



Contents lists available at ScienceDirect

International Emergency Nursing

journal homepage: www.elsevier.com/locate/aaen

Creating authentic video scenarios for use in prehospital research

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ARTICLE INFO

Article history:

Received 15 November 2016

Received in revised form 3 January 2017

Accepted 9 March 2017

Available online xxxxx

Keywords:

Video scenario

Authentic

Prehospital

Expert panel

Nominal group technique

ABSTRACT

Video scenarios have been used to explore clinical reasoning during interviews in Think Aloud studies. This study used nominal group technique with experts to create video scenarios to explore the ways paramedics think and reason when caring for children who are sick or injured. At present there is little research regarding paramedics' clinical reasoning with respect to performing non-urgent procedures on children. A core expert panel identified the central structure of a prehospital clinical interaction and the range of contextual factors that may influence a paramedic's clinical reasoning [the way in which information is gathered, interpreted and analysed by clinicians]. The structure and contextual factors were then incorporated into two filmed scenarios. A second panel of clinical practice experts, then critiqued the body language, spoken word and age appropriate behaviours of those acting in the video scenarios and compared them against their own experience of clinical practice to confirm authenticity. This paper reports and reflects on the use of nominal group technique to create authentic video scenarios for use in prehospital research.

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1. Introduction

Children can become sick or injured at home, school or in a public place which can result in an ambulance being called. Paramedics caring for these children formulate a plan of care which may involve performing a clinical procedure such as blood sampling, wound dressing or the administration of medicines. Clinical procedures can cause children to become upset or distressed [1,2], which may lead them to be un-cooperative and held by a parent against their will so the procedure can be carried out thereby heightening the child's distress. It is not always necessary for paramedics to perform these procedures urgently, indeed many procedures can often be deferred until the child reaches the emergency department. Little is known about how paramedics think or, more precisely, clinically reason in situations that involve non-urgent procedures on children. Clinical reasoning is a complex process using discipline-specific knowledge to gather, analyse and evaluate verbal and non-verbal pieces of information (contextual cues) about a patient and the care setting [3]. The effect contextual factors have on clinical reasoning has previously been explored using video scenarios [4]. This paper will explain the process and research methods used to construct authentic video scenarios that

have been developed for future use as a data collection tool to explore paramedic clinical reasoning.

2. Background

There is little evidence describing what contextual factors influence the clinical reasoning of paramedics around performing non-urgent procedures on children. Clinical reasoning has been defined as a critical skill [5] and an essential feature of healthcare practice [6]. Clinical reasoning is similar to clinical decision-making, but clinical reasoning does not only focus on the end-point of a process, it is interested in the cognitive process itself [3]. By deconstructing and analysing how paramedics perform clinical reasoning about children who require a non-urgent clinical procedure it may be possible to gain a clearer understanding of how paramedics begin to make decisions.

Review of the clinical reasoning literature highlights a number of examples where simulation or scenarios [7] have been used to explore clinical reasoning. High Fidelity simulation has become a popular educational resource that aims to immerse participants in the task under observation in an authentic way "by inducing a sense of being there" [8]. Authentic scenarios and simulations in healthcare are variously described as seeming to be real [8], realistic [9], depicting real life [10] and can be difficult to achieve [11]. Generating simulations can be difficult as the actors may be required to precisely reproduce the same performance numerous

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times and in different locations. This can be especially challenging for simulations involving children, when subtle nuances surrounding the portrayal of contextual factors such as anxiety, distress or mischief can be lost during repeated simulations. An advantage of video scenarios over simulations is that they allow the children and adults to rehearse and repeat their performance so that only those clips that authentically portray the correct range of contextual features are used.

The video scenarios described in this paper were developed for use as a data collection tool to explore paramedic clinical reasoning. In order for these scenarios to be authentic they needed to represent a genuine, true to life portrayal of the real events paramedics are faced with as part of normal clinical practice. The scenarios had to contain ample contextual information and a sufficiently nuanced performance that captured the gestalt of a clinical interaction with children. Only by doing this would the paramedic participants achieve the desirable level of immersion when viewing the scenarios.

This paper will describe one method of creating video scenarios that authentically depict real life pre-hospital clinical interactions with children to facilitate the exploration of paramedic clinical reasoning strategies.

3. Methods

The video scenarios were developed through the use of nominal group technique (NGT). NGT is a time efficient method of achieving the formal consensus of a group through a structured meeting [12]. The NGT process adopted for this study involved three sequential expert panel meetings reaching a consensus on the structure, context and authentic portrayal of clinical interactions with children whom are sick or injured. Participants were sampled and recruited by the researcher from the researcher's own place of employment and were known professionally to the researcher and fully aware of the study.

3.1. Recruitment and sampling of the expert panels

Expert panels have been used across a range of health research disciplines to reach a consensus on a number of issues including the development of data collection tools [13]. Whilst expert panels are used widely within research, few papers specifically describe the recruitment and constitution of their panel. It is suggested that the convened panel have the required expertise and be representative of their profession [14]. In this study, two expert panels (core panel and authenticity panel) were recruited based on the participant's role title and minimum clinical experience criteria. Recruitment of participants to the core expert panel was purposive with inclusion criteria based on the role title of consultant paramedic and a minimum clinical experience in prehospital care of ten years. Recruitment of the authenticity expert panel was similarly purposive with similar inclusion criteria. However, the role title was changed to advanced paramedic. All those fulfilling the criteria for the core expert panel criteria ($n = 4$) and the authenticity panel ($n = 13$) within one ambulance trust were invited by the researcher to participate by email. The e-mail included an information sheet for the specific expert panel to which the participant was invited. The core expert panel recruited four panellists, the authenticity

expert panel recruited five panellists. Members of each expert panel were known to both each other and the researcher.

3.2. Data collection within each of the panel meetings

Data were collected over four months during 2016 at two sites in the North West of England. Both sites had a room allocated to the researcher and participants for the duration of the meetings. The process of NGT used in this study followed the stages of; introducing the task, silent idea generation, sharing ideas, group discussion and voting/ranking [14] facilitated by the researcher. The data collection process and structure of this study is shown in Fig. 1. At the beginning of each NGT session panellists were introduced to NGT, the importance of each stage within the process, an overview of the project and provided with the opportunity to ask questions. Each of the two panels had a different purpose; the core expert panel focussed on defining the structure of a prehospital incident with a child and identifying the contextual factors that may influence that incident, the authenticity panel focussed on reviewing the raw footage of the video scenarios and deciding which of those scenarios appeared to be most authentic to clinical practice.

All expert panel meetings lasted no more than one hour and followed the prescribed format for NGT [14]. During each of the expert panel meetings panellists were given up to five minutes to quietly contemplate their responses (silently generate ideas) and write them down on paper provided by the researcher. Each panellist in turn shared their responses with the rest of the panel. The individual responses were recorded by the researcher on the flip charts so all panellists could review their own and others' responses and this helped to facilitate the group discussion. The panel then spent approximately ten minutes in free group discussion of the accumulated responses attributing their personal values to one response or another. The panel were then asked to decide as a group which of the responses were the most important and assign a numerical ranking to these responses. All meetings of the expert panels were digitally audio recorded with consent of those present and permission was gained for anonymised quotes to be used in papers and presentations. The consent form also covered future use in print and presentation of all collected data. All participants have reviewed this manuscript.

3.3. Core expert panel meetings

The first meeting of the core expert panel asked panellists to focus on their own experiences relating to the dialogue during, stages of and factors which may influence a pre-hospital incident with a child. The panel were asked three questions during the first meeting to explore the structure and contextual factors of a clinical interaction involving a child who was sick or injured (Table 1). Following this first meeting the researcher listened to the audio recording of the meeting and reviewed the flip charts to create two storyboards of a fictitious incident (Fig. 2). These storyboards were used during the second meeting of the core expert panel to help panellists further develop the portrayed incidents. This further development included the addition of possible conversations and describing how the conversations would evolve and be realistically portrayed. Due to the short time between the first and second core expert panel meetings it was not possible to transcribe the

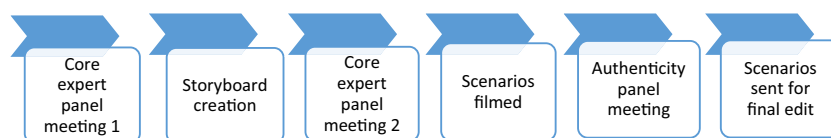


Fig. 1. Data collection process.

Table 1
Questions posed to the expert panellists.

	Core Expert panel meeting 1	Core Expert panel meeting 2	Authenticity panel
Q1.	Reflecting on your own experiences of attending a normal emergency incident that involves a child who is sick or injured what words would you use to describe the stages or steps that make up an incident?	In relation to the storyboard scenes (Fig. 2) and reflecting on your experiences, what contextual factors are necessary?	Which of the scenes you have just viewed is the most like everyday practice and why?
Q2.	Reflecting on your own experiences of attending children what factors might compel paramedics to perform a clinical procedure on a child who has a GCS of fifteen? These factors might be medical, emotional, social or professional.	In relation to the storyboard scenes (Fig. 2) and reflecting on your experiences, how would the agreed contextual factors be realistically portrayed?	
Q3.	Reflecting on your own experience of attending children, what factors might compel paramedics to continue performing a clinical procedure on a child who becomes uncooperative? These factors might be medical, emotional, social or professional.		

discussions for participant review. Following the second meeting all audio recordings were transcribed and returned to core expert panel members for comment prior to commencing the filming of the scenarios. No comment was received from panel members.

3.4. Filming of the video scenarios

Filming of the video scenarios took place in the ‘Better at Home’ suite at Edge Hill University. The Better at Home suite was funded by Well Child and seeks to replicate a home environment for families to learn and practice skills to care for their children who have complex needs in an environment similar to their own home.

The media development team at Edge Hill University undertook the filming. The researcher or members of the supervisory team knew and invited the actors (children and adults) in the video scenarios. Several recordings of each scenario were made in order to capture the range of contextual factors.

3.5. Authenticity panel

The filmed footage was downloaded onto a flash drive to facilitate it being played to the authenticity panel on a large television screen. The authenticity panel met once to review all the raw footage obtained during filming. Every scene that was filmed was shown to the authenticity panel. The filmed scenes were grouped together based on the individual child performing. This meant that each scene could be considered in relation to the previous scenes. The NGT process was adapted slightly to accommodate the screening of the scenarios. The authenticity panel first watched each scene in silence; they then individually provided their thoughts on the relative authenticity of each scene. Group discussion focussed on the factors that demonstrated authentic portrayal and these were ranked from the most authentic to the least. This process was repeated for both scenarios and the most authentic two scenarios chosen for final editing. The panellists asked for additional review of specific scenes during the session prior to reaching a consensus.

3.6. Ethical considerations

Ethical approval was obtained from both the Faculty of Health and Social Care Research Ethics Committee at Edge Hill University. North West Ambulance Service NHS Trust (NWAS) provided research and development approval. Written consent was obtained from each participant and permission given for the meetings to be audio recorded. Parental consent was obtained for the children to act in the scenarios along with agreement about the use of the videos within the study and beyond. During filming the children were appropriately protected under the University’s safeguarding children policy. It was expressed clearly that the children would determine the filming schedule and pauses for the children to rest, drink, snack and seek comfort were accommodated at the request of the children.

4. Results

4.1. Defining the structure of a pre-hospital incident with a child

The aim of the first meeting of the core expert panel was to determine the structure of a common pre-hospital incident. The

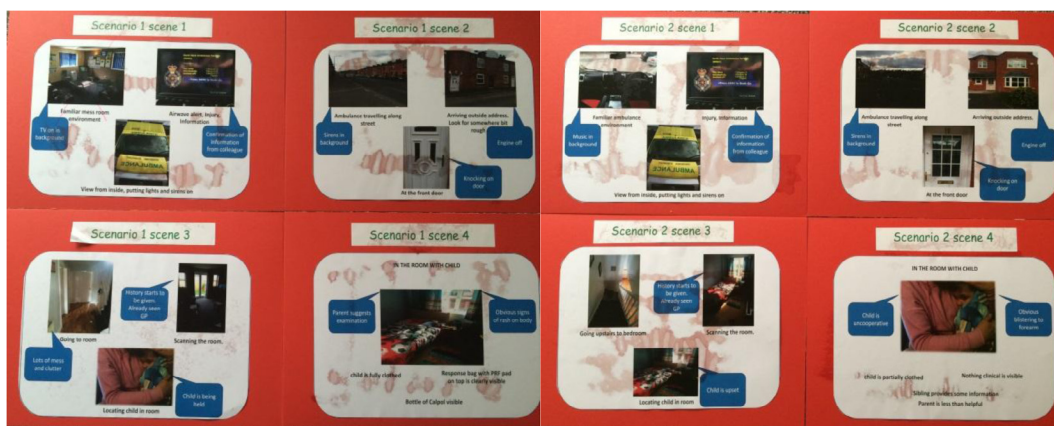


Fig. 2. Scenario storyboards.

panel reached a consensus that an incident could be divided into four stages: receiving the incident from ambulance control onto the ambulance data screen; travelling to the incident; obtaining a history/examination of the child; and making a decision about the most appropriate care that can be provided (which may or may not include transportation). Data reported in this paper are ascribed a number, allocated according to the order in which a panellist first spoke. Panellists first discussed how the receipt of an incident would prompt paramedics to start considering what type of incident they would be attending, “getting an impression from the MDT [mobile data terminal]” (P3) and how this would “set you up a bit, how you begin to approach a job” (P2).

The discussion then moved on to the journey to an incident, for example “thinking about checking JRCalc [National Ambulance Guidelines] procedures or something like that en-route” (P1). They talked of how paramedics would review possible age appropriate treatment options at that stage stating “an approach to an infant will be different to a five year old, which will be different to a ten year old” (P4).

The third stage related to the initial interaction with the child and family and included many factors the paramedics considered before a physical examination of the child “It’s that first view, isn’t it? It’s the child lying on the sofa, playing. Are they in somebody’s arms? ... It takes just seconds” (P3). Participants described the importance of simply observing a child’s behaviour “where the child is clearly shy” (P1) and the importance of building trust. Panellists did discuss aspects of the actual examination and what assessments they may undertake on a child who was sick or injured “you know, pulse ox [oximetry], try to do a BM [blood glucose measurement]” (P4). In the final stage of the incident the panel agreed that once all the relevant information had been obtained, formulating a plan of care with the parent would take place, “make sure they [parent] understand what’s going on” (P2), “it’s a negotiating process, isn’t it” (P4).

The expert panel were asked what may influence paramedics’ clinical reasoning when undertaking procedures on a child. One reason for undertaking procedures was to provide reassurance to the parents “it gives parents’ confidence in your decision making if you do a full set of obs [observations]” (P4). Conversely, it was seen as reassurance for the paramedic “It’s about defending your position isn’t it? Defendability... Duty of care... It’s professionalism isn’t it?” (P2). Finally, panellists were asked to consider what factors may compel paramedics to persevere with a procedure on an uncooperative child. The basis of this question was to firmly understand which contextual factors were the most powerful in relation to performing a clinical procedure on a child. The discussion first focussed on the imperative to save life, “it’s for the child’s good, say a life-saving treatment” (P1) as the question posed did not make clear that the scenario would present non-urgent procedures. This was then clarified to the panel to enable discussion to progress. Discussion progressed and panellists suggested a need to get the job done “sheer bloody-mindedness. I’ve started on it, so I’ll get that BM no matter how much you wriggle” (P2), and also explored a lack of alternatives noting that “people [paramedics] feel there’s a pressure to continue to do something as nobody else is coming” (P3).

4.2. Defining the contextual factors which may influence a pre-hospital incident with a child

The second expert panel meeting aimed to provide the contextual information for the scenarios and describe ways in which these could be portrayed. The storyboards created from data obtained in the first meeting were displayed so panellists could visualise how the scenarios would be structured. In the first meeting panellists identified four stages to an incident, with the final stage being the planning of care or transportation of the patient.

As this study is concerned only with clinical reasoning (not decision-making), this fourth stage was not included in the video scenarios as planning care or deciding to transport represents a decision having been made. Frequent contextual characteristics that emerged across all three stages were parental and child tone of voice, personal stress of parents or children, environmental factors and making some of the non-verbal contextual factors explicit in speech as well as being visible in the scenario.

When discussing receiving an incident from ambulance control, panellists described possible reactions of paramedics and how these might be portrayed “are they pressured, are they busy, are they relaxed?... Tone of voice can really set the scene” (P3). Similarly, when discussing the journey to an incident the panel expressed how the incident location may have a contextual influence, for example, “we do gain an impression, don’t you, sadly about the house that we’re pulling up to” (P1). “do they [paramedics] know the address or area, maybe a comment on the social conditions” (P3), “so it intimates they know that area of town... that they visit regularly” (P2).

Panellists discussed a range of environmental tensions which may be encountered by paramedics and articulated how these might be depicted suggesting either “a lot of messy clutter, have they got other children running round” (P1) or “showing a family that is well managed and not chaotic and actually mum does know about Calpol [Paracetamol/Acetaminophen suspension]”. They also noted that the “age of the parents is very important as that might influence, are they experienced... more of a challenge to the crew?” (P3). In the filmed scenarios a bottle of Calpol was clearly visible as was the mess and clutter in the room.

4.3. Authenticity expert panel meeting

Using NGT each panellist indicated which scenario they thought was the most authentic and why. In the case of the first scenario the panel were unanimously agreed in their decision and no group discussion was required, panellists used terms such as “posture... behaviour... realistic” (P1). Panellists recognised age appropriate behaviours and questioned whether the portrayal of the child’s body language matched their developmental age, “slightly too young a position on Mum” (P2). Personal experience of caring for sick and injured children seemed to be used by panel members to support their choices “rather than turning towards the paramedic, which is probably what a child would do” (P4), “his posture and behaviour seemed more realistic in the third one... All he wanted to do was cuddle mum really” (P4).

The key points that emerged revolved around observed behaviours, body language and age appropriate reactions to illness or injury, “Mum got, I thought, a little more flustered in each one” (P4). The realistic portrayal was discussed and constructive criticism made of the acting “She [mum] did seem genuinely concerned” (P4). Similar to scenario one the panellists clinical experience played a part in deciding which footage seemed most authentic “I just thought that wasn’t the way I’d sort of see it out there” (P3), and “It was just ‘my tummy hurts’ which is probably quite realistic” (P1).

5. Discussion

The purpose of creating the video scenarios is for the scenarios to underpin an investigation to explore paramedics’ clinical reasoning. Therefore, portrayal of contextual cues in the video scenarios needed to be realistic enough for participants to ‘buy in’ [15] or feel connected [10] to the scenario. Achieving this buy in or connectivity to a scenario is proven to facilitate participants to respond appropriately [15,10]. The video scenarios created show a meaningful portrayal of a clinical interaction. It is important for scenarios to seem real to skilled clinicians and not fabricated [15].

The following discussion will explain how contextual cues can be authentically incorporated into video scenarios alongside a reflection of the challenges and rewards of using the methods described in this paper.

5.1. Creating authentic video scenarios by incorporating contextual cues

The role of contextual cues in depicting an authentic scenario cannot be underestimated. Contextual cues are important and come from a variety of sources during an emergency interaction including the environment, the patient, relatives and colleagues [4,16]. Both expert panels in this study used NGT to facilitate the creation of video scenarios that represented 'real' practice. The expert panels explored a wide range of contextual cues that may be apparent during a clinical interaction with children. Through a structured ranking exercise panellists decided which of the key contextual cues captured the necessary 'gestalt' [9]. Using the NGT process reduced researcher bias as the expert panel generated their own discussion from a single question prompt and then reached their own unique expert consensus. This unique consensus from experts within the paramedic profession means that the contextual cues have credibility. Discussion of how these contextual cues are authentically portrayed within the scenarios now follows.

Inanimate contextual cues such as the reason for the call (a scald or a rash) and the mess, clutter or tidiness of the home were identified by the core expert panel and were relatively easy to incorporate into the scenarios by using props. These props included the use of theatrical make up, the child's teddy bear, a variety of other toys and a bottle of Calpol. The contextual cues produced by people such as anxiety, distress, upset, mischief and fear were more difficult to incorporate. Schweickerdt-Alker [9] suggests authenticity can be portrayed using subtext. Subtext is the deeper and more personal feelings and cues that influence non-verbal communication. To obtain this authentic portrayal of people generated contextual cues the children and adults acting in the scenarios were only provided with the scenario subtext rather than a specific script. This meant the actors had to rely realistically on their own experiences and how they interacted with each other on the day. The children were asked to express being unwell/hurt and a fear of examination in their own way. By not being scripted the children and adults in the scenarios probably drew on their personal experience, unknowingly using a technique described by Schweickerdt-Alker [9] as method acting. The use of personal experience in expressing or articulating emotions or beliefs is an important part of what Starr [11] concept analysis describes as demonstrating congruency between ideals, values and actions which can lead to individuals being recognised as genuine and trustworthy and therefore authentic.

In discussions during the authenticity panel meeting, panellists were able to perceive the children's fear from each child's behaviour and response to a situation (e.g., turning away or wanting a cuddle) and the expressions of stress, frustration and worry expressed by the adults. In reviewing the video scenarios, authenticity panellists chose scenarios where the level of pain, distress or other contextual cues appeared congruent with the actions of the child or adult. The critical assessment made by the authenticity panel in comparing their own lived experiences to the scenarios is in itself an expression of authenticity according to Starr [11].

5.2. The experience of creating and filming authentic video scenarios

This paper has described a method of creating authentic video scenarios and it now moves on to critically reflect on the experience of using this particular method. Starr [11] provides a detailed consideration about what constitutes authenticity and she states

that generating authenticity can be arduous and requires self-discovery. Convening and coordinating three expert panels and filming scenarios with children was both challenging and enlightening.

The process of NGT is described in a linear fashion within the literature [14], seamlessly moving from one step to another. In reality this process proved to be less linear with overlap between idea sharing and group discussion phases. Expert panellists were sometimes interrupted by other panellists when sharing their ideas. This is a slight deviation from the traditional NGT method which asks that no debate occur during the idea sharing phase [14]. Possibly due to inexperience of the researcher or in the interests of maintaining a free flow of ideas some latitude was given during this element of the NGT meetings. The researcher found it demanding during the authenticity panel which required an impartial approach to be maintained. Personal preferences surrounding scenario authenticity were hidden from panellists to allow them to come to their own conclusions.

A challenge of using expert panels is the competing demands senior clinical staff face and one of the core expert panel members was unable to participate in the second meeting due to pressing commitments. Similarly filming where children are participating needs to consider the timing and in this study the school holidays was selected. Remaining flexible and adapting to sudden changes in scheduling may cause consternation from the researcher's perspective. The researcher needs to accommodate all such issues, be flexible and adapt to changes in scheduling if success is to be achieved. There are also ethical challenges to face, particularly when filming involves portrayal of illness or injury. These ethical challenges appeared to be relatively simple to overcome. This could be due to nature of the illness and injury being carefully considered so as not to cause the children to be fearful. The children were also well supported during the filming process. Adherence to established local safeguarding policies alongside a great emphasis on considering the children's feelings and well being during filming appears to fulfil most ethical requirements.

5.3. Limitations

At this stage it is not possible to know to what extent participants will engage with or connect with the video scenarios during data collection and therefore how authentic they are perceived to be. Due to the scenarios being informed by panellists from one ambulance service Trust there may be local practices, priorities and experiences that influenced the thinking of the panel which may differ in other ambulance service Trusts. Whilst this study was designed to create video scenarios for a UK paramedic audience, it may be possible to use well established academic links with South African Universities to explore paramedic clinical reasoning further afield.

6. Conclusion

Nominal group technique using three expert panel meetings offered a robust method for creating and filming video scenarios that are likely to be authentic. There must be a pragmatic understanding on the part of the researcher from the outset of the challenges which may be faced for example, the personal investment and goodwill of participants (panels and actors), availability and cost effectiveness of resources (storyboards, filming team) and difficulty in controlling the timeliness of the project due to competing demands on the time of panellists. The authenticity of video scenarios depends on portraying contextual cues (body language, age appropriate behaviour, injury and illness generated emotion) and encouraging subtexts (unscripted filming). Video scenarios

facilitate exploration of clinical reasoning and the influence of contextual factors and using this NGT process could enhance that exploration.

Ethics statement

Not applicable.

Funding sources

Funding for this PhD study (fees) came from charitable funding via the Children's Nursing Research Unit at Alder Hey Children's Hospital NHS Foundation Trust.

Conflict of interest statement

None declared.

Acknowledgements

I would like to express my appreciation to all those involved in creating my video scenarios. Thank you to Edie, Evan, Alex and Thomas, the child actors who were fantastic.

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