INTRODUCTION

Being anesthetized is a stressful experience for children. More than 60% of all children undergoing anesthesia report anxiety, and nearly 20% experience a high degree of anxiety. The higher the level of anxiety children experience, the lower their ability to cooperate during the anesthesia induction. Children are provided with nonpharmacological interventions and pharmacological treatments to relieve their anxiety. Although only a few studies have examined why children experience anxiety, high anxiety is known to be associated with younger age, behavioral problems, previous hospital admissions, and anxious parents present at the induction. In addition, children can feel a loss of control when they are in an unknown environment and can be anxious when their parents are absent even if their anxiety is not always reduced by a parent being present.
Children have the right to be listened to regarding issues that concern them, including medical procedures. The child’s best interests must thus be considered when medical care needs to be provided. A number of studies have investigated children’s experiences from a second-person perspective (ie, by interviewing parents or healthcare professionals). There is, however, a gap in the literature where the focus is on the children’s own, unique experiences of anesthesia. Filling this gap might facilitate a greater understanding of these experiences, which is thus the goal of this study. Qualitative methodology provides the conditions for discovering how children experience the act of caring in this specific environment. By using a hermeneutic lifeworld approach, the children’s own experiences are the main focus. The lifeworld approach has been especially developed for gaining knowledge about meanings in an individual’s lifeworld and elucidates lived human experiences. More knowledge is needed about children’s feelings, thoughts, and experiences concerning anesthesia. This knowledge may contribute to improving care and help reduce the children’s anxiety. This study thus aims to explain and understand the meaning of being anesthetized as experienced by children.

2 METHODS

A qualitative lifeworld hermeneutical approach was used. Data were collected through nonparticipant video observations, field notes, and interviews in 2018.

2.1 Participants and settings

Data were collected from four hospitals in Sweden, two with a child anesthesia specialty and two with both children and adult anesthesia specialties. After approval from the heads of the operating units, the operations coordinator consecutively selected children from the elective operating list. Nurses on the operations or children’s wards provided oral and written information to the children and their parents about the study. The first author (LA) provided more oral information the day before the surgery or well in advance on the same day but prior to any premedication. If they agreed to participate, an assent was obtained from the children and written consent was obtained from the parents. The inclusion criteria were as follows: Swedish speaking; 4-13 years old; and planned minor elective surgery/procedures under general anesthesia. All children should belong to ASA class 1-2, a classification of the American Society of Anesthesiologists (https://www.asahq.org/standards-and-guidelines/asa-physical-status-classification-system). The exclusion criteria were as follows: acute surgery and surgery under local or regional anesthesia. All the children in this study were recruited in 2018, and they varied in terms of ages, gender, diagnosis, and previous experiences of anesthesia (Table 1). All the nurse anesthetists and/or anesthesiologists who participated during the anesthesia gave written informed consent. Other team members in the operating room (OR) were informed orally and could choose to remain in the OR when the child was anesthetized or just wait outside the OR during the video recording.

2.2 Data collection

Data collection was performed through nonparticipant video observations, field notes, and interviews. Forty-five children and their parents were asked to participate in this study, and 28 accepted. All the children were accompanied by one parent in accordance with the hospital’s routines and the parents and/or the children were allowed to decide which parent accompanied them into the OR. All the children and the parents met an anesthesiologist preoperatively. Data collection began with the video session, which started when the participants entered the OR and were completed when the parent(s) left the room (ie, when the anesthesia drugs rendered the children unconscious). The first author sat quietly in a corner and left the OR immediately after the parent. One child did not participate in the video session due to a double booking in the OR. The first author wrote field notes immediately after leaving the OR.

The parents and the children chose the time and place for the interviews, which were performed the same day or up to a maximum of 4 days after the surgery. The initial question to the children was “Could you please tell me about how what it was like to be anesthetized?” Children were encouraged to narrate their experiences as freely and openly as possible. The first author asked follow-up questions such as “What do you mean?” when needed and also presented a storybook to all the children and showed a picture of the OR to encourage them to describe their experiences. This kind of symbolic methodology can generate deeper and richer descriptions. Each child was asked during the interview to draw a picture of what happened in the OR and then was encouraged to talk about the drawing. Five parents declined the children’s follow-up interview.
which they were allowed to do without giving any reason. All interviews were audio-taped, and both the audiotapes and videotapes were transcribed verbatim.

2.3 | Data analysis

The analysis process started with the authors viewing the video observations, and reading the field notes and interviews several times to acquire a general sense of the entirety of the data and a preliminary understanding of it. The interpretation phase began by searching for and identifying the meanings of the data. Meaning units were then sorted and grouped for similarities and differences into themes representing the different meanings of the phenomenon. The analysis continued by searching for underlying meanings (ie, searching for meanings “between the lines” to create the tentative interpretation). The analysis was complemented by a questioning and critical approach during this phase, which continued until all data related to the aim were included. Data were then grouped into preliminary interpretations. A validation procedure was implemented prior to the next phase.10,12 The authors first ensured that the interpretations were derived from the data and did not reflect the researchers’ biases or assumptions. Secondly, the authors ensured that there could be no other meaningful explanations of the data. Thirdly, the authors ensured that there were no contradictions in the data and that the interpretation could be considered valid.

A movement between the whole (ie, all the data from the audio-video observations, transcriptions of the audio-video, field notes, interviews) and the parts (ie, the interpretations of the children’s stories) was performed to capture the meaning of the text and the preliminary interpretations throughout the analysis process. This back-and-forth movement between the whole and the parts was carried out to ensure that the interpretations were related to the phenomenon under study: being anesthetized as experienced by children. Some tentative interpretations were excluded during this phase because they did not fulfill the validity criteria. This resulted in four tentative interpretations that were related to the aim: Being powerless, Striving for control, Experiencing ambiguous comprehensibility, and Seeking security.

The final phase of the analysis consisted of all interpretations being compared with each other in order to uncover a comprehensive understanding and a common denominator (ie, a main interpretation that further explains the meaning of the data and the interpretations that have been evaluated as valid). This step constitutes the highest

| TABLE 1 | Participant demographics (n = 28) |
|---------|----------------------------------|
| Age (y), n |  |
| 4 | 2 |
| 5 | 5 |
| 6 | 6 |
| 7 | 2 |
| 8 | 1 |
| 9 | 2 |
| 10 | 4 |
| 11 | 2 |
| 12 | 2 |
| 13 | 2 |
| Gender | Boys/girls 18/10 |
| Diagnosis<sup>a</sup> |  |
| Skin flap/abrasion/cystoscopy/tooth extraction/ | 1 |
| Colonoscopy/Botox injection | 1 |
| Hand surgery/jaw surgery/plastic tube operation/orchiopexy | 2 |
| Circumcision/hernia | 3 |
| Foot surgery/gastroscopy | 4 |
| Day surgery/in child ward | 22/6 |
| Anesthetized for the first time/anesthetized before/missing data | 10/13/5 |
| Premedication before anesthesia induction |  |
| Midazolam/dexmedetomidine | 4/4 |
| None | 18 |
| Anesthesia induction/pharmacological treatment |  |
| Inhalation | 8 |
| IV induction | 19 |
| Tried but interrupted inhalation | 1 |
| Parent present during the anesthesia induction |  |
| Yes/no | 28/0 |
| Mother/father/both mother and father | 23/5/0 |
| Preoperative preparation about anesthesia induction before the day of surgery (visit, movie, information brochure) |  |
| Yes/no | 14/14 |
| Using videotape<sup>b</sup> |  |
| Yes/no | 27/1 |
| Interval, minutes (mean/Md) | 3.31–25.2 (8.17/7.33) |
| Interview |  |
| Yes/no | 23/5 |
| Same day | 7 |
| Day after the surgery | 15 |
| Four days after surgery | 1 |
| Interval, minutes (mean/Md) | 5–57 (35/35) |

<sup>a</sup>Child per diagnosis.

<sup>b</sup>Time in the operating room until the child was asleep.
level of abstraction and a more developed understanding of the phenomenon, and the comprehensive understanding is more profound than the tentative interpretation conducted at the beginning of the analysis. Validity was tested in the last stage of this phase, where two more criteria: to ensure the comprehensive understanding did not leave out any relevant data and to ensure the tentative interpretations (i.e., the parts) related to the main interpretations (i.e., the whole) confirmed each other.\textsuperscript{10,12}

\section*{2.4 \textbf{Ethical considerations}}

The study was approved by the Regional Ethical Review Board (Dnr 2017/532-31). The participants were informed that their participation was voluntary and that they could withdraw at any time without giving any reason.

\section*{2.5 \textbf{Methodological considerations}}

A greater understanding of the phenomenon and providing the children with a chance to describe their experience can be attained in a qualitative descriptive lifeworld hermeneutic study with different types of data. The children varied with respect to age, gender, surgical procedures, previous anesthesia experience, and the hospitals where they received their anesthesia. This variety is a strength of this study since all lifeworld research depends on a rich variation in data.\textsuperscript{10} Some factors, however, limited trustworthiness during the data collection. Firstly, the children’s ability to concentrate and retain their interest in the subject varied as well as their individual ability to verbalize their feelings and thoughts. Creative methods such as drawings, pictures, and a storybook were successfully used to help the children express themselves.\textsuperscript{31} Video observations were also valuable since the children’s verbal skills were limited. Secondly, some interviews took place the same day as the anesthesia in accordance with the parents’ wishes, which could have affected the children’s ability to express themselves due to fatigue. Some children received premedication, which could also have affected their memories. However, it can be said that the large number of interviews generated rich and robust data.

\section*{3 \textbf{RESULTS}}

Anxiety concerns the children’s worries and fears and is a core emotion that emerged in all of the themes. The interpretive themes should be understood on this basis.

\subsection*{3.1 \textbf{Being powerless}}

Being powerless can manifest itself with reactions such as stomach aches, body tremors, and difficulty sleeping days before the anesthesia and usually increases as the day of anesthesia induction approaches. Anxiety can be expressed through verbal and bodily protests in the OR; for example, one child hid under a blanket and another kicked or pulled his/her head to one side (9 and 12 years old, respectively). Sometimes feelings of powerlessness were expressed through silence in an attempt to regain their power. This sense of powerlessness appears to be related to a feeling of not being able to affect the care process. Anxiety about complications may occur, such as pain and insufficient anesthesia, and thus, a risk of waking up during the surgery may also involve thoughts about the risk of dying: “The anxiety will always be there when you’re being anesthetized. Even if you’re an adult, I think that you’ll be anxious as there is a chance that you’ll die” (13 years old).

The feeling of being powerless can be increased if the technologically advanced environment is unfamiliar and frightening. Unfamiliar sounds such as alarms from the monitors may reinforce the experience of anxiety: “It [the anesthesia equipment] would take something, it would take me” (4 years old). The anesthesia equipment is perceived as the most core in the OR because it maintains vital functions and anxiety exists about its safety: “If something went wrong with the breathing machine so that I couldn’t breathe anymore” (10 years old). However, some children seem intrigued by the equipment, especially those with technical interests, and their curiosity seemed to coincide with a reduction of anxiety and a reduction of feelings of powerlessness.

Powerlessness can also occur when children are exposed to various procedures that they cannot affect and avoid. This may involve painful procedures such as intravenous cannulation, a foreign substance penetrating their bodies, and being subjected to restraint at the time of the anesthesia induction reinforces the feeling of powerlessness.

