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The Silent Epidemic: Assessing Policy Equilibrium and Punctuation on the issue of Sport-Related Concussions

Major Research Paper
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Abstract

Sport-Related Concussions (SRC) represent an important public health issue. An estimated 1.8 to 3.5 million SRC occur each year in the United-States. As our understanding of the brain evolves and evidence becomes available, policymakers are increasingly interested in addressing the issue of SRