term "underpants" will refer to underpants for both genders.

Perceived risk

Bauer (1960) first introduced the concept of perceived risk and defined it as a subjective consumer behaviour related to the amount of uncertainty and the consequences consumer associates with a purchasing action. A perceived risk consists of two components: uncertainty (a possibility of unfavourable outcomes) and consequences (situations occurring as a result of a wrong (Mathur & Gangwani 2021). purchase) Although the child is the end consumer who will wear the product, the parent is responsible for purchasing the underpants. Therefore, the parent will experience perceived risks. Perceived risk has received much attention in consumer research, but inconsistencies occur with categorising and naming the types of perceived risk. Perceived risk can be classified into six main types: physical/safety risk, functional/performance risk, time and effort risk, financial/monetary risk, social risk,

and psychological risk (Hoyer *et al.* 2013; Solomon & Rabolt 2004).

Physical/safety risk refers to the potential harm that purchasing and consuming a product might pose to the consumer (Hoyer et al. 2013). In terms of clothing, a safety risk can be, for example, the flammability of certain textiles (Solomon & Rabolt 2004). Functional/performance risk (from here on, referred to as functional risk) occurs when the product does not perform according to the consumer's expectations, leading dissatisfaction (Schiffman & Wisenblit 2019). Functional risk is inherent to all products in every industry, and when the perceived risk functional is high, consumers automatically become less willing to purchase the product (Chen & Huang 2017). In addition, when the product cannot be accurately judged or evaluated, the perceived functional risk often increases (Chen & Huang 2017). Parents of children with sensory-related issues often cannot take their children with them to shop for clothing because they may not react well to the retail environment (Kabel et al. 2016). Since this influences the evaluation of alternatives, it likely contributes to increased functional risk. Time and effort risk is the uncertainty related to the time spent purchasing the item (Schiffman & Wisenblit 2019). This type of risk might be critical since searching for the best clothing product can be highly time-consuming (Kabel et al. 2016). Financial risk occurs when consumers fear that a purchase will not be worth the money spent (Schiffman & Wisenblit 2019). A popular way to mitigate financial risk is by offering better exchange/return policies (Mathur & Gangwani 2021). However, underwear, specifically underpants, often cannot be exchanged due to hygiene implications.

When the consumer is concerned that a purchase will not receive approval from the consumer's friends or family, social risk is experienced (Jacoby & Kaplan 1972). Apparel

products face social risks as they are seen as an extension of the self and carry a sense of symbolism (Mathur & Gangwani 2021). Although underpants are not visible to other people, the effect of the product might manifest in behaviour that could pose a social risk to the parent. For example, when a child feels agitated or stressed by uncomfortable underpants, they may react negatively towards others or themselves. Their reactions may include aggressive outbursts such as screaming, crying or being unable to sit still, and even self-injurious actions such as throwing themselves on the floor or hitting themselves (Kabel et al. 2016). This situation can cause the child and parent discomfort in social gatherings and lead to them avoiding social opportunities (Kabel et al. 2016). Psychological risk is very similar to social risk in that both deal with how society may view the self; however, it is specifically related to the consumer's ego (Schiffman & Wisenblit 2019).

The objectives of this study were, therefore, to explore the following perceived risks experienced by parents when underwear shopping for their children with sensory hyperreactivity:

(1) functional risk, (2) time and effort risk, (3) financial risk, (4) social risk.

METHODOLOGY

Research design

This study took a qualitative research approach utilising face-to-face, one-on-one interviews. It aimed to better understand the problem by relying as much as possible on the participants' views, which coincides with the constructivist philosophical worldview (Creswell & Creswell 2023).

Sampling

The unit of analysis was South African parents/guardians of children with sensory hyperreactivity struggling specifically with underpants. The participants needed to reside in the Pretoria region (due to time and geographical constraints) and have a child with sensory hyperreactivity between the ages of three and thirteen at the time of data collection. Non-probability sampling methods were used, specifically purposive sampling quota sampling. An invitation participate in the study was shared with occupational therapists in the area distribute to their clients who fit the criteria. This invitation was also shared on online support groups and social media pages. The invitation had a brief description of the research study, what the participants could expect when participating, and the contact details of the researcher and the research supervisor. With the online distribution of the invitation, a Google Forms link was included where individuals could disclose their contact details for the researcher to make an appointment. Quota sampling was, to some extent, also utilised to ensure that the number of parents of boys and girls was almost equally represented (Kumar 2019). Data collection continued until data saturation occurred, resulting in a final sample of 11 Adhering participants. to the quota, participants included five parents of boys and six parents of girls (Table 1).

Description of participants and their children

As indicated in Table 1, the participants were all female and mothers of children with sensory hyperreactivity. No fathers responded to the invitation. This is likely because mothers are more likely to take the role of primary caregiver (Nomaguchi & Milkie 2017). It is essential to understand the profile of the

participants' children since it provides context to the results. Participants with both male and female children were invited to participate, with careful attention to maintaining a genderbalanced representation; six had female children, and five had male children. The study targeted participants with children with sensory overreactivity between the ages of three and thirteen, as these are the ages where symptoms of sensory overreactivity present the most intensely (Güçlü et al. 2007). This requirement was clearly stated in the invitation that was sent out. There was no specific quota for the ages of the participants' children; they only had to fall within the stated age parameters. The final sample of this study included 11 parents with children 6-13 years

The participant's children experienced several conditions, as reported by the participants themselves. Seven children had been diagnosed with Sensory Integration Disorder by their occupational therapist and three children were described as being sensory or tactile sensitive. Six children were diagnosed with ASD, and two children with ADHD. One child was diagnosed with Hypermobility syndrome, which is a heritable condition in which the individual experiences extremely flexible joints, hyperextensibility of the skin, and fragile body tissues that can cause the individual pain (Snowdon & Dadla 2023).

Data collection

The interviews took place at a location deemed appropriate by the individual participants. These locations included their personal residence, coffee shops, and even afterschool activities while the parents waited for their children. Depending on the amount of information the participants provided, the interviews took between 20 and 40 minutes. To provide the participants with ample time to answer the set questions, the researcher explained that the interview would take an hour of their time. Before the interviews commenced, the researcher explained to the participants that their participation voluntary and that they had the right to stop the interview at any time. It was also explained that there was no pressure to answer the questions in a certain way, as there were no right or wrong answers. The consent form also disclosed this information, which had to be signed beforehand. All participants agreed to the recording of the The collection interviews. data only commenced after the ethical clearance was obtained.

Data analysis

The interview recordings were transcribed using the Otter.Al application. The first author checked and corrected the transcriptions by

TABLE 1: DESCRIPTION OF PARTICIPANTS AND THEIR CHILDREN

Р	Gender of participant	Gender of child	Age of child at time of interview	Conditions of the child as reported by the caregiver
1	Female	Male	9	SPD
2	Female	Female	9	SPD
3	Female	Male	6	ASD, ADHD, SPD
4	Female	Female	9	ASD, ADHD, SPD
5	Female	Female	13	ASD, SPD
6	Female	Female	6	Tactile Sensitive
7	Female	Female	8	Hypermobility Syndrome
8	Female	Female	10	Sensory Sensitive
9	Female	Male	10	ASD, Sensory Sensitive
10	Female	Male	6	ASD, SPD
11	Female	Male	6	ASD, SPD

Note: SPD = Sensory Processing Disorder; ADHD = Attention Deficit Hyperactivity Disorder; ASD = Autistic Spectrum Disorder

reading through them while listening to the recordings. This process was done shortly after the interview, as the researcher could still clearly recall the information. The data analysis thereafter continued using qualitative analysis software (Atlas.ti). Two researchers coded the data: the interviewer (first author) and a second research team member (second author), who had ample experience in qualitative data analysis. An initial code book with the types of perceived risks as a priori codes was used. During the data analysis, new codes emerged. The coders periodically re-evaluated the codebook and debated the codes until an agreement was reached and adjusted accordingly. This enhanced the intercoder reliability (Cofie et al. 2022).

