

**Grounded or 'Shaky':** How Mobilizations of Expert Knowledge Affects Legal Outcomes in Shaken Baby Syndrome Cases.

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## ***Abstract***

This project examines how expert witnesses affect legal outcomes in shaken baby syndrome (SBS) cases. The connection between shaking and intra-cranial injury in infants is heavily debated within the medical community. This paper explores the relationship between medical knowledge and legal prosecution using documentary analysis of court decisions. In addition, this project uses semi-structured interviews with five medical professionals and one legal professional. The interviews reveal that there is a moral and consequence based dilemma for the professionals involved in cases of suspected child abuse or shaking. The documentary analysis reveals how medical expertise is subjective in terms of how it influences court proceedings in shaken baby cases. What is evident from the analysis is that perceived credibility of experts can influence the perception of medical evidence. There is anthropological literature about knowledge, science, medicine, and expertise. However, there is less written in the field about the relationship between scientific expertise and the legal system. This research contributes to the small body of anthropological literature on the connection between law and medical evidence.

## **Introduction: Medical Expertise and the Shaken Baby Debate**

Diagnosing shaken baby syndrome (SBS) is a contentious medico-legal issue. The medical literature on SBS is divided between experts, who are either skeptical or in support of a connection between physical shaking and intracranial injury. Another contention is that the body of medical research on SBS yields mixed or inconclusive evidence for the diagnosis. The objective of this research is to explore the question: How does the mobilization of expert knowledge affect legal outcomes in shaken baby syndrome cases? It is not the intention of this project to take a position on either side of the medical debate about the syndrome. This paper approaches the medical and legal relationship in SBS cases from an anthropological perspective.

Prosecuting based on a diagnosis of SBS, and more recently abusive head trauma (AHT); has become increasingly controversial because of the lack of medical consensus on the diagnosis. It is also controversial because there have been cases of wrongful convictions due to misdiagnosis of the condition. There are newer pathological terms that have replaced the term shaken baby syndrome; however, the term shaken baby syndrome will be used for the purposes of this essay. There is a large body of legal literature that discusses the legal problems pertaining

to shaken baby convictions. Some of this literature analyzes the emotional and moral dilemmas within child abuse investigations and the problem with a default diagnosis of abuse.

The method of research used for this project is a documentary analysis of Ontario court rulings. The sample includes rulings from the Ontario Superior Court of Justice (ONSC), Ontario Provincial Court of Justice (ONCJ), and the Ontario Court of Appeal (ONCA). I also conducted qualitative semi-structured interviews with medical professionals and a legal professional. This was done to provide insight into the medical debate and the complicated nature of this issue.

The presentation of science in legal cases is a very complex social relationship. Latour (1987) proposes that the more complex and apparently successful science is the more opaque it becomes. “The word black box is used by cyberneticians whenever a piece of machinery or a set of commands is too complex. In its place they draw a little black box about which they need to know nothing but its input and output” (Latour, 1987, 2). I draw upon Latour’s (1987) notion of black box to analogize how expert knowledge and medical evidence in the court of law is utilized, yet not fully understood or necessarily questioned by non-experts and fact-finders. Being illiterate in the history, controversy, and originations of the expert’s science is an accepted fact of courtroom life; after all, that’s what the expert is there for.

Expertise is invaluable in cases where there is medical evidence; however, science and expert opinion are fallible. In the legal system medical and scientific error can have very serious ramifications. Expert opinion can affect the outcomes of legal prosecutions; a guilty or innocent verdict can be based on medical evidence and testimony. This is why it is important to look at how expertise operates in connection to its scientific area and the law, especially in an area as contentious as shaken baby syndrome.

There is a widespread body of anthropological literature on expertise, science, and medicine. However, examining expertise in legal courts is a thinner body of anthropological literature. Expertise in law courts represents a very multifaceted and specific relationship between scientific knowledge and the law. I do not believe that this relationship can be described accurately by anthropological literature in isolation. It is therefore important that this issue is examined within the context of legal and medical literature as well. This paper will examine the effects of medical knowledge on legal proceedings, while approaching the expert witness through the anthropological framework of expertise.

## **Literature Review: Medical Debate Turned Legal Controversy**

### *Introduction*

How does expert knowledge affect the legal outcomes in shaken baby syndrome cases? This question can be situated in three bodies of literature, so that is how I will attempt to frame it. This approach is important because the question speaks to a relationship between science, the law, and the role of scientific expert. The legal role of expert witness is very much an extension of the socio-cultural designation of expert. Therefore, I will also be looking at the legal role of expert witness framed by the anthropological definition of scientific expert.

### ***An Anthropological Overview of the Courtroom: Black Boxed Opinion***

Anthropological literature describes experts as individuals that are recognized scientifically, legally, and socially for having knowledge that is inaccessible or valuable to others (Carr, 2010, 18-21). Experts are also seen as intellectuals who have a jurisdictional specialization of labour. Dominic Boyer (2005) distinguishes expertise as intellectual labour and as specialized physical labour (Boyer, 2005, 244-245). Both of these definitions can apply to

medical expertise; it is an area of knowledge that is needed by others. An expert is also an individual who has a particular intellectual jurisdiction and a specialized craft.

Legal experts have knowledge-based authority because they have knowledge that others value and do not have. In a legal context their opinion is deemed credible for the clarification of the evidence presented at trial (Carr, 2010, 19; 23). Experts as extensions of scientific inquiry are valued because science is already seen as being both authoritative and credible in our culture. The status of scientific expert implies being a member of the scientific community (Segal and Richardson, 2003, 138-141). To answer the question of how Charles Smith's erroneous opinions were seen as credible for so long, it could very well be that experts are categorically assumed to be qualified in their opinions' (Segal and Richardson, 2003, 140; Carr, 2010, 22).

One of the reasons experts are used in a legal context is because judges and juries are not scientifically literate enough to interpret the evidence, unlike the testifying expert. This sets a precedent for the only person being able to challenge the interpretation of an expert with the same authority as that expert is another expert (Iacobucci & Hamilton, 2010, 54). This exemplifies the social and, by extension, legal status of expert as both a scientifically credible status and an authoritative one.

Good (2006) in his work on British asylum courts explains that expert witnesses are not free agents in court proceedings; their opinions are limited to what is asked of them; and their answers are confined to the question asked of them. "Through this legal artifice, lawyers gained 'extensive control over the form of an expert's testimony and consequently reduced the degree to which experts controlled their own evidence'" (Good, 2006, 135). Expert testimony is not simply something that is in control of the expert; there are other agents that shape and extract that

testimony, as Good (2006) points out. Good (2006) throughout his work approaches the relationship as being a mutually influential one.

Evidence interpretation is a characterizing feature of medical experts. Dummit (1999) uses the term 'expert objects' to describe evidentiary objects which require specialized interpretation to be understood. Dummit (1999) specifically references medical imaging and argues that these images can be prejudicial because they are persuasive yet not understood by non-experts. Dummit (1999) describes medical images as the result of objective machines; therefore, they must be objective medical proof (Dummit, 1999, 175-177; 186). Medical tests are compelling pieces of evidence, in that lay-people do not need to understand how the technology works or how to interpret the results in order to find them convincing. For example, it is unlikely that someone will argue with an expert stating the results of an MRI, unless they have equal in-depth knowledge of how MRIs work and what the results could mean.

Good (2006) discusses scientific membership of expertise as giving weight to expert testimony. He points out that expert witnesses have a background of accumulated knowledge to draw upon and can offer the collective weight of their discipline in their expert testimony (Good, 2006, 136). Expertise in this light can be seen as social fluency, in which individuals are formally trained and acquire the skills to become experts, earning their membership to the scientific community. In contrast, lay-people are individuals who may not be a part of the scientific community. However, this does not necessarily mean that they are not knowledgeable (Evans, 2008, 283- 286). The boundary between expert and layperson becomes blurred to an extent in the legal system. Knowledge is not necessarily confined to experts; it is possible to have an informed layperson. The court of law hovers over this boundary because non-experts are

expected to make informed decisions based on presented evidence and specialized areas of science (Evans, 2008, 286).

### ***A Medical Overview of Shaken Baby Syndrome: Inside the Black Box***

The commonly used definition for SBS in medical literature is inflicted intracranial injuries that are caused by shaking an infant (Uscinski, 2004, 57; Duhaime, et al. 1987, 409; Jaspán, 2008, 379). SBS is diagnosed through the presence of subdural hemorrhaging, hypoxic-ischemic encephalopathy, and retinal hemorrhaging, contentiously known as the SBS triad (Bandak, 2004, 72; Kodikara and Pollanen, 2013,1373). However, not all cases may present all the symptoms of the triad, and some cases may present additional findings associated with the symptom, such as skeletal fractures (Forbes & Levin, 2011, 412).

There are various points of disagreement in the medical literature regarding the diagnosis of SBS. The first is that the diagnostic criteria lacks medical consensus; the second is that there is conflicting medical evidence for what natural or accidental causes can cause or mimic SBS symptoms. Furthermore, much of the research on SBS is limited to medical data and records from existing cases of diagnosed SBS and head injury, data collected from cadavers and autopsy results, and experiments done on infant models and animals. There is no other way to ethically test the hypothesis other than these methods, as nobody can test shaking on actual infants.

