The Art and Science of Examining a Child

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Core Messages

- The pediatric exam is not as methodical and sequenced as the adult exam. Rather, it is carefully aimed at the most important findings and it is opportunistic.
- The care giver's initial behavior should be aimed at establishing trust and making the data collection fun for the child.
- Dilating the pupils is an essential part of the complete exam of the child; however, it is used in follow-up only when it will potentially change management.
- Pediatric eye exams are done as a team. The need to see more patients in less time has eliminated the luxury of having the pediatric ophthalmologist perform the entire exam him/herself.

1.1 Introduction

I have heard it said that when it comes to the pediatric eye examination, a friendly manner, a little trickery, and a lot of praise can accomplish a great deal. These are essential elements in the art of examining a child. Residents, fellows, and geriatric ophthalmologists are usually facile and disciplined in the performance of the adult comprehensive eye examination; however, gathering useful data from an unfriendly toddler can seem as challenging as taming the wild beasts of Africa. After a few failed attempts to persuade a young patient to allow even a glimpse of the eyes, the ophthalmologist may ask how anything gets done in the pediatric ophthalmology office, at least without anesthesia.

This chapter offers advice on how to approach the pediatric eye examination. It is not meant to cover every aspect of the eye examination of children. Rather, it deals in concepts, and some details. It is assumed that the examiner already knows how to perform a complete eye exam. The reader is referred to the orthoptic chapter (Chap. 4) for well-written advice on the ocular motility examination. Here, instead, I offer practical advice to allow the examiner, the patient, and the parent to enjoy the encounter with the pediatric ophthalmology team. When dealing with a child, professional competence requires both art and science.

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1.2 Developing a Plan at the Beginning of the Encounter

Since children are not merely small adults, the temptation to proceed methodically and sequentially through each portion of the complete eye exam in each patient must be resisted. Remember that the doctor does not decide when the exam is over, the child does. Judgment must be used to pick and choose portions of the complete exam most likely to yield useful data for that patient. For example, a careful slit-lamp examination may be essential to the evaluation of childhood uveitis but could be deleted in the patient with uncomplicated intermittent exotropia. In the later, a penlight examination can quickly scan for corneal luster, pupil size and shape, anterior chamber depth, and the absence of an afferent pupillary reflex without forcing the child's head into the slit-lamp. The retinoscope or direct ophthalmoscope can assess the quality of the red reflex from an arm's length without forcing the child into a difficult position.

Use the limited attention span and cooperation of the child to perform the investigations most essential to the chief complaint and add less critical steps as patient tolerance allows. Restraint or sedation should be used only if absolutely necessary and only if the data will influence the management of the patient.

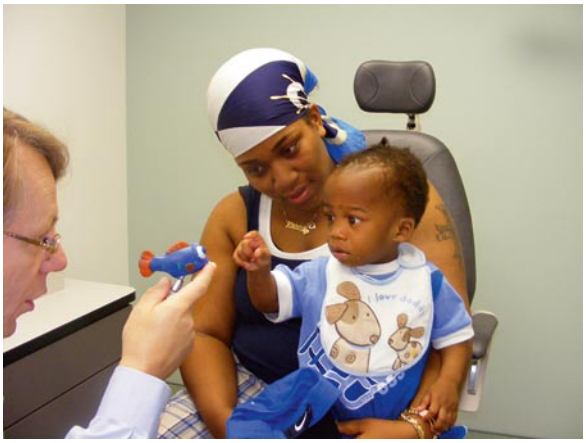

Fig. 1.1 This young boy is sitting in his mother's lap and the chair has been raised to place the child at the same or higher level compared with the examiner

Fig. 1.2 After showing this child a toy, he is allowed to hold it briefly before the exam is resumed

1.3 A Fine Line Separates Fear from Cooperation

For many children, a fine line separates fear from cooperation. The doctor's initial behavior should be aimed at establishing trust and making examination data collections seem more like "child's play". When entering the examination room, the doctor should immediately be seated, so as not to stand over the child. Invite the child to sit in the BIG chair on a parent's lap or alone. Raise the chair quickly so that the child is at least at eye level with everyone in the room (Fig. 1.1). Do not surprise the child. Tell the child you are going to make him or her TALLER and say "here we go" as the chair elevates. Talk directly to the child. Comment on his or her clothing or ask a question you know he/she can answer, such as: How old are you? What grade are you in? What are you doing this summer? When a child begins to speak, his/her anxiety level drops dramatically. It is also helpful to show the child a toy and let the child hold it (Fig. 1.2).

1.4 The Attention-span Clock is Ticking

If the chief complaint is known, begin the exam immediately, before taking additional history. The attention-span clock is ticking. Do not waste time asking

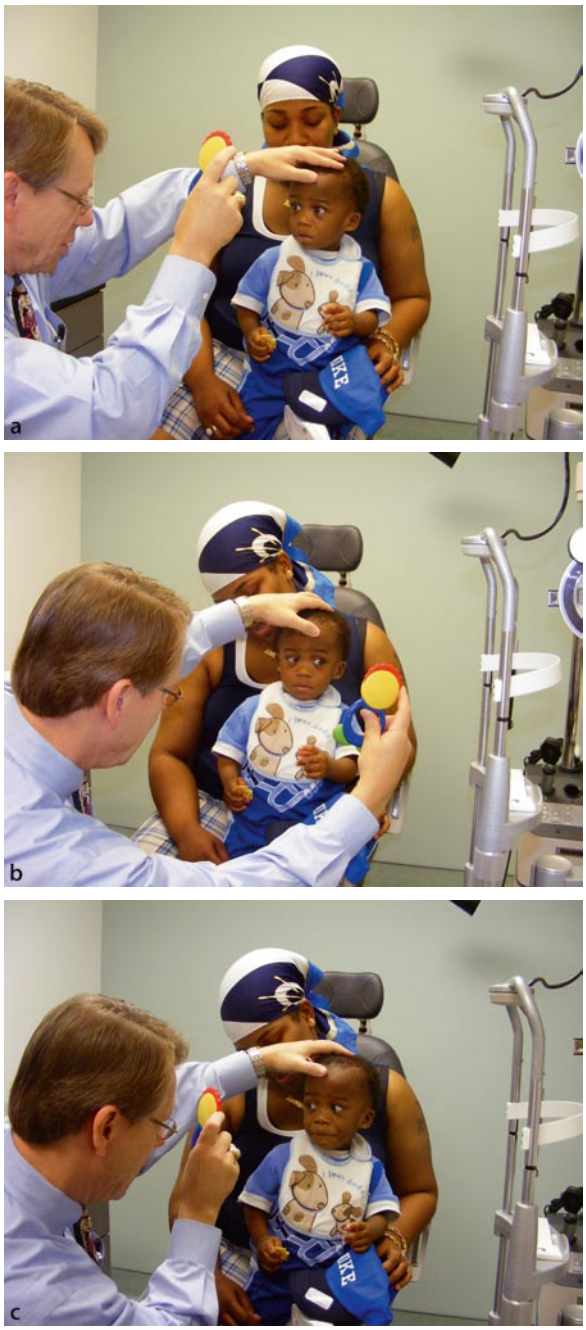

Fig. 1.3 **a** A colorful toy is used for vision testing. This one makes noise, too. **b** A colorful toy is used for vision testing. A hand on the head can promote eye movement rather than head movement. **c** A colorful toy is used for vision testing. Move quickly and remain animated using whistles and clicking sound when needed

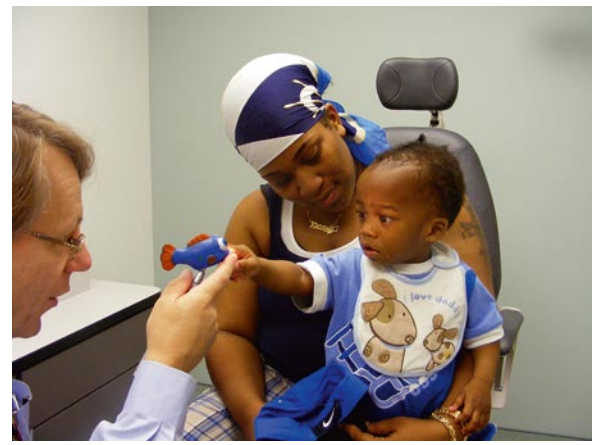

Fig. 1.4 A colorful toy is used and changed when needed. This toy also allows corneal light reflection testing

the parents questions. Move quickly from one investigation to another. Tell the child what to do. Be animated. Have colorful toys. Whistle, make noises, and call the child by name (Figs. 1.3, 1.4). Use an age-appropriate vocabulary (e.g., phoropter = elephant glasses). Have fun and make sure the child is having fun, too. I have a foot switch that turns the overhead lights off and on. I will commonly ask the child to say "lights out" out loud. As he/she does so, I hit the foot petal and the lights go out, to the amazement of the unsuspecting child. The more curious ones will want to know how it works so I show them. They can then operate the foot petal themselves at the end of the exam if they let me do all I need to do. It is useful to have a visual acuity computer screen so you can show movies and then switch from the movie directly to ABCs, HOTV letters, or Lea symbols. We have fish, balloons, and other non-movie videos as well. It is essential to keep the child engaged and get good data. Random displays on the computer eliminate memorization so re-testing can be done at any time. We use an occlusive patch to isolate one eye for visual acuity testing. I highly recommend it. Children are experts at peaking around an occluder. We tell the child that they can take the patch off as soon as the testing is completed. That seems to comfort them somewhat. They know the patch is temporary. I like to have additional lighted noise-making animals mounted on the wall beside the computer screen. These are foot-petal

activated and are a wonderful way to get the child to look in the distance for strabismus measurements or for the evaluation of ocular torticollis (Figs. 1.5, 1.6). Some pediatric ophthalmologists have eliminated these toys because they have images on the computer visual acuity screen. I believe they still have added value to hold the attention of the child and also in visual function testing in pre-literate children. With three "barking dogs" mounted on three vertically separated shelves, I can evaluate the quality of the vertical saccade produced when I activate each toy and deactivate the previous one, using a foot petal (Fig. 1.7). This is discussed in Chap. 22 in the context of evaluating visual function in children with partial cataracts. A brisk and accurate vertical saccade to the changing "barking dogs" indicates reasonably good visual acuity in a pre-verbal child.

When slit-lamp examination is needed, I ask them to hold the "handlebars" and put their chin in the chin rest. I get them into the proper position, with the help of a parent if needed. I quickly praise them for being "grown-up" and for doing great. Then I praise them

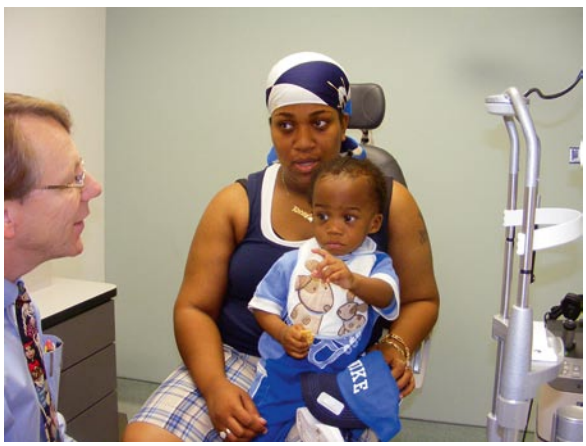

Fig. 1.5 Foot-petal operated noise-making animals are used to direct this child's gaze into the distance

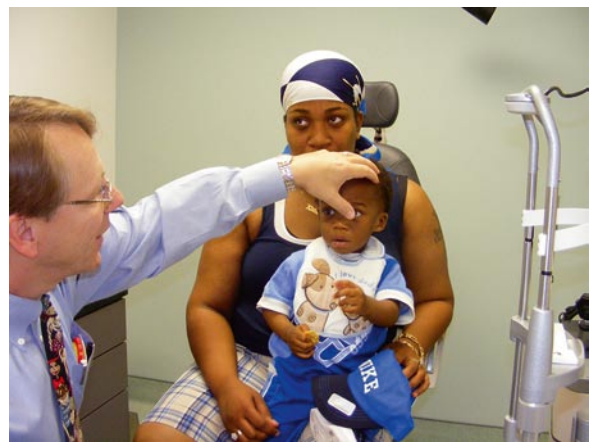

Fig. 1.6 The alternate cover test can be started with the child fixating on the distant noise-making animals

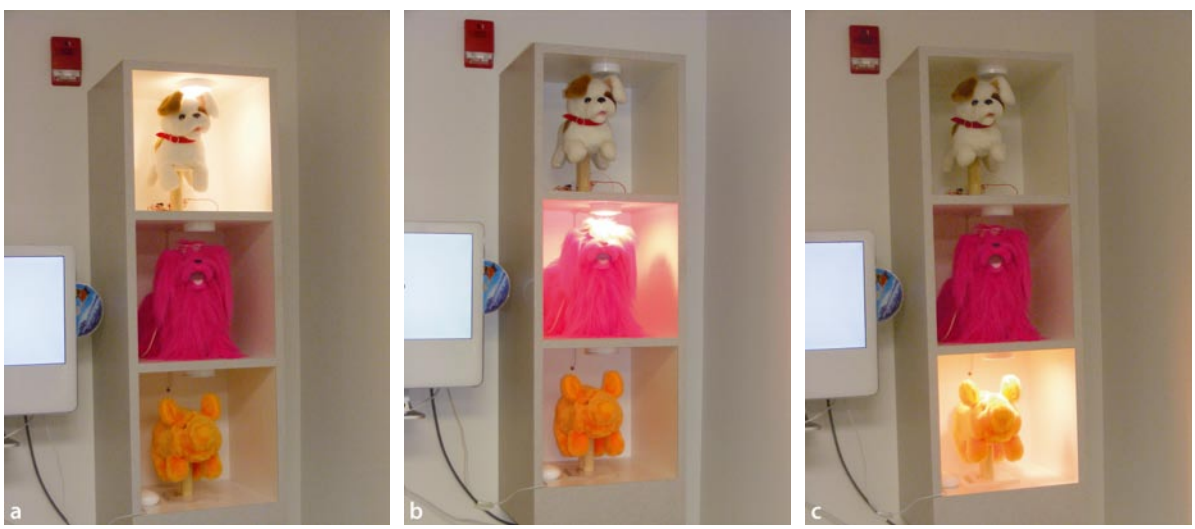

Fig. 1.7 **a** The upper foot-petal operated animal is activated. **b** The middle foot-petal operated animal is activated. **c** The lower foot-petal operated animal is activated

for having really "amazing" eyes. They will sometimes stay still if you say, "Can you see my eyes?" or "Look at my ear." I usually throw in a few "almost done" comments to keep them in the head rest. Again, at the end, more praise is warranted, even if they did not do as well as you hoped. The initial exam will build on the next one. If a child has a chronic condition and will need multiple exams, it is important to have the child feel reasonably good about the first exam, even if the evaluation was not fully accomplished. Build on that first encounter and push for a little more the next time the child is examined.

During the course of the exam, pause whenever you need a break or the child "demands" one. Remember, the child and parent will detect any hint of frustration in your voice. At the end of the initial examination, allow the child to climb down from the Big Chair. Additional history and explanation of the findings can then be completed. If pupil dilation is needed, have someone other than the examiner place the drops and make sure they are preceded with a topical anesthetic. This too can be done quickly so the child can be consoled by the parent and can retreat to the comfort of a playroom or a toy-filled sub-waiting area.

Remember that each time a decision is made to dilate a child's pupil, it adds the equivalent of one additional patient encounter to the day. These children dislike the drops and they are often tired and fussy when the drops have finally led to cycloplegia and dilated pupils. I do not discourage pupil dilation when it is necessary and when it may change the course of therapy; however, I must have a reason for dilation more than just because it has been a year since the last one.

Fundus examination and retinoscopy are usually the parts of the examination that are done after the child's pupils have been dilated. Again, as noted above, it is essential to know what information is needed. The child is often sleepy and cranky at this stage of the exam. Quickly performing an estimation of the refractive error using the retinoscope without any lenses is an invaluable skill. By learning to enhance the retinoscopic streak and then rotating it, the examiner can already know what lens with which to begin in the loose lens set. Rotating the enhanced streak gives the examiner the knowledge about whether significant astigmatism is present or not. Retinoscopy is most accurate when the central reflex is evaluated. Having the child look directly into the light is the best way to retinoscope the macula; however, when the cycloplegia is incomplete, I use the movie at the end of the examination room as the fixation target instead of the light. Care must be taken to read the reflex as centrally as possible when this occurs.

Fundus evaluation can usually be done without restraining the child if the examiner uses a low-level light and makes it fun. I point out that I am putting on a "strange hat" that can look all the way into their "brains". Then, as I view the optic nerve and macula, I often praise the child for being smart since they have "lots of brains". In fact, their head is "full of brains". When restraint is needed, having the parent help is best. Be efficient by getting the look you need as quickly as possible. I do not hesitate to schedule an examination under anesthesia if I see something that needs further study and intense examination.

1.5 The Pediatric Ophthalmology Team

Pediatric ophthalmology is, perhaps, the last holdout against the fast-paced, high-throughput, team-based approach to ophthalmic office examination. Many pediatric ophthalmologists still feel that they alone should do the majority of the gathering of data. Technicians are relegated to patient transport and dilation duties. With the need for more patients to be seen per hour, this approach is unsustainable. In addition, it is unnecessary. The modern pediatric ophthalmology office functions as a health care team. The families returning for follow-up respect the technicians, orthoptists, residents, fellows, and the pediatric ophthalmologists as care givers. Pediatric ophthalmic technicians develop a special rapport with the patients and their families. The skills they develop (accurate visual acuity, intraocular pressure measurement without squeezing, contact lens management, teaching of the care instructions) can become so refined that the physician trusts the data as much or more than if he/she had gathered it him/her self. Refracting technicians can spend time with the verbal child and get an amazingly accurate refraction once the pediatric behavior skill set is mastered. The physician need only recheck the endpoint or compare the pre-dilation finding with his/

her post-dilation finding. Orthoptists become masters of the ocular motility exam and the sensory evaluation. A combination of school-based knowledge and on-the-job training lead to the level of trust needed for the team to manage patients together.

The art of the exam discussed in this chapter must be learned by each member of the team. Using judgment, the technicians and orthoptists learn to do as much or as little as is appropriate for the particular patient and the particular complaint. Then, the physician is brought in at the correct time to do the essential things he/she really needs to do to get to the decision making at the end of the encounter. The goals are to avoid unnecessary repetition and yet avoid important omissions. The patient and the parent should recognize the value of the care team and should get the sense that the physician and the staff are all "on the same page" and have "trained together" to develop the protocols that lead to effective, efficient, and mistake-free care delivery.

1.6 Modeling Appropriate Behavior

Near the onset of ophthalmic training, residents and fellows should carefully observe practitioners who are skilled in the artful techniques of pediatric examination and develop a mindset and a game plan. Technicians and orthoptists should also model appropriate behavior they see in others. The staff should observe each other and give meaningful feedback. The team, together, should discuss the art and science of dealing with children and continuously improve their techniques. Patient and parent feedback should be taken seriously and changes made accordingly.

Each team member (physicians and staff) should take what I call an "innovation trip" periodically. The purpose of such a trip is to observe the techniques of a respected colleague in another location across the state or across the country. Pick those colleagues that have been praised for "best practices" innovation. Observe carefully and write down the details of anything you can bring home. This will help the team become a continuously learning group.

Pediatric ophthalmology is unique within ophthalmology. Those who work in pediatric ophthalmology know that "a friendly manner, a little trickery, and a lot of praise" may be a good beginning, but much more is needed for success. For those physicians or staff entering the field, success is achieved by hard work, continuous learning, and by having fun.

Early in their pediatric ophthalmology training, residents often ask why the children seem so much better behaved when the attending physician is conducting the examination. At the end of their training, after modeling the best of what they have seen in the staff and the attendings, they too can make data collection seem like "child's play". They discover that learning to tame the unfriendly toddler can produce a level of satisfaction and self-confidence not achievable by scientific mastery alone.

Take Home Pearls

- Sequence the pediatric eye exam based on what are the most important parts of the exam for that child's chief complaint.
- Learn to put the child at ease by sitting down quickly and raising the child up to where he/she is at least at eye level with everyone in the room.
- When you get a child to vocalize, his/her anxiety level goes down dramatically.
- Use pupillary dilation when necessary, but use it sparingly on follow-up visits.
- Pediatric ophthalmology is no longer a solo sport, it is a team game. Train the team so that everyone adopts the same child-friendly habits.

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