The child who drew the above illustration described the drawing as follows: “I draw myself and I’m anxious [Figure 1]. One of the staff holds the mask. Mom sits by my side, and one of the staff gave me a syringe and then he just kept going and held the mask.// I cried when they forced me and then he said it would smell a little of petrol”.

\begin{figure}[h]
\centering
\includegraphics[width=0.8\textwidth]{child_drawing.png}
\caption{The child’s drawing of his/her facial expression reflects the child’s anxiety (9 y old)}
\end{figure}
Aspects that can further affect the children's sense of powerlessness as the result of being anesthetized are linked to the number of staff around them. This sense of powerlessness seems to accompany the realization that these staff are busy working on several tasks at the same time: “I don’t like it when there’s a lot of people gathered around me and so. I think if I was to accept it then there should only be one nurse sitting there next to the bed” (9 years old).

A sense of powerlessness can also be reinforced when the child does not want to talk to the staff on the anesthetic unit due to anxiety about not being listened to or not having their feelings confirmed: “They’d said I didn’t have to be anxious and so. And if I’d said it to them, that I am anxious, then they would have said that you always have to be a little anxious” (10 years old).

### 3.2 | Striving for control

Striving for control occurs when different strategies are used and when the children try to endure and distance themselves in order to manage their feelings: “I was a little anxious, but I am not the type who is sensitive, I can hold out” (11 years old). Some children wanted to keep from crying: “My body said stop, try not to do it. It just said so. I don't know why” (6 years old). These children often expressed doubts about being able to live up to expectations (eg, not being brave).

Children want to understand the process of anesthesia and the equipment they will be exposed to, but they also want the opportunity to be involved and make decisions about the process. For example, they could hold the breathing mask or sit on the operating table during induction to get the sense of regaining control: “It was scary to lie down, the anesthetic machine can be dangerous” (4 years old). Striving for control can also involve observing things the staff are doing rather than being distracted by the staff, for example, by showing stickers.

Feelings of a loss of control may occur if trust and competence in the staff on the unit are lacking: “It looks scary, there are so many machines and so many tubes [in the OR]. I don’t know how I could keep track of all that and I don’t know how they are able to do it. If they [the staff on the anesthetic unit] forget something and something goes wrong” (12 years old).

A loss of control can also occur when a child's memory fails due to the effects of premedication and anesthesia. This loss of control can entail that he/she can have feelings of uncertainty: “I didn’t know what it would be like. […] I didn't see or hear anything. So when I woke up, it looked different in the room” (6 years old). The sedative effect of the premedication contributed to a desire for control for some children: “I was so tired that I couldn’t ask for anything” (12 years old). A loss of control can also be due to the child succumbing as there is no return from the situation. This situation is explained by the fact that the child’s anxiety cannot be reduced, so they do not ask questions and choose to be anesthetized quickly.

### 3.3 | Experiencing an ambiguous comprehensibility

Children are unsure about how the anesthesia induction is carried out. Some anxiety persists, especially if the child has no experience with anesthesia, in spite of being provided with preoperative information such as brochures, films, and visits to the surgical department. Furthermore, if a previous anesthesia induction had been a negative experience, anxiety and doubt remained: “I'm calmer when I know what is happening. The first time I was so scared. I cried” (13 years old).

Familiarity with equipment appears to help reducing anxiety. For example, if the children realize that the breathing mask resembles their own asthma mask, they will feel more comfortable with the procedure. Information can be provided repeatedly in different ways to increase the children's comprehensibility of anesthesia, as in the case of this 10-year-old child:

Child: Where did I get the medicine?

Member of staff: Do you remember?

Child: No.

Member of staff: In this plastic cannula here [pointing to cannula].

Comprehension is reduced considerably and anxiety appears to increase when no information is provided: “In the beginning, I didn't know about the needle just that I should breathe through the mask. And I thought why can’t I just breathe through the mask and insert the needle when I'm asleep?” (9 years old). The children's imagination can prevail if no information is given about the equipment in the OR: “That there would be evil things. I saw lamps and things and I thought they would do something” (8 years old). Difficulties in understanding metaphors used by the staff can also lead to incomprehensibility: “They [the staff] said sleeping milk, so I thought it was a glass of warm milk, but I didn’t get any milk as I thought” (6 years old).

There is, however, an ambivalence about how much information the child desires. It becomes a question of balancing between comprehensibility and incomprehensibility. There also seems to be a need for the children to distance themselves from the information that is available. The ambiguity that arises in the quest for comprehensibility also includes the time in the OR: “It went so fast. I wanted them to talk more about what they would do, they could have done one thing at a time, it went so fast, it became too much” (12 years old).

### 3.4 | Seeking security

Seeking security is connected to the fact that the children see their parents as being responsible for stability and the latter thus become an obvious part of anesthesia process; that is, children see their
parents as protection against danger: “They [my parents] can take care of me. They have been around all my life; it feels more secure” (13 years old). This feeling of security can be compromised if parents are not allowed to accompany their children into the OR. Feelings of security are facilitated when parents encourage and confirm their child by expressing their thoughts and feelings and by being physically close. For example, when a member of staff on the unit asked a 9-year-old boy if he wanted the mask, he started crying and turned his body toward his parent, who hugged him. It seems important there are no physical obstacles that hinder the parents' physical access to their child: “I [6-year-old] wanted to cuddle and hold [my mom], but I got a crocodile [oximeter] there. Mom was to hold my hand, but that's not possible. What will happen now?” (6 years old).

Most of the children experienced less anxiety if their parents were involved. However, parents do not seem to be able to eliminate all anxiety: “I do not want to be there myself because I am anxious in that room. She [parent] is with me all the time, makes me feel calmer” (8 years old).

Seeking security can be understood as a desire to bring the parent, who is responsible for basic security, into the OR. It may apply to the parent who is generous with physical proximity and who is usually the one who is available the most to provide comfort and support in everyday life: “It’s just that my body says mom” (9 years old). However, most of the children also request participation from both parents. This can be explained as constituting a strengthened protection against danger since parents can complement each other and thus further reduce anxiety (Figure 2).

The staff on the unit also represent security, but it seems that they do not generate the same sense of security for the children as the parents can do because they are unfamiliar to the child and establishing relations with the staff is difficult. The children’s memories of the staff from the anesthetic unit in the OR are vague: “The only thing I remember was mom” (10 years old). These staff need to initiate communication because children might find it difficult to have a conversation with a stranger: “The best was the guy who talked, those who talk, and that they talk to me because I’m the one to be operated on” (10 years old). Some children can also be made less anxious through conversations about their everyday life, helping them imagine being in an environment where they feel safe. These types of conversations also convey to the children that the staff are interested in them and concerned about their safety. It is thus crucial that a positive, calm, and relaxing environment is developed: “They are important for security. If people aren’t kind, then you do not want to come back. They should have a kind voice and know what to do and what to say. That’s all that’s needed” (13 years old). These conversations can also involve using toys or a tablet such as an iPad. Other objects brought from home such as cuddly toys or computer games can also strengthen feelings of safety, increasing the child’s sense of security (Figure 3).

### 3.5 Main interpretation

Being anesthetized can be understood as a threat to life and where anxiety is more or less constantly present. Children fear both being anesthetized and the overall procedure. It is a struggle to keep the body intact from the external threat that may occur in the OR. Anxiety decreases if the external threat is diminished and help is sought primarily from those who are well known and the child feels safe with. Anxiety may increase if external threats and loss of control increase. Despite the child’s own central position in the situation, the power of the adult becomes apparent and defense strategies are used, which become visible through verbal and bodily protests as well as through silence and distance.

The goal is to achieve health and well-being, but the way to get there is perceived as difficult. There is a desire to gain comprehensibility in order to be able to cope with anxiety, but knowledge can also increase anxiety. It seems as though anxiety can be reduced...
by implementing measures that enable control and security. The more protective factors there are, the stronger the shield against the threat located in the OR. Protective factors include allowing parents to be present and applying a caring approach with the individual child in focus.

4 | DISCUSSION

The main finding in this qualitative study is that being anesthetized is multifaceted and can be understood as feelings of powerlessness. Being anesthetized also involves anxiety about enduring painful procedures and being in a technologically advanced environment with unknown people. Although children have extremely limited choices and therefore reduced participation in ORs, they strive for control. When the children seek comprehensibility in anesthesia, it concerns gaining knowledge about how anesthesia can be implemented. However, when the search for comprehensibility becomes ambiguous, children can feel ambivalent about how much information they want and need. When anxiety is present, children seek security, especially by leaning toward their parents. The anesthetic staff can provide some protection, but it seems they are not as significant for the children's security as the parents are.

Earlier studies have also found that children are anxious during anesthesia induction. Our study found that children expressed their feelings in different ways in an attempt to restore a sense of power. This response can feel as being quiet or hiding when they feel threatened. Children develop coping strategies (i.e., their own ability to deal with a threat) based on their own internal conditions and previous experiences.

Children attempt to regain control or participate in decision-making in spite of their limited choices. Their control can to some extent increase if they are able to make some decisions themselves. This is in line with the findings from other studies; for example, children want to express their opinions, ask questions about care and procedures, and make decisions about small matters such as holding the breathing mask. Staff and parents should demonstrate that they want to hear what the children have to say and about how they are feeling as well as encouraging them to be involved in decision-making and sharing of responsibility in order to access and understand the children's perspectives. Staff are more likely to talk with an older child to provide information and to include them in decision-making, but it is necessary to involve all children in decision-making irrespective of age. These seemingly small interventions can improve outcomes. This does not mean that the children should be pressed into being involved in decision-making; that is, listening to children is not the same as giving them sole responsibility for making decisions. Children need to be given space regarding time, support, and active engagement to ensure participation.

One study also indicated that children are uncertain about which method of information and timing would be the best. In an earlier study, younger children asked for more information about the operating environment and it has been shown that children who exhibit a higher degree of anxiety demand more information. The information requested by children mainly concerns the operation, anesthesia, and any pain associated with a procedure.

Reducing children's anxiety is still a challenging issue, and various methods have been studied and can be used. The role of parents in the OR has been discussed for decades, and some studies have shown that parental presence in the OR might not reduce preoperative anxiety. The children in our study thought that their parents' presence in the OR reduced their anxiety and often portrayed their parents as defenders, a response that resembles the way Bowlby's attachment theory is linked to anxiety. This type of anxiety is related to unfamiliar people and places, sudden changes in the environment, and being alone without parents. Attachment theory highlights the importance of a lasting relationship with parents, which includes a strong tendency to seek security when experiencing anxiety. The parent-child relationship is one of our strongest emotional relationships. The older a child is, the less significant is the attachment; nonetheless, an older child might experience anxiety if there is a threat and/or loss of someone close.

Our results support the practice of allowing both parents to be present during anesthesia induction. One parent is usually allowed to be present in Sweden. Parents have a strong desire to be present and they also want to be with the other parent. The parents in our study appeared to manage their own emotions very well, at least until the children were anesthetized, a time when support is needed. There is a correlation between parents' level of anxiety and their children's level of anxiety. Reducing children's anxiety is partly the result of reducing parental anxiety. Parents should thus be offered behavioral or other interventions to help them manage their own anxiety.

5 | CONCLUSION

Being anesthetized makes children feel powerless, and unable to protect their bodies. Being anesthetized induces anxiety as the children are in a technologically advanced environment with members of staff that are unknown to them while enduring possibly painful procedures. To facilitate their experiences, staff from the anesthetic unit should highlight the children's own feelings, listen to their unique wishes, provide individualized information in a positive and calm environment with few people around, and let parents be physically close.

CONFLICT OF INTEREST
Nothing to declare.

AUTHOR CONTRIBUTION
LA was involved in all phases. KK, PJ, and SA-Ö prepared the study design, analyzed the data, and participated in writing the article. All authors agreed to be accountable for all aspects of the work.
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