Scientific and medical claims about shaking causing injury cannot be totally falsified by medical research. A criticism the literature makes is that because there is no precise way to conduct research trials on SBS, the diagnoses made in SBS cases are being made solely from interpretations of individual physicians (Geddes & Plunkett, 2004, 719). There is evidence to suggest that the symptoms of SBS can be mimicked by pre-existing medical conditions and other accidental causes, making misdiagnosis of SBS an issue (Togioka et al. 2009, 201-202).

The literature is divided between evidence either supporting or laying question to the diagnosis of SBS. Shaken baby syndrome first appeared in a publication by British pathologist Norman Guthkelch in a 1971 edition of the British Medical Journal, which argued that subdural hematoma could be caused by shaking. The diagnosis of SBS became accepted in the medical community by the 1970's (Uscinki, 2004, 57-58). In 1972, American radiologist John Caffey suggested that shaking could cause subdural and retinal hemorrhaging in infants, which is indicative of child abuse (Kodikara & Pollanen, 2013, 1374).

The diagnosis of SBS is based on a triad or constellation of symptoms associated with intracranial injury (Kodikara & Pollanen, 2013, 1373). Since the 1970's there has been a mixture of famously referenced research. One experiment commonly referred to in shaken baby literature was conducted by Duhaime, et al. (1987), who tested the shaking hypothesis on whole infant models, and concluded that shaking alone is unlikely to cause severe injury without a predisposing condition, and in cases of diagnosed SBS it is far more likely that the infant also suffered from blunt force trauma or impacts (Duhaime, et al., 1987, 411-414). Bandak (2005) conducted a more recent experiment using infant models, which concludes that shaking would unavoidably cause injury to infant vertebrae, even before shaking could cause intracranial injury. In a majority of SBS cases, clinical findings of a spinal injury is rare, yet according to these results it should be present if the injuries to an infant are due to shaking (Bandak, 2005, 76-78). Whether or not impact or neck injury is needed to diagnose or cause the symptoms of SBS is not agreed upon.

Another disagreement about the diagnostic criteria is the degree to which accidental and natural causes can mimic SBS symptoms in infants. A study conducted by Geddes et al. (2003) reviewed 50 post-mortem cases of infants who had died of causes such as infection, SIDS, and

unexplained causes of death, concluding that most cases presented symptoms associated with SBS (Geddes, 2003, 14-15). The study implies that infants could present symptoms of intracranial injury without sustaining shaking. This particular hypothesis represents a position in another ongoing medical debate, as how unique the collective symptoms that are associated with SBS are unique to SBS.

In contrast, there are medical experts who defend the diagnostic criteria of SBS. Certain portions of the literature argue that the diagnostic triad used for SBS or AHT cannot likely be accounted for in the absence of a preceding medical condition, and the presence of triad symptoms are a valid indicator of inflicted injury (Jaspan, 2008, 385). Others in the medical community argue that child abuse should be suspected based on certain SBS symptoms. In a review of 66 publications of data, Togioka et al. (2009) conclude that SBS produces particularly recognizable patterns of retinal hemorrhaging, which are rarely present in accidental traumas (Togioka et al., 2009, 100-101). Wygnanski-Jaffe et al. (2006) arrive at a similar conclusion upon reviewing and comparing 36 postmortem cases of children that died of accidental head trauma and diagnosed SBS. The conclusion they made is that orbital nerve and tissue trauma is more likely to occur in SBS than accidental head injury, except in cases where there is direct impact to the orbits (Wygnanski-Jaffe, et al., 2006, 238). Narang et al. (2011) argues that the shaken baby syndrome debate discounts that SBS diagnoses are reached through the process of the differential diagnosis methodology. Differential diagnosis is a standardized methodology used in the diagnosis of symptoms, in which known mimics of the syndrome can be excluded from the diagnosis in a proper differential diagnosis (Narang et al, 2011, 77-79).

Bodies of Canadian medical literature have directly associated SBS with intentional injury or child abuse. In a review of 364 Canadian hospital-identified SBS cases from 1988-1998

conducted by King et al. (2003) it is argued that because the early stages of SBS have non-specific clinical symptoms such as vomiting, dizziness, and lethargy, health-care providers should have a high index of suspicion when infants and young children present with these subtle neurological symptoms (King et al., 2003, 157-158). In a report by Health Canada, SBS is defined as “A condition that occurs when an infant or young child is shaken violently, usually by a parent or a caregiver.” The same report by Health Canada also states “Shaken Baby Syndrome, with or without impact trauma, is a form of child abuse. When it is suspected, it will be investigated by the police because it is a form of assault which is a criminal offence in Canada” (Health Canada, 2001, 2-3). Medical literature that describes SBS in this manner is important when assessing the condition from a legal perspective. In this type of medical literature, the diagnostic criteria of SBS are made medically and legally synonymous with child abuse.

### ***A Legal Overview of Shaken Baby Syndrome***

As discussed in the medical literature, the diagnosis of SBS is made through the findings of a pathologist or pediatrician, who becomes the expert in cases of diagnosed SBS. The literature pertaining to expert knowledge addresses the problems with prosecuting based on expert opinion in isolation, and the consequences of misdiagnosing natural or accidental causes of death as homicides. The difficulty with prosecuting SBS cases is that the convictions in those cases are dependent on symptomatic findings. Convicting based on SBS symptoms can be problematic because medical consensus on diagnosis criteria for SBS does not exist (Tuerkhimer, 2011, 517-518).

There is Canadian legal literature that focuses on the attention towards wrongful convictions in child deaths in Ontario. The Goudge inquiry examined the role of pediatric

forensic pathology, and conducted a review of child death cases in Ontario from 1981-2001. This inquiry was prompted due to the errors of Dr. Charles Randal Smith (Goudge, 2007, 1-3). The mandate of the inquiry was to identify the systematic issues in pediatric forensic pathology in Ontario:

The broad purpose is to determine the systemic failings that may have occurred, and, guided by that, to identify the systemic issues that need to be addressed in order to make the recommendations required to restore and enhance public confidence in pediatric forensic pathology in Ontario and its future use in investigations and criminal proceedings (Goudge, 2007, 1).

In 2010, again in Ontario, Committee Report to Attorney General: Shaken Baby Death Review and reviewed 48 cases involving pediatric head injury. Out of these 48, 13 were found to require further medical evaluation (Ebbs, 2011, 2).

Under Canadian law the role of expert is to provide specialized knowledge in cases where that knowledge is necessary for a layperson to make a correct inference. The opinion of an expert is necessary in assisting the judge or jury in their deliberation. A potential problem with experts is that when two experts give conflicting testimony at trial, they may both present what seems to be objective scientific evidence. This confuses the judge and jury, who are unlikely to be scientifically literate in the field to which an expert is testifying. Another issue is that the financial cost of retaining experts to a defence raises concern about judicial fairness (Iacobucci et al., 2010, 53-54). The literature draws attention to the controversy of trials and legal convictions being over-reliant on expert opinion. This is controversial in cases of SBS because there is conflicting opinion amongst medical experts.

The literature addresses the making of erroneous diagnoses, in cases of suspected SBS where the causes of death without the SBS diagnosis may be medically inconclusive and a medically uncertain child death creates a dilemma for authorities. An assessment of Canadian Child Protective Services, Bala and Trocmé (2007) asserts that balancing between false

accusations of child abuse and protecting children from child abuse is difficult (Bala and Trocmé, 2007, 4). The authors also explain the conflicting position in which the child protection system is put in by uncertain cause of death diagnoses. Especially in cases where there are surviving or remaining children in the family, determining whether surviving children are at risk of abuse or neglect creates a precarious position for authorities (Bala and Trocmé, 2007, 8). In 1995, the Chief Coroner's Office of Ontario adopted a protocol encouraging pathologists to maintain a high level of suspicion or 'think dirty' with cases of unexpected infant death (OCCO, 2007, 31-32).

This protocol highlights the risk assessment shift in child protection and death investigation in the 1990's (Bala and Tromcé, 22). The protocol is argued to have invoked bias in forensic pathological findings and maintains that the forensic pathologists' office and the Coroner's Office of Ontario were influenced by vigilant efforts to prevent child abuse (Cradock, 2011, 367-368). Whether or not the phrase 'think dirty' actually invoked bias or wrongful pursuing of child abuse in pathologists is hard to determine (OCCO, 2007, 31-32). However, this investigatory protocol suggests that pathologists should have a high index of suspicion in child death cases. Considering that certain cases may lack of medical certainty in the cause of death, such as potential SBS and Sudden Infant Death Syndrome (SIDS), this creates a problem of confirmatory bias. Emotionally charged attitudes in pathology, which may bias the pathologist towards intentional child abuse, are contradictory to the legal role of the pathologist, which is to give scientifically objective impartial testimony (Iacobucci and Hamilton, 2010, 56).

The remaining portion of the Canadian literature specifically focuses on the 2008 Goudge Inquiry in Ontario. This inquiry became necessary because of the concern about the work of Dr. Charles Smith, who was the director of the Ontario Forensic Pediatric Unit at Toronto's Sick

Children's Hospital from 1992-2001. Smith was a pediatric pathologist with no qualifications in forensics whose diagnoses were involved in over a dozen overturned convictions (Cradock, 2011, 363; Kramer, 2006, 806-807). This inquiry drew on a major issue in forensics and legal prosecution: not only is a forensic pathologist or forensic pediatric pathologist a highly specialized category of expert, but Canada does not have training widely available for forensic pathologists, unlike the United States or the United Kingdom. Universities also do not tend to fund forensic pathology because it does not generate research funds; therefore, finding individuals who meet all the qualifications to make a diagnosis in a child-death can be difficult (Cradock, 2011, 169-170).

This inquiry represented a notable shift in the Ontario legal system; it addresses both erroneous medical interpretation, and the risk of wrongful conviction in cases of child death. Previous inquiries focused largely on child welfare, but the Goudge inquiry focuses on sufficient evidence in child abuse cases and the presumption of innocence of the adults in those cases (Cradock, 2011, 366-396). The medical skepticism over SBS is a legal controversy; not only is it heavily dependent on expert interpretation, but it is also a condition where some experts are uncertain or very cautionary about the diagnosis of the condition. Criminal proceedings where the decision is isolated to expert opinion are disturbing because experts are not infallible.

## **Methods: A Documentary Analysis with Interviews**

The objective of database searching was to collect cases involving either a diagnosis of SBS or cases of AHT where shaking was a suspected mechanism of injury. Both the Quick Law and Canlii databases were used to collect documents. In total, 78 Canadian court documents were selected and downloaded in an indiscriminate fashion, providing they were SBS or AHT criminal cases from 2000-2013. Due to a large uneven sample, the analysis is limited to Ontario court cases, which comprised the majority of the database findings. The Ontario sample was reduced, after the elimination of duplicate documents, to 25 court documents from 23 cases. The document sample consists of appeal rulings, conviction summaries, and sentencing summaries from 2000-2013. The legal inquiry addressing shaken baby cases in Ontario made its jurisdiction a suitable case study on its own. This was an appropriate design for exploring the relationship between expert knowledge and the legal system. A case study can focus on a relationship within a single entity; additionally, case studies do not require a hypothesis and can be exploratory (Bouma, et al., 2012, 110).

I limited the cases collected for core analysis to the years 2000-2013; cases from the 1970's to the 1990's were not included. I believed that it was more useful to answer my research question to make an assessment from cases involving contemporary expertise and legal practices, as opposed to assessing a sample where the cases and experts came from different decades. A core part of my research examines the current medical and legal debate over SBS, and the more recent attention of convicting under the SBS diagnosis. Having a short time frame to complete the research also necessitated a manageable sample size.

Court ruling summaries were adequate for the purposes of my research. The research is a case study and is qualitative in nature, so making large-scale inferences from the documents was

never the intention. Court rulings summarize medical expert testimony within the decision of the fact-finder and the evidentiary aspects that formed the decision of the fact-finder. Court rulings were a manageable way of assessing dozens of cases within the project deadline, which was constrained to the academic year. The documents are also a free public resource, so I was able to access them easily. The goal in reading and recording the specific facts of each document was to search for themes pertaining to medical expertise, including how both expert witness testimony and medical evidence were cited within the rulings. A limitation of this sample is that it does not explore the potential effects of medical expertise on family court proceedings; family court rulings were not included in the sample.

The same key terms in both databases were used when searching for cases. Base key-terms, such as shaken baby syndrome and abusive head trauma, were used for initial database searches. Different combinations and variations of key-terms were used in subsequent follow up searches (see Appendix D). One of the issues with searching legal databases is that often cases that did not pertain to SBS or AHT, but cited SBS or AHT cases, would appear in the search results. Another issue was that sometimes documents would coincidentally contain the keywords I was using. A potential example might be “The witness was ‘shaken’ on the stand” or “X claimed that Mr. X was ‘abusive’”. This provided a challenge in searching for documents, but did not inhibit the collection of relevant cases.

A limitation to the methodology is that it is restricted to court ruling documents from two legal databases. Even though court rulings do adequately explain what facts of the case influenced the outcome or legal decision of a trial, they are limited to the single perspective of the ruling judge. It is important to note that the judge is not the only perspective at trial and is not the only actor capable of making a legal decision based on medical expertise. The crown, the

jury, and the defence can also make legal decisions, which influence the outcome of a trial. A court ruling is a snapshot into one particular instance, from one actor's perspective. Even though this method was limited to assessing a single decision within a case, a case may contain several rulings, summarizing several different decisions. Overall this method was useful in studying the presence and influences of experts on various aspects of court proceedings. However, it is important to acknowledge that the documentary analysis is limited to the documents and types of documents that I had access to.

Another aspect is that there was also no particular consistency in the types of court rulings that were available for assessment (see Appendix B). However, I found certain aspects of having a non-homogenous sample beneficial; having a sample of various documents enabled assessment of expertise in the context of different types of rulings. There was also no consistency in the presence of experts in a case in this sample. Some cases had several experts, others had one, and in some cases the decision was mostly based on non-expert evidence.

The documentary analysis itself was largely exploratory. I asked broad thematic questions of the documents, such as what types of experts testify, what medical evidence is usually present, what type of charge is laid, what medical tests are done, whether or not the issues of the medical debate come up, what terms are used, and how many experts are present (See Appendix E). I read and made notes on each of the documents, then I went back and re-read the notes and areas of the document I had highlighted, and I revisited aspects such as arguments made, medical evidence presented, and factors that were weighed in the ruling.

The purpose of conducting semi-structured interviews was to provide further clarification on the polarization in the literature. The interviews proved to be incredibly useful; they provided insight into disagreements, medical evidence, and terminology. The interviewees were contacted

by email. In total, nine individuals were contacted and six responded and consented to do an interview. The medical professionals interviewed consisted of two neuropathologists, one pediatric doctor who worked in child abuse, one developmental pediatrician, and one forensic pathologist. The final interviewee was a criminal attorney who specialized in wrongful convictions who agreed to a brief interview. All interviews, with the exception of one face to face interview with Dr. Wood, were done over the phone. Phone interviews were necessary because five of the interviewees did not live in the province. Semi-structured interviews were a useful method because I was looking to gain the professional insights of the interviewees; therefore, it was important that the questions were framed around their answers (Bouma, et al. 46).

An ethical concern was that my interviews were not anonymous. This is because the participants are fairly identifiable by the work or because there is a small group of people with their title or specialty. Even though I was not assessing the interviewees as individual professionals, I needed to be sensitive to the fact that readers could very well make assumptions about them professionally. Case citations are used to describe some of the findings. I have chosen to black out the names, to minimize direct naming of anybody, even though they are of public record.

## **Findings: An Analysis of Shaken Baby Syndrome and Expertise**

I asked the interviewees about their experiences as expert witnesses and what they felt their role was. When this question was asked, the respondents described their role in the court room as both as being an educational one.

My role is to take my experience and my understanding of the literature to present it in as clear and as precise a manner as I can to the court to try and bring light to this area, and to try and educate courts, judges, juries on what I feel is the pathology in these cases (Dr. Squier, personal communication, February 12<sup>th</sup>, 2014).

I feel my role was to present the medical evidence in as objective manner as possible, and in as clear as manner as possible for non-medical people to understand. And to try and steer the way between emotional reactions and what is based in fact (Dr. Mian, personal communication, Feb 4<sup>th</sup> 2014).

I see my role as a teacher in the courts because the point is that they don't have that level of education and experience, but the juries and the judges require some knowledge and information around that specific area in order to form their opinion regarding guilt or innocence (Dr. Wood, personal communication, Jan 24<sup>th</sup> 2014).

When I go into the court it's to try and explain what my interpretation of the evidence is. I have no vested interest in either side winning or losing I just want the case to be represented as clearly and accurately to the court, so in their deliberations they don't have unclear or incorrect commentary to go on (Dr. Ramsay, personal communication, Feb 17<sup>th</sup> 2014).

The interviewees described the role of expert witness as one that involves presenting evidence in a way in which it can be understood and used to rule on the evidence. When this theme came up, there was an acknowledgement among interviewees that they were testifying for the benefit of non-experts. In that sense, the expert witness is an evidentiary role; however, from these anecdotal experiences, it is also a teaching role. It was also characterized as a role of personal perception, in which the experts gave their interpretations of the findings to the best of their ability, so the court could make an informed decision.

Expert testimony is based on the informed and knowledgeable opinions of the individual expert, who educates the court on their interpretation of the evidence. Within the sample, in every ruling that had experts testifying, the experts testified based on their own findings, and

what aspect of the medical findings they were deemed qualified to give evidence in. It was difficult to say whether the scientific background of shaken baby syndrome came up at all in a trial; however, it was not cited in the majority of the rulings. In this particular area of medicine, experts have differing opinions about AHT and SBS. The testimony of an expert may be characterized by their own position in the debate, in which the presentation of the medical evidence is framed through that experts' own take on SBS symptoms.

A way to exemplify this is the disagreement over retinal hemorrhages. The accuracy of retinal hemorrhages in differentiating between accidental and non-accidental trauma is debated. There are some experts who consider retinal hemorrhages to be a more definitive sign of inflicted head injury, and do not believe them to be typically caused or easily mimicked by accidental causes (Forbes & Levin, 2011, 410; 412-413). However, there are other experts who believe that the brain swelling and intracranial pressure caused by head injury can account for retinal hemorrhages seen in SBS cases (Geddes & Whitwall, 2004, 86).

If the medical findings of a case include retinal hemorrhages then the court may not know that different experts hold different opinions about retinal hemorrhages unless the expert is asked, or if fact-finder is already scientifically literate on the issue of retinal hemorrhages. As a result what the court learns about the medical findings of retinal hemorrhages may be subjective to what the testifying expert already believes about retinal hemorrhages versus what another expert may believe about retinal hemorrhages. There is the opinion, knowledge, and professional experience of the expert that is presented in court and then there is the vaster knowledge within their respective scientific discipline from which they draw from, which may not arise in court, and which the court may not be already privy to.

The documentary analysis showed that expert testimony within the courtroom is highly contextual. The number of testifying experts varied from as many as ten doctors testifying in a trial to a single doctor testifying in a trial. There were cases where the influence of experts was greater because of factors such as it being a case in where trauma was medically harder to prove. There were also cases where expert influence was less visible in a ruling, such as guilty pleas in where there wasn't a trial. In an interview with Dr. Main, a pediatrician, she explains that her experiences as an expert witness tended to be subjective to the climate of the court.

So they varied it really depended on the clinical case and what was available, they were more likely to be believed if there were external signs of injury then if there were none. It depended on the strength of the case, and in other ways it also depended on the nature of the parents, the lawyer, and the defence. If it was a criminal case then it was dependent on how good the crown attorney was and how good the defence attorney was. If it was a custody case then it was dependent on how good the CAS lawyer was and how good the parent's lawyer was. It also was dependent on the judge's leanings, some judges are inclined to believe that parents can sometimes harm their children, and some judges don't want to believe that (Dr. Mian, personal correspondence, Feb 4<sup>th</sup> 2014).

The interviewees who had testified in SBS cases described their experiences as expert witnesses as ones where their evidence was scrutinized. From their anecdotal experiences, the debate does affect how the expertise and the evidence of testifying experts are viewed. When the question, "What was your experience like as an expert witness?" was raised, responses showed that experts testifying in SBS cases could have a difficult time presenting their findings in court.

My experiences have been very varied from really hostile court environments where people were not inclined to believe that shaken baby syndrome existed, and if it does exist then it certainly doesn't exist in this child. To situations to where they were believing in shaken baby syndrome and could believe that it could be happening in this particular case (Dr. Mian, personal correspondence, Feb 4<sup>th</sup>, 2014).

It can become extremely acrimonious and I have had all kinds of unpleasant things said to me and about me and I've had some really rigorous cross-examination in court. But if your evidence is sound and if it's backed by experience and by what other people have experienced by publication and peer reviewed literature, then that's the way I try to work, and I try to cite the peer reviewed literature in everything I say (Dr. Squier, personal correspondence, Feb 12<sup>th</sup> 2014).

The problem is that you run into popularity votes, the pediatrician says this, children's aid says this, neurosurgeon says this, and here's this pathologist cabling over the conclusion of all these

experts, so I get challenged in court and I go ‘I’ve explained to you why I’ve have reservations about this argument for the triad, and I will not take part in a popularity contest’ (Dr. Ramsay, personal correspondence, Feb 17<sup>th</sup>, 2014).

The extent to which shaking is implied as an exact mechanism of injury was a finding in both the documentary analysis and in the interviews. Discussion of medical terminology was a common interview theme; four of the interviewees mentioned the change in terminology during their interview. All three pathologists stated that they felt that the term ‘shaken baby syndrome’ was misleading because it implies an exact mechanism of injury. They believed that the term ‘shaken baby syndrome’ was prejudicial term, and either did not use it themselves, or felt that its use should be avoided. This was incredibly insightful into how definitive a mechanism of injury can be medically diagnosed.

‘I don’t tend to use the term shaken baby syndrome because I think the shaken baby syndrome implies more certainty about the mechanism of the inflicted injury then I’m actually able to support’ (Dr. Wood, personal communication, January 24<sup>th</sup>, 2014).

It is also important in this analysis to mention that the tentativeness to diagnose shaking as a mechanism of injury in pathology is not synonymous with diagnosing a traumatic head injury. “Just because we can’t prove it was shaking doesn’t mean we can’t prove that an injury was there” (Dr. Wood, personal communication, January 24<sup>th</sup>).

Certainty of the mechanism varies among the documents to different extents; however, it was highly subjective in terms of how medical testimony stated shaking as a mechanism of injury. There are also cases in the sample that do not cite shaking as a specific mechanism, but more in the language of a potential mechanism. This aspect of the sample is very hard to quantify to any degree of exactness because there were cases of multiple experts testifying who cited different mechanisms from each other, cases of diagnosed SBS where there were numerous injuries, and cases where shaking was cited as the sole mechanism of injury.

In six of the cases, the defendants had admitted to shaking the child. There were three defendants who pled guilty and three who recanted a confession made to police. In two of the cases where the defendant recanted, *R.v. E.M* and *R.v. T.E*, there were findings of severe injuries which supported ongoing abuse and neglect; both defendants failed to seek assistance for their children. In one of the cases where the accused recanted, *R.v.Armishaw*, the confession was ruled inadmissible because the court found that the accused's confession was involuntarily made (*R.v.Armishaw*, 2011¶133-134). In addition to these cases there was also an appeal case, *R.v. Kumar*, in which the defendant had pled guilty. In 2011 the conviction was quashed and the defendant was acquitted (*R.v.Kumar*, 2011, ¶39). From these findings it is hard to say as to whether admitting shaking is actually confirmatory to medical findings of shaking. However, in the court rulings these admissions, apart from *R.v.Armishaw*, were treated as corroboration for the medical findings that conclude shaking as the mechanism of injury.

The majority of sentencing and trial convictions were aggravated assault cases or cases in which the victim in question survived. There was a notable presence of cases where there were traumatic injuries such as fractures, multiple unrelated injuries, and injuries of varying ages. These types of injuries act as corroborating evidence of abuse, especially if the injuries are extensive. In the aggravated assault cases specifically, pediatric doctors and child abuse specialists were the experts testifying.

As discussed in the overview of the medical literature, there is debate about the likelihood of natural and accidental mimics of the syndrome. The presence of traumatic injuries such as fractures, bruises, and multiple injuries at different stages of healing are important pieces of medical evidence in these cases; they support that the symptoms were more likely the cause of a trauma or inflicted force than a natural disease. Furthermore, multiple injuries at different

stages of healing mean that the findings cannot be related to a single instance of trauma. These types of injuries were cited in eight of the cases where the children had injuries ranging from bruises to multiple untreated fractures. Six of the cases: *R.v. E.M*, *R.v. T.E*, *R.v. Dooley*, *R.v. J.R*, *R.v. Hernandez*, and *R.v. McCauley* cited severe and multiple untreated injuries. Untreated severe injuries such as bone fractures are compelling indicators of abuse because they imply that the parent was either extremely negligent or severely abusive. In some of the cases, where the child had survived, ongoing medical evidence of trauma was cited; such as a patient who suffered permanent brain damage or began to recover from traumatic brain injury.

An outlying example in the sample is *R.v. Dooley*. In this case there was no debate amongst the testifying experts that this child was severely abused, and that this child's death was either directly caused or precipitated by abusive injuries. However, shaking being a mechanism at all was debated because the child was seven years old. It was cited by two pathologists that shaking was a possible mechanism, while it was cited by two other pathologists that shaking was highly unlikely (*R.v. Dooley*, ¶75-80). This case demonstrates the principle that there can still be abuse and there can still be inflicted head injury causing death; however, the diagnosis of shaken baby syndrome does not need to present in order to prosecute abuse and death caused by abuse. It is fully possible to diagnose intentionally inflicted trauma without experts diagnosing or agreeing upon shaking as the exact mechanism.

In cases where there was a medically inconsistent history or explanation for what may have happened to the child, this is mentioned in court rulings. Experts would testify as to how the medical findings could not be explained by an accidental event such as a fall or a panicked resuscitation attempt. In the interviews, the idea of default diagnosis versus a diagnosis that supports the medical findings was brought up. Within the interviews this seemed to be

contingent on whether the interviewees believed that minor accidents could possibly account for the SBS symptoms or not.

An injury that is incompatible; for example, 'The child fell off the couch', in fact we often talk about the quote 'killer couch'. In fact many children fall off a two foot couch and don't have these injuries, and babies with shaken baby syndrome often present with that history with catastrophic findings, so that's not consistent. They present with histories that change, so mother says 'He fell off the couch' father says 'He fell out of my arms', um so that kind of thing I mean by history (Dr. Mian, personal correspondence, Feb 14<sup>th</sup> 2014).

There's huge difficulties related to the phenomenon of confirmatory bias, so a child comes in say the family claims that the child has fallen down the stairs or has fallen from short height. The child is examined and is found to have retinal hemorrhages, severe brain swelling, skull fracture, and impact site; and people say that this is inconsistent with a short fall; therefore it must be abuse. Then so the next case comes in with the same story and the same conclusion is reached. The problem with that is that the more it happens the more the possibility that actually short falls in certain circumstances may produce the constellation of findings that most people interpret correctly as a head injury but incorrectly as having been inflicted rather than accidental (Dr. Ramsay, personal correspondence, Feb 17<sup>th</sup> 2014).

The vast majority of interpretation and presentation of medical findings were in support of the diagnosis of shaking. The majority of non-appeal cases reviewed resulted or cited a conviction. The exceptions were *R.v.Hernandez* and *R.v.Armishaw*, which were applications so a decision to convict would not have been cited. *R.v.Shields* was the only not-guilty verdict in the sample. The overwhelming majority of expert witnesses in the cases were crown experts. This finding is not to imply that experts who testify for the crown are wrong in doing so. However, the crown has a far more unfettered financial ability to recruit experts and the defendant may not have that ability.

The side that favours the prosecution is the side that has the state paying them, and the state pays well and can always pay, and will engage your services for the maximum amount needed. The defendant on the other hand will impecunious and may be relying on a legal aid system, and a legal aid system will not begin to fund the individuals in the way that the state is able to (James Lockyer, personal correspondence, February 20<sup>th</sup> 2014).

It is realistic possibility that in some cases, the total absence of defence experts, as it was with most cases in the sample, is socio-economically influenced. In one of the cases, socio-economic

status was cited in the court was *R.v.Rouselle* by the testifying expert. The expert cited their own research on the science of risk factors to describe the mother of the child, who was not on trial but lived with the defendant.

██████████ testified that she is engaged in research in respect of the science of risk factors associated with abuse of children. She testified that these risk factors include young parental age, unplanned pregnancy, a maternal history of domestic violence, and limited supports. Other factors are low level education, violence within the relationship, use of marijuana, and a maternal history of mental health problems. All of these risk factors were present for ██████████ (*R.v. Rouselle*, 2010, ¶99)

Supposed risk factors that may be characteristic of child abuse cases, or consider the age and social class of the defendant at trial could be prejudicial; it allows the social qualities of the accused to be covertly entered as evidence against the defence.

The interviews revealed a tension between the evidentiary standard in law and the evidentiary standard in medicine. In an interview with a criminal lawyer and pediatric doctor, it was shown how the SBS situates in both the legal and medical system. In the context of criminal law, SBS is questioned because SBS cannot be diagnosed with absolute certainty.

The legal system has given validity to the concept of shaken baby syndrome and has come to believe it is real, and never really comprehended that it is nothing more than a hypothesis, and is not as such a scientific conclusion – the legal system is having a lot of trouble grappling with that and still does. Still it's a very a conservative system, the legal system, and when a person, especially somebody clothed in expertise comes forward and provides if you like a criminal explanation for an event that does not admit an easy analysis, the criminal justice system tends to jump on it, and once it's jumped on it's very slow to let go (James Lockyer, personal correspondence, Feb 20<sup>th</sup>, 2014).

In the context of pediatric medicine, the diagnosis is not necessarily made at a lower standard than any other diagnosis in medicine.

There are problems diagnosing anything in medicine and there are also problems when diagnosing shaken baby syndrome. Sometimes it's not that problems are typical only of shaken baby syndrome as opposed to anything else in medicine to where a patient presents with a series of symptoms or signs by symptoms we mean a history or ways of acting, or what they are or are not doing, and by signs we mean things that we find on physical examination or with laboratory testing. And like anything else in medicine we make a differential diagnosis, and try to

understand how the symptoms and signs came to pass in a particular child. That's a problem set that is true for shaken baby syndrome but that is a problem set that is true for any clinical condition in which signs and symptoms are presented and you try to understand them (Ronald Barr, personal correspondence, February 19<sup>th</sup>, 2014).

A major contention around shaken baby syndrome was whether or not the diagnosis was absolutely certain and if doctors could be absolutely certain. The interviewees, who worked directly in this area, either in the field of pediatrics or the field of neuropathology, agreed that the condition was not pathognomonic. The debate over this condition is fueled largely by the fact legal prosecutions are based on a probable diagnosis as opposed to a pathognomonic diagnosis.

It was brought up in the interviews of Dr. Mian, Dr. Ramsay, and Dr. Barr that there is no perfect diagnostic standard for shaken baby syndrome, in that 100% certainty was not possible. It was additionally brought up in the interviews of Dr. Barr, Dr. Mian, Dr. Squier, and Dr. Ramsay that there needed to be testing done to rule out natural conditions and make a good differential diagnosis. However, it was also made apparent by these interviews that there does not seem to be a universal regulatory standard among doctors about specifically what tests to run and what conditions to rule out when presented with cases of potential SBS.

The five interviewees who work directly with SBS cases took various positions in the debate in terms of potential consequences resulting from error. It was clear that the professionals whose work involved SBS directly were concerned with the outcome of either missing child abuse or wrongfully convicting somebody of child abuse.

We really do need to continue to try and work on the science; preferably having both sides come together, so we can really thrash out what we feel is the truth. Because the fallout from this is just awful, getting it wrong and missing child abuse puts children at risk, but getting it wrong and over-diagnosing child abuse wrecks families, it puts people in prison, takes happy lovely children out of loving families and puts them in care where we know they'll do worse overall than staying with families. The stakes are enormously high (Dr. Squier, personal correspondence, Feb 12<sup>th</sup> 2014).

The interviewees whose work involves shaken baby syndrome cases took different moral positions on the consequences of error and misdiagnosis in these cases. The themes of default diagnosis, misdiagnosis, wrongful conviction, missed child abuse, and child protection were all very present themes throughout the interviews.

## **Conclusion: So What?**

Much of the legal opposition and cautionary skepticism toward shaken baby syndrome in the literature pertains to the consequence of wrongful convictions in child death cases. Forensic pathologists are the professionals who rule the cause of death in these cases. In the literature, that area of medicine notably tends to gravitate towards to either the cautionary side or the skeptical side of the debate. The interviewees who were pathologists tended to give a more cautionary view on the diagnosis of shaking. Whereas much of the pediatric and child abuse literature provided a more definitive support of making a probable diagnosis of SBS, with a proper medical investigation, as did the pediatricians interviewed. The two neuropathologists and the two pediatricians, whose work typically involves SBS, were very adamant about thorough investigation and diagnosing in these cases. However, the ideas of certainty and probability came up: how sure can a doctor be when diagnosing abuse? The controversy on the diagnosis of shaken baby syndrome is disputed as to whether it is valid to prosecute based on a possible or highly probable diagnosis versus a pathognomonic or diagnosis of absolute certainty.

The debate is partially characterized by the moral risks of making a diagnostic mistake in these cases. The interviewees themselves all took different moral stances in terms of potential consequences. From the literature and the interviews, I would conclude that there is certainly a consequence spectrum for professionals who work in these cases between failing to diagnose cases of child abuse and misdiagnosing cases of child abuse. Missing a case of child abuse and

failing to protect children is on one end of this spectrum; wrongfully convicting someone due to a medical error or a misdiagnosis is on the other end. I would argue this controversy is not simply a professional or scientific one, but it is very much based on the disastrous consequences that can occur from being wrong in this regard.

In the sample, there is a significant presence of shaken baby syndrome cases where there is no child-death. In these cases, ongoing medical evidence was cited, such as a living patient with permanent brain damage, or a patient who gradually recovers from traumatic brain injury. In the majority of these cases, child abuse and pediatric specialists were heavily involved as expert witnesses, and pathologists and forensic experts were absent. There was often corroborating physical evidence presented at trial such as fractures, injuries of different ages, and admissions of abuse by the caregiver.

In conclusion, the documentary analysis reveals that expert opinion could be incredibly influential. How expertise is influential and the degree to which expert evidence is questioned is incredibly subjective. The boundary between layperson and expert is apparent, yet it is blurred because the layperson must make a decision based on expert interpretation. This research shows that medical findings of abuse definitely affect the legal outcomes of shaken baby syndrome cases. The actual presence of experts varies from case to case throughout the sample. This research did show some potential ways in which expertise influences legal outcomes. However, the research was far more revealing of how the debate manifests itself in the expertise.

The findings of this research are not to dismiss experts as scientific boogeymen whose opinions rule the courtroom. A portion of this research demonstrates that nothing could be further from the truth; the interviews showed that expert witnesses experience varying degrees of scrutiny in their opinions while informing the court. The anthropological literature reviewed

largely defined the role of medical experts as a category of person with knowledge and influence. Looking at how experts in our culture use their knowledge and how their knowledge is used might provide greater insight into cultural expertise. Further anthropological research related to expertise may benefit from exploring expertise through the perceptions of experts.

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R. v. Hawkins, [2006] O.J. No. 3261 (QL)  
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R. v. T.E., [2009] O.J. No. 4298 (QL)  
R. v. Toledo, [2003] O.J. No. 6065 (QL)  
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## **Appendices**

### *Appendix A: Email Recruitment Script*

Dear \_\_\_\_\_

I am completing my honours thesis at Dalhousie University. The topic of my thesis is: How does expert knowledge affect legal decisions in Shaken Baby Syndrome Cases. I am seeking to interview professionals with experience and expertise related to the areas of law, medicine, and forensic science. I would be very interested in interviewing you. Attached to this email are the project details.

Best Regards

Sara Gillett

*Appendix B: Sample*

N=25

Case Citation	Document/ Decision	Year	Charge	Ruling/Plea	Court
R.v. Habib	Appeal	2000	Aggravated assault	Dismissed	ONCA
R.v. Smith	Appeal	2001	Manslaughter	Dismissed	ONCA
R.v. Sheppard	Appeal	2001	First degree murder	Allowed/ new trial ordered	ONCA
R. v. Toledo	Sentencing	2003	Aggravated assault	Guilty plea	ONSC
R.v. Shields	Trial	2004	Second degree murder	Not guilty	ONCJ
R.v. T.R.S.	Sentencing	2004	Manslaughter	Guilty plea	ONSC
R.v. E.M.	Sentencing	2005	Aggravated assault	Guilty plea	ONCJ
R.v. Jackson	Sentencing	2006	Aggravated assault	Guilty plea	ONSC
R.v. Hawkins	Trial	2006	Aggravated assault	Convicted	ONSC
R.v. Donnelly	Trial	2007	Aggravated assault; assault causing bodily harm	Convicted	ONSC
R.v. McCauley	Sentencing	2007	Aggravated assault	Guilty plea	ONSC
R.v. Pollard	Application for a stay of proceedings (for an unfit accused)	2007	Aggravated assault	Stay of proceedings granted	
R.v. Medieta	Appeal	2007	Second Degree Murder	Allowed/ new trial ordered	ONCA
R.v. Dooley	Appeal	2009	Second degree Murder	Dismissed	ONCA
R.v. T.E.	Trial	2009	Aggravated assault; criminal negligence; failing to provide the necessities of life; breaching a probation order	Convicted	ONSC
R.v. Rousselle	Trial	2010	Aggravated assault	Convicted	ONSC

R.v. Summers	Sentencing	2011	Manslaughter	Guilty Plea	ONSC
R.v. Armishaw	Application on admissibility of statements	2011	Second degree murder	Exhibits excluded	ONSC
R.v. Kumar	Appeal	2011	Criminal negligence causing death	Quashed/ Acquitted	ONCA
R.v. Simmons	Appeal	2012	Manslaughter	Dismissed	ONCA
R.v. Summers	Appeal	2013	Manslaughter	Dismissed	ONCA
R.v. Streeter	Appeal	2013	Second degree murder	Quashed	ONCA
R.v. J.R.	Sentencing	2013	Failing to provide the necessities of life	Found guilty, and sentenced	ONSC
R.v. Demanche	Trial	2013	Assault and manslaughter	Convicted (both counts)	ONSC
R.v. Hernandez	Application to allow medical specialists	2013	Second degree murder	Application allowed	ONSC

Total Cases: 23

*Appendix C: Participants*

Name	Occupation/Title	Expert Witness
Dr. Marnie Wood	Forensic Pathologist	Yes
Dr. Marcellina Mian	Pediatrician, Child Abuse Physician/ Dean of Medical Education	Yes
Dr. David Ramsay	Neuropathologist	Yes
Dr. Ronald Barr	Professor of Pediatrics/ Developmental Pediatrician	No
Dr. Waney Squier	Neuropathologist	Yes
James Lockyer	Criminal Lawyer	No

### *Appendix D: Key Terms Used*

Shaken Baby Syndrome  
Shaken Baby  
Inflicted Head Trauma  
Inflicted Head Trauma, Shaking  
Non-Accidental Head Trauma  
Non-Accidental Head Trauma, Shaking  
Abusive Head Trauma  
Abusive Head Trauma, Shaking

### *Appendix E: Abbreviations*

ONCA- Ontario Court of Appeal  
ONCJ- Ontario Court of Justice  
ONSC- Ontario Superior Court of Justice

AHT- Abusive Head Trauma  
NAHI- Non-accidental Head Injury  
IHT- Inflicted Head Trauma  
SBS- Shaken Baby Syndrome

## *Appendix F: Documentary Analysis Notes*

### Initial Questions

What types of experts testify?  
What medical evidence is usually present?  
What type of charge is laid?  
Are medical tests done, if so what medical tests are done?  
Does the issue of the medical debate come up?  
What terminology is used?  
How many experts are there and who are they testifying for?  
What are the reasons for an appeal?  
Do defendants deny or admit to shaking?

### Themes/ Developed Questions

How do the findings of retinal hemorrhages affect medical testimony, legal outcome?  
Why are retinal hemorrhages so compelling?  
Are they agreed upon in the literature or at trial?

How does socio-economic status affect proceedings?  
How does this affect ability to retain experts?  
Is medical testimony immune from social prejudices?  
Is there a pattern of experts testifying for crown versus experts testifying for defence?

Testimony to time frames of injury or death.  
How do expert time-frames affect cases?

Experts testifying to amount of force needed to inflict injury?  
How specific should the description of force be?

Previous, multiple, and aged injuries on children? (e.g. broken bone, older trauma, healing trauma, non-related traumas).  
How do these medical findings affect the legal outcomes?  
How do these cases differ from triad cases?

How is clinical history perceived by the courts if experts don't agree?

Are fact-finders scientifically literate on the medical debate?

Do professional differences come up at trial?  
\*See forensic versus pediatric and child abuse literature.

## *Appendix G: Consent Form*

### The Mobilization of Expert Knowledge in Shaken Baby Syndrome Cases

You are invited to take part in research being conducted by me, Sara Gillett, an undergraduate student in Social Anthropology, as part of my honours degree at Dalhousie University. The purpose of this research is to investigate the influence and effects of expert medical and scientific knowledge and testimony in legal cases involving shaken baby syndrome. The methods used will include both documentary analysis of legal cases involving shaken baby syndrome, and qualitative interviewing of medical and legal professionals. I will write up the results of this research in an honours thesis.

As a participant in the research you will be asked a number of interview questions about your professional experience, expertise, and opinion pertaining or relevant to the topic of Shaken Baby Syndrome. The interview is not expected to exceed 40 minutes and will be conducted in a location of your choosing, or by phone or Skype conversation. With your permission the interview will be audio recorded. If I quote the interview conversation in the thesis your name and occupation will be identified in the final thesis.

Your participation in this research is entirely voluntary. There are no anticipated risks to participating in these interviews; however, you do not have to answer questions that you do not want to answer, and you are welcome to stop the interview at any time if you no longer want to participate. If you decide to stop participating after the interview, you can do so until March 1. I will not be able to remove the information you provided after that date, because I will have completed my analysis, but the information will not be used in any other research. In addition, data collected will be destroyed one year after submission of the honours thesis.

Only the honours class supervisor and I will have access to the unprocessed information you offer. I will describe and share general findings in a presentation to the Sociology and Social Anthropology Department and in my honours thesis. It is very likely that I will quote individual interviewees in my thesis. Because there are very few people who have professional experience pertaining to shaken baby syndrome, and because it is important to identify interviewees' professional roles in the thesis, it is impossible to guarantee anonymity in this research. I intend to attribute quotes to interviewees by their profession and probably also by name (since who has what role is usually public knowledge). I will destroy all information one year after submitting my honours thesis.

The risks associated with this study are no greater than those you encounter in your everyday professional life.

There will be no direct benefit to you in participating in this research and you will not receive compensation. The research, however, will contribute to new knowledge on: How medical expertise and scientific knowledge influence legal decisions in Shaken Baby Syndrome cases. If you would like to see how your information is used, please feel free to contact me and I will send you a copy of my honours thesis after April 30.

If you have questions or concerns about the research please feel free to contact me or the honours class supervisor. My contact information is sr515186@dal.ca. You can contact the honours class supervisor, Dr. Martha Radice, at the Department of Sociology and Social Anthropology, Dalhousie University on (902) 494-6747, or email martha.radice@dal.ca.

If you have any ethical concerns about your participation in this research, you may contact Catherine Connors, Director, Research Ethics, Dalhousie University at (902) 494-1462, or email [ethics@dal.ca](mailto:ethics@dal.ca).

Participant's consent:

I have read the above information and I agree to participate in this study.

Name: \_\_\_\_\_

Signature: \_\_\_\_\_

Date: \_\_\_\_\_

Researcher's signature: \_\_\_\_\_

Date: \_\_\_\_\_

## *Appendix H: Interview Quotes*

### **Dr. Marcellina Mian**

Alright, and you um seemed to have worked in let's say this field for a very long time, do you think that the perception and the way in which the condition has been thought of or diagnosed has changed, throughout the years?

I mean I think initially there was a lot of skepticism about whether shaken baby syndrome existed at all, I mean not that there isn't skepticism now there clearly is, but I think that now it's more from the point of view of controversy whereas initially it more incredulity, like 'what are you talking about?' Whereas now it's more as 'you're wrong, this doesn't exist, you have to have impact, or you have to have more force.' so that had changed. The nomic nature has changed, I think we all still use shaken baby syndrome, but now abusive head trauma um is more commonly used, or that's what the American Academy is pointing to, so yes things have evolved, we also have as I indicated to we had fewer tools to in terms of being able to evaluate the situation now we have more tools, we can be more sophisticated, we have some chemical markers we can look at, we clearly need to do a lot more but we understand a lot more about the problem then we did. So yes things have changed tremendously.

Sara: And what do you mean by history, do you mean lack of injury, or preceding condition, or history of abuse?

Dr. Mian: So lack of injury, or a injury that is incompatible. For example, 'the child fell off the couch', in fact we often talk about the quote 'killer couch'. In fact many children fall off a two foot couch and don't have these injuries, and babies with shaken baby syndrome often present with that history with catastrophic findings, so that's not consistent. Or histories that change, so mother says 'he fell off the couch' father says 'he fell out of my arms', um so that kind of thing I mean by history. Social history is, might contribute um with indicators so for example knowing that the child had a previous abusive injury, or that the father is violent or that the mother is violent, or that previous sibling was shaken, all of those things add to the picture, but on the other hand we always have to keep in mind that regardless of all of those findings what we need to look at is can we make the medical diagnosis in this particular child. So all of those risk factors can help us in the overall picture but don't really contribute to the diagnosis of whether this particular

How common would you say shaken baby syndrome is?

Um, so the reality is that we don't have good figures, but probably the study that Jim King did in Canada a few years ago that gathered data from many institutions, and you probably have that, gives some findings, but we don't have any population based studies. I mean most of the studies that are available are available in various institutions

What was your experience as an expert witness?

So they varied it really depended on the clinical case and what was available, they were more likely to be believed if there were external signs of injury then if there were none. It depend on the strength of the case and in other ways, it also depended on the nature of the parents, the lawyer, and the defence. If it was a criminal case then the dependent on how good the crown attorney was and on how good the defence

attorney was. It was a custody case dependent on how good the CAS lawyer was and how good the parent's lawyer was. It also dependent on the judge's leanings, some judges are inclined to believe that parents can sometimes harm their children, and some judges don't want to believe that, or don't want to believe that shaken baby syndrome exists. My experiences have been very varied from really hostile court environments where people were not inclined to believe that shaken baby syndrome existed, and if it does exist then it certainly doesn't exist in this child. To situations to where they were believing in shaken baby syndrome and could believe that it could be happening in this particular case.

What do you feel your role was?

I feel my role was to present the medical evidence in as objective manner as possible, and in as clear as manner as possible for non-medical people to understand. And to try and steer the way between emotional reactions and what is based in fact, and to try and present the objective evidence and do so in as clear as manner as possible.

You mentioned testifying for the prosecution have you ever testified for the defence? Or have been called upon by the defence.

I have um but I don't think I was ever called for the defence in a shaken baby case. I mean shaken baby cases are so hard to prove that usually they don't come to court unless there is strong evidence. And in the position I was in being on the SCAN team I don't recall any case...I think it would be very unlikely for a child abuse physician to be called in a shaken baby case for the defence. The defence witness are said to be the ones who are well known like Dr. Plunkett like Dr. Letma, there are very few cases in where there have been honest mistakes.

So usually when somebody is accused of shaking a child there will be over whelming corroborating evidence?

In my experience the times when we on the SCAN team made a diagnosis of shaken baby syndrome it was of pretty significant evidence.

Additional comments?

No I don't think I have any additional comments, I think it's one of those a difficult topics. I think—not I think; I know that I and my colleagues often agonized on making the diagnosis in these cases specifically in these cases where the parent's presentation or the presentation of everybody involved in comparison to the findings on child were in conflict.

I've spent way too much time making decisions about whether children are safe to remain with their parents or not. And contrary to what a lot of attorneys tried to say, which is for me it's easy to remove, if I suspect abuse it's easy to remove a child from a parent it's not it's not. I believe strongly that a child belongs with his or her parents because those are the people who care the most about that child and to make the decision to remove that child is extremely difficult.

## **Dr. Ronald Barr**

Well, shaken baby syndrome is a syndrome that has been in the literature now since 1971, it has recently been renamed abusive head trauma by the American Academy of Pediatrics, and like many syndromes it is defined by a constellation of physical findings complimented by history, and scene investigations, and interviews with parents and caregivers. There are some things that are typically part of it, but one of the myths is that it has been defined uniquely as having physical findings sometimes referred to as a triad, that is to say brain injury usually represented by cerebral-edema, retinal hemorrhages or bleeding in the back of the eye, and sometimes broken bones and ribs, sometimes fractures, and subdural hemorrhages. So the usual triad is subdural hemorrhages, retinal hemorrhages, and brain damage the common pathway is swelling of the brain or cerebral edema.

Well thank you for the mention about the purple crying, the reason that's there is because by far in a way the most common situation in which shaking occurs is because caregivers or parents, could be transient caregivers as well, get frustrated by prolonged unsoothable crying that the infant is doing. And that's a stimulus risk factor that is true across all socio-economic statuses and across all groups, and is in fact a universal factor for all infants in the first 3-5 months of life. And the frustration from having a baby that is crying and you can't do anything about it is enough to put some caregivers over the edge. Even without knowing it they can just be holding the baby in their arms and hold it out in front of them and shake it and go 'What are you doing?' 'What can I do for you?' 'Why are you doing this?' because they don't know because they don't have a sense that this is a totally normal part of infant behavior.

One of the most scary part about this in comparison with anything else they can do with the infant like throwing them against the wall or punching them in the stomach, which sometimes happens, shaking them actually has them calm down and that's because they basically induce a transient concussion, and as a result of that the baby cries and they calm down when they're shaken. That can lead to doing it again at a subsequent episode, so over 50% of these kids have repeated shaking episodes not just a single one.

I have seen them but I need to share with you that I am not a child abuse physician. My entry and area of interest into this is in the world of prevention, so I'm not a primary care child abuse physician I don't see them in the emergency room, but I have seen and met children that have been shaken either initially or after they have grown up and that is a very depressing, as you can imagine prospect because some of these children are very seriously delayed.

Delayed how so?

Usually in all of the way in which brain damage can produce delays. That can include that their developmental progress has been arrested at whatever the age they were when the shaking occurred if it's a very severe case. The case I happen to know the best is a currently seventeen year old whose functioning like a six month old because she was shaken by her father in her first ten days acutally of life. She cannot feed herself, she cannot sit up strait, she can't talk; she only communicates in the most rudimentary fashion; she has constant seizures which are only partially controlled; so the outcome for these kids is pretty desperate actually.

Are there problems with diagnosing shaken baby syndrome?

So there are problems diagnosing anything in medicine and there are also problems when diagnosing shaken baby syndrome. Sometimes it's not that problems are typical only of shaken baby syndrome as opposed to anything else in medicine to where a patient presents with a series of symptoms or signs by symptoms we mean a history or ways of acting, or what they are or are not doing, and by signs we mean things that we find on physical examination or with laboratory testing. And like anything else in medicine we make a differential diagnosis, and try to understand how the symptoms and signs came to pass in a particular child. One of the big challenges in regards to shaken baby syndrome is that there is hardly anybody there to witness what happened, so what you get is a set of clinical signs and symptoms and you have to try and understand why that particular patient is in the condition that they are in at the time you see them, and that means ruling out other possible explanations for the signs and symptoms the time you see them. That's a problem set that is true for shaken baby syndrome but that is a problem set that is true for any clinical condition in which signs and symptoms are presented and you try to understand them.

Is the triad for abusive head trauma and for shaken baby syndrome specific?

I'm sorry to be picky but it depends on what you mean by specific, let me say it another way. There is a phrase in medicine and that is: is something pathognomonic? And pathognomonic means that if you have conditions X, Y, or Z then that absolutely defines that you have or do not have a disease. In the case of shaken baby syndrome we talked about the triad and you asked about the triad, and you asked me specifically about the triad, and the answer is you don't have to have all three elements of the triad in order to have shaken baby syndrome. But even if you have all three elements of the triad it could still be depending on the condition and depending on other parts of the history and so on a result of other things, but it's very very unlikely to be, so we're talking probabilistic as opposed to absolute certainly.

So there is no debate about the fact that they could be mimicked by other conditions, that's never been a debate, the people that are deniers of shaken baby syndrome would like to think that people have said that it's specific in the sense that you're asking, and that it can't be due to anything else nobody that I know makes that assertion. That's a false assertion, that's a false set up of a debate because it's not true for anything in medicine that you can say with 100% certainty that something is a case or not, or condition X is a case or not, cause there is always other things especially if we're talking about symptoms. Even if we're talking about signs which remember I referred to before as physical examinations and laboratory findings, or symptoms and signs together, all of these things virtually always there can be something else that can mimic it.

I'm not actually concerned too much about the portion of the medical community that denies it since it's a very small portion of the medical community. They happen to be very prominent and salient partly because one of the things that comes up in all forms of child abuse but especially abuse head trauma is the fact that there are legal consequences if you are the person who shook the baby, and because of that the court is brought into these debates that adds a whole level of both logic and process that isn't typical for most things that we deal with in medicine. And as a result because in very basic principal in court is there reasonable doubt that the person who in this case might be accused of shaking the baby or abusing the infant didn't do it, so anything that can be brought up to cast doubt is brought up to cast doubt. So for that reason making claims that the triad is absolute certainty when none of us in clinical medicine would ever say that, and then saying so there must be reasonable doubt is a typical and understandable defence strategy but that is not the same as having a difference of opinion about the clinical evidence as to whether or not there is shaken baby syndrome or not that has to do with casting reasonable doubt in a court room. And I understand where that comes from as does everybody else who is involved in this. But that is not the same as having a significant medical debate about abusive head trauma and shaken baby syndrome.

I would say that other than recognizing that having a syndromic name i.e. shaken baby syndrome in the title of the name it assumes a mechanism and that is not something that's typical in medicine.

I think that the extent to which are claims made that are overarching and generalizable has very serious consequences for the protection of infants and children. People who claim as by the way fifth estate a program on CBC interviewed a bio-mechanic in the United States, who claimed that you can't get shaken baby syndrome on the basis of shaking babies alone, and that was on the fifth estate program. And the message anybody watching that program could take away from that program is that, 'It doesn't matter if I shake my baby because I can't produce this clinical damage anyway' is exceedingly dangerous, and it scares me to death that programs like that who don't do their background homework appropriately are actually compromising the health and welfare and arguably the lives of Canadian or infants around the world wherever it gets seen, so yes I think the controversy does have some potentially very negative effects.

### **Dr. Waney Squier**

I think that there are many alternative conditions which can masquerade as shaken baby syndrome, and of course the other thing to add is low falls. Babies who have falls may in fact injure themselves 3-4 feet or off a bed or off a changing mat can damage a baby. And in the established literature on shaken baby syndrome this is said to be unacceptable, that if a parent says their baby has fallen 3-4 feet they are obviously lying. I think that is something that we can't be so sure about and biomechanical studies have shown us that even falls of a foot can generate more force than an adult shaking a dummy, so I think that's an area we also need to take into consideration.

We know that abusing a child or impacting it or shaking it can likely cause serious damage. The question we should be asking is if we see a baby that has subdural hemorrhage, and retinal hemorrhage, and a swollen brain can we infer that there must have been shaking and I think the answer is that we cannot, we don't have sufficient evidence to make that assumption with any degree of safety.

Well I think that if you are talking about abusive head trauma you at first of all need to look for evidence of that. So if you got what is regarded as something due to trauma inside the head then what's the evidence of trauma? Are there bruises? Are there fractures? Is there a skull fracture? Are there fractures elsewhere in the body? Is there abrasions? One of the stories about shaken baby syndrome is that the forces are equivalent to those of a road traffic accident or a multi-story fall, well in those babies you would see multiple fractures, and skin damage, and bruises, and abrasions. If you don't have any evidence at all of any trauma outside then you have to do a very careful examination because if you have any bleeding at all inside the head then of course you need to consider the possibility that it could be traumatic and it could be inflicted, that's a very important consideration because what we don't want to do is miss these cases. But you also need to look and see if it could be a natural disease because if we put those blinkers on too soon and say this is shaken baby syndrome; therefore we've got an answer we may very well be missing conditions that need treatment.

It's a hugely polarized debate there are people on each side of this. It's very hard to get sensible debate in the middle ground, I've been involved in many attempts to do this, and it's very hard to get people to come together and put their science on the table. There are those who firmly believe in shaken baby syndrome; although, they do not call it shaken baby syndrome anymore they call it abusive head trauma, but they still reserve the right to say in which shaking may be part of the mechanism. Then there are those

who say well the science doesn't really stuck up because nothing that was initially said about shaken baby syndrome in 1971 has shown to be correct. We've shown that the bridging veins aren't show to be ruptured and that the bleeding probably comes from the dura, and that is pretty well-established now, and many experts from both sides are beginning to accept that subdural bleeding may come from the dura rather than from ruptured bridging veins.

Is the triad reliable

Yes I do not think it is at all reliable, and again this is something that I've always worried about to a certain extent. I think it was September 2012 there was a meeting in Queens, a prosecutors meeting, and again Carol Jenny said 'The triad is a myth', and Carol Jenny being one of the chief proponents of shaken baby syndrome, so again this is one other part of the argument where the two sides are coming together.

I think the first thing we need to do is to stop people from jumping into this diagnosis preemptively and to soon, and to be willing to undergo a far more exhaustive series of tests, investigations, at the outset. Because again and again I have seen it happen that babies come into hospital the diagnosis is made, and then all further investigation stop.

My role is very clear I'm a neuropathologist, I for thirty years been in this department in Oxford, studying the brains of fetuses, newborn babies, infants, children, who have natural disease. So I have a huge experience of looking at thousands of brains of babies with natural disease processes. I do know a bit now about how the brain works how it responds to various insults. My role is to take my experience and my understanding of the literature to present it in as clear and as precise a manner as I can to the court.

### **David Ramsay**

'The root of the problem is you come into hospital with a heart attack and there are very specific findings on the ECG and on blood tests that prove you have had a heart attack. But we don't have that in particularly triad cases. If you look at the question of inflicted head injury, the two big contentious areas are first the pure triad cases where there is no direct evidence of trauma, and therefore shaking becomes the default diagnosis.'

It's much easier to say to the triad, oh well we've done all our tests there's nothing else to explain it, so you just take the default diagnosis. To me having been trained properly as a scientist with a Ph.D. and post-doctoral experience that is not an untested root that I would want to take if I were in court.

I tend not to use phrases in which intent or mechanism is implied. If you say inflicted head injury, abusive head injury, shaken baby syndrome, it subconsciously reinforces to the injury

**James Lockyer**

L: Alright, what kind of work, I'm a criminal lawyer, uh who specializes in examining wrongful convictions from the past and trying to set them aside.

Sara: Alright, and do you usually encounter shaken baby syndrome cases?

L: I have encountered several yes.

Sara: And is there a particular case that has exemplifying factors of?

L: Well there's a number of them, there's two I've actually uh brought to a successful conclusion, if I can put it that way, uh where um two individuals convicted in the 90's, of a shaking uh...in both cases their own babies to death, they were both fathers, I both I had both set aside and acquittals entered uh some twenty years later or so.

Sara: Alright, and is in your opinion is charging individuals with abusive head trauma or shaken baby syndrome uh is it usually problematic?

L: Yes they're unbearably problematic.

Sara: How so?

L: A because it's um uh...it's a(the?) medical people trying to hypothesize a conclusion as to how a baby died when they don't know how a baby died, and a shaken baby is really nothing more than hypothesis thought of several decades ago, and has been rather religiously followed by some medical practitioners and pediatricians since.

**Dr. Marnie Wood**

Dr. Wood: And again, um ah I don't tend to use the term shaken baby syndrome um, any, anymore um because I think the shaken baby syndrome implies more certainty about the mechanism of the inflicted injury than I'm actually able to support, and I think um having findings in a case investigation that are suspect--- um that are very suggestive or diagnostic of head injury are not necessarily diagnostic of or suggestive of shaking specifically.

Sara: And are there say predictable elements of abusive head trauma cases? In terms of things that you'd routinely see, or investigation routes that would routinely be taken?

Dr. Wood: As far as autopsy findings, or things in the history or scene? I'm not sure...

Sara: Like let's say if suspected that the cause of death was abusive head trauma, I'm not going to use shaken baby syndrome in the interview anymore now that I know. Um, like would the like would sort of

be the procedure or the conclusion, would it be charged as suspicious or would it be investigated as a homicide or...?

Dr. Wood: Okay, well I just sort of sit back and I can describe, and I think answer your question, in describing how infant deaths in general are handled, um so when an infant death is reported to our service, and let me know if I'm going way off into left field and giving you more than you want. Um when an infant death is reported to our service the first decision we have to make is whether or not it is a medical examiner case or not, so some infants die in a hospital of a congenital birth defect, or an infection, or something that has been diagnosed in the hospital it's perfectly natural disease, and it's an expected death and those cases don't become medical examiner cases. Um, if an infant dies and they were previously known to be healthy they have no medical history whatsoever, um even if the circumstances initially present as relatively benign um if there's no reason for that baby to have died upfront then that becomes a medical examiner's case, those cases by our office are routinely investigated in the same way in all cases, um so they ah receive a full autopsy, including consults as necessary, toxicology testing, microscopic examination of the tissues, um it's very much the same autopsy done in most of those cases. We also gather scene information on where the baby was found, what was present at the scene, and we were a send our investigators out to collect as much information as possible on their medical history, um what happened to the baby in the immediate time before death, did they suffer any injuries? And part of that is discovering through questions of family members and through interviews performed by the police, is there any suspicion that the baby was injured? Uh, that being said the presence or absence of any suspicion we still always sort of rule out whether there's injuries at the autopsy and we consider that possibility whether or not the possibility is initially presented on history if that makes sense? Um, and that that full investigation can take a lot of time to collect all that information and do all of the ancillary testing, and then at the end of that investigation um as medical examiner I look at the autopsy findings, and the scene investigation, and all the history that I've collected, and any of the police statements that come up, and I decide at that point, my role is to certify the cause of death and the manner of death, and so based on if there's injuries at the autopsy, and there's no, no accidental explanation then the cause of death becomes the injury and the manner of death may become homicide; if there's injuries at autopsy and they were in a car accident for instance, or they fell from significant of height then that becomes the that's mechanism of injury and then it becomes an accident, if there's an infection of autopsy and nothing bad happened to the baby then it becomes a natural death. So that ruling, so that's—that's the purpose of our investigation to come up with the cause and manner. And then the police investigation, our findings get used in their investigation to decide whether or not they pursue any investigation into criminal activity at all, if it's a natural death they don't, um or whether or not they're investigating a murder or a manslaughter or something else.