Trustworthiness

Since this qualitative study was conducted with a constructivist paradigm, the criteria for trustworthiness, developed by Lincoln and Guba (1986), were critical throughout. Continuous meetings of the research team during coding and data analysis, along with purposive sampling, contributed to credibility (Niewenhuis 2019). During data analysis, careful referencing of the correct participant and the line number assigned by Atlas.ti within the transcription enhanced the audit trail, contributing to confirmability (Niewenhuis 2019). To further enhance confirmability, the researchers aimed to remain free from bias and strived to rely solely on the participants' views (Lincoln & Guba 1986). Regarding transferability, the researchers took care that the participants were typical of the phenomenon being studied, and during data analysis and write-up they emphasised the context of the participants' responses, referred to as thick descriptions (Niewenhuis 2019). The research design and its implementation serve as an indication of dependability (Niewenhuis 2019).

FINDINGS

During the data analysis, it was clear that parents experience functional, time and effort, financial, and social risks when purchasing underwear for children with sensory hyperreactivity. Although the coders were cognisant of additional types of perceived risk as described in the literature (Kim et al. 2021; Mathur & Gangwani 2021), such as physical and aesthetic risks, these risks did not come to the fore in the data.

Perceived functional risk

Of the four perceived risks participants discussed, functional risk was the most prominent and primarily associated with product evaluation and return. In some cases, the packaging was the root of the increased perceived risk. It was discussed that the packaging often prohibits the consumer from touching the fabric. Since the underpants are the first layer next to the skin, and the fabric hand is one of the determining factors in the decision-making process, tactile evaluation is crucial. Participants explained:

"Well, it's trial and error. Because like with [Retailer E], for example, they have it on these hangers with the pegs. So, it's open so we can walk through the shelves and feel it. But if it's closed in a packet and you can't open the plastic, then it's trial and error." (P8:265)

"[if the underpants are in a closed pack] I'm just going to waste more money because you can't fit it and she likes to feel it with me." (P6:310)

Furthermore, the packaging discourages the fitting of underpants. While the underpants are still on display, they include elements such as price tags, security tags, and some underpants even have a plastic protective sticker placed on the gusset of the underpants

for hygiene purposes. All these elements contribute to discomfort and can trigger adverse reactions. This can defeat the purpose of fitting the underpants to evaluate comfort. Participants shared their experiences:

"If we fit clothes, I need to tell her: remember, there's a label but as soon as we get home, we can cut it out, otherwise she completely freaks and would not wear it." (P4:244)

"Knowing that she would not fit it on if it's got the plastic [the protective hygiene sticker on the gusset]. So you can't pull it off. So yeah, she won't fit it. So, we'll just buy the packs and eliminate the ones at home and pass it on to the cousin. That's our system." (P6:313-322)

The problem with underwear specifically is that most of the time it cannot be returned. If it is impossible to fit it and not possible to return it, it places a lot of risk and stress on the parent. Participants explained:

"I kept on buying different ones, different sizes and he refused to wear any of them so they are just lying around and I haven't even tried returning them because I know it can be difficult so I stopped trying." (P9:220)

"[The problem is] you can't fit a panty, and you can't bring it back." (P2:451)

Time and effort risk

Time and effort risk were also very prominent. Most participants mentioned that shopping for underpants for their children can become time consuming, especially when a retailer does not carry the correct size of the desired underpants and the parents are forced to shop around. Even though time and effort risk is common in clothing purchasing (Solomon &

Rabolt 2004) and missing sizes frustrates consumers in general (Boardman & Mccormick 2022), these frustrations are elevated if suitable, comfortable options are limited. Several participants described their struggles:

"I think just to get the time to go to shops and see which briefs will [work] or boxers will work for him...you need to find time to go and look for [it] ..." (P11:271)

"I'm a single mom. So, I'm really, really limited with time and stuff. Like 'yes, this, let's go!" (P3:316)

"It is agony because you look [for] and you find [underpants], and you look and you can't find [underpants], and then you don't find the [right] size, and then you go to the next store and they don't have the size or... It's just a never-ending agony operation so if you find and you want to get two packs [there's] always only one pack of the same size left." (P7:193)

Some participants shared their solution to reduce time and effort risk. If parents are aware of the specific type of undergarment their child finds comfortable and know the retailer where it is available, they prefer to purchase it online. According to them, buying online enables them to purchase the correct size in less time than they would spend searching store-by-store.

"And thank goodness for COVID in a sense because it made me realise that I can buy online. Because most of the times some of his sizes are not there [in store] and then I actually get quite nervous, because 'where am I gonna find his size?' and now I buy online where I can just find the [right] size and they just deliver now." (P1:26)

"Or like the [Retailer E] ones [underpants] because they never have stock in store. [They only] stock the higher sizes. Yes, yeah, I am constantly online." (P7:205)

Perceived financial risk

Although underpants are inexpensive compared to clothing items such as jackets and coats, perceived financial risk was also highlighted. During the interviews, many participants mentioned that they experienced purchasing underpants for a child with sensory hyperreactivity as expensive. The biggest problem most participants mentioned was that they spent a lot of money on purchasing multiple types of underpants. They then end up with a large selection of underpants, while their child only wears a select few due to the exchange policies of retailers. Participants explained:

"Yeah, [I'm] not even gonna lie. Definitely. We end up buying six packs from which she will only wear two and out of the two packs she'll pick two [individual undergarments] for her. That's really quite expensive." (P6:286)

"...because I kept on buying different ones, different sizes and he refused to wear any of them so they are just lying around and I haven't even tried returning them because I know it can be difficult so I stopped trying [to find the perfect underpants]. But I guess for parents that keeps on trying it must be very expensive." (P9:220)

"Yeah, luckily we have friends of smaller children [to whom we can give the extra underpants], but still it's quite expensive." (P4:97)

One participant shared her strategy to reduce financial risk. She explained that if she finds

underpants that work for her child, she will return to that store repeatedly.

"And the thing with underpants is that you can't try it on in the shop...So yeah, it is challenging, but at least I found that shop now which I know is... he wears that underpants. So [Retailer I] is the only place where I buy. I don't say that other places don't have maybe better underpants. I just haven't tried it. Yeah. because I don't want to waste more money. I'm sticking to what he wears know. But it vou is challenging." (P1:244)

Perceived social risk

Although underpants are not worn conspicuously, the sensory discomfort can still present social risk, as highlighted by several participants. For the first example, it must be remembered that small children sometimes need assistance with actions such as toileting and dressing. Teachers and assistants often assist children with these actions at schools and day-care centres. In addition, children with sensory hyperreactivity prefer worn-in clothes that have undergone a few laundry cycles (Jordaan et al. 2024). Older underwear is thus more comfortable. One participant explained that she feels ashamed that other people need to see the state of her child's underpants.

"She will take one of the torn ones out of the cupboard because that's the comfortable ones that she knows are the comfortable ones even if they are a little bit ripped. She will go back to those that she knows and then they look a little skiffy. Looks like I'm a bad mother." (P7:175)

Other participants also shared their socially awkward experiences. It was explained that in severe cases, the child would immediately take the underpants off, regardless of where they were and who was present. The participants explained that they would feel extremely concerned about their child and try to rectify the situation as soon as possible:

"He'll take it [his underpants] off. He takes it off. He doesn't care where he is. Who's watching, those days it's like [he] sort of leaves it [the underpants] there and he keeps walking." (P3:370)

"He will take it [his underpants] off, you will find him walking around in his birth suit because it's irritating him. And there's still no concept of what is appropriate and not appropriate. So you will be outside and 'it's bothering me' then he will take it off." (P11:310)

The researchers could gauge that the parents are constantly wary of the social response towards their children. They know that the public may not have any context of the situation and may react negatively and avoid them and their child. One participant mentioned that it is challenging to navigate these situations where an innocent act may not be perceived as innocent by outside individuals:

"He will become fidgety, he, you know, his hand will be in and then I will say take out your hand and then he will say but it's irritating me. And then it's sort of like okay I know it is irritating you but I mean, for other people, it's disturbing for a boy sitting with his hand in front of the pants." (P11:316)

One participant with a child with ASD shared how shopping often results in her child having meltdowns. These meltdowns would put her in a difficult situation as the surrounding individuals may not always understand what is happening.

"I do try and make him used to people and shopping centres. And it's just really busy. It's very overwhelming. ...and then he falls to the floor, wherever you're standing. And it's just the meltdowns. Oh, my heart breaks every time. So, we try and avoid it. If it's a weekday and it's like today during the day, I will take him with me because everyone's working." (P3:394-400)

DISCUSSION

The perceived risks experienced by parents that shop for underpants for their children with hyperreactivity sensory have been categorised into four types of perceived risk: functional, time and effort, financial, and social risk. It has been well described that retailers can, to a certain extent, manage the amount of risk the consumer experiences (Kim et al. 2021, Schiffman & Wisenblit 2019). When taking a step back to consider the risks described in this study, it becomes apparent that the origin of many of the risks experienced stems from the product evaluation step of the consumer decisionmaking process. In many cases, the safety and security measures that retailers have in place may act as barriers to consumers (Bonfanti 2016). The packaging of the underpants creates difficulties. If it is not possible to open the packaging to feel or try on the underpants, consumers cannot fully assess whether the underpants would be suitable. The findings of this study align with current research related to clothing and perceived risks; the inability to touch the fabric and fit the clothes are the main barriers in clothing retail (Kim et al. 2021). Additionally, the security tags, price tags and hygiene stickers prevent the child from evaluating the comfort of the underpants. Since many retailers do not allow underwear returns (Bozzi et al. 2022), the parent cannot purchase underpants and take them home in

order for the child to try them on to evaluate them when calm and relaxed in their familiar environment.

The findings of this study, seem to suggest a link between perceived functional risk and perceived time and effort, financial, and social risks. Searching for and identifying the most suitable underpants is a difficult and timeconsuming process. When parents need to buy a selection of underpants because they are unsure of the suitability of any purchased items for their children, it has financial implications. Since retailers typically refuse to exchange and refund underpants, the parents cannot get their money back after purchasing unsuitable underwear, which further increases financial risk. The exchange policies further contribute and even pose a perceived social risk. Fitting of underpants is often not permitted by retailers. If fitting is allowed, underpants can usually only be fitted in-store. Depending on the condition of the child, such an outing may trigger challenging behaviour, such as a meltdown (Kabel et al. 2016), which could contribute to social risk.

The findings correlate with perceived risk literature, indicating that knowledge reduces uncertainty and perceived risk (Kim et al. 2021; Schiffman & Wisenblit 2019). Only once the parents have identified suitable underpants do they know what to look for and where to find it. Once they have done that, parents are able to conveniently purchase the suitable underpants online.

It is suggested that retailers rethink their packaging of underpants for children. While it is important to maintain hygiene and security standards, packaging should allow for better product evaluation by the consumer. In addition, retailers are encouraged to rethink their exchange policies for children's underwear. Furthermore, retailers can benefit by spending more time on size-curve analysis, to ensure that the correct amount per size is purchased and allocated as per store needs.

As perceived risk directly affects purchasing behaviour, underestimating these perceived risks may increase the possibility of a loss of sales (Li et al. 2020).

CONCLUSION

This study identified the perceived risks parents face when shopping for underpants for their children with sensory hyperreactivity. study provides insight into experiences of a specific group of vulnerable consumers that may be insightful to retailers and marketers. The researchers would like to encourage retailers to take note of these risks and take the necessary steps to enable a more inclusive retail experience. Combining these insights with a suitable product offering would give the retailer a lucrative competitive advantage.

Furthermore, the authors encourage research focusing on perceived risks experienced by vulnerable consumers. Future studies can focus on different product categories and a different unit of analysis, such as consumers with physical disabilities, since there is a gap in the literature (Kabel et al. 2016). A limitation of this study is that only mothers living in Pretoria participated. This may be addressed in future by including a more diverse sample of children and adults with sensory hyperreactivity. In addition, a replication of this study in other parts of South Africa, or even abroad, would give a broader perspective to this problem. Due to the qualitative research approach, the findings of this study cannot be broadly generalised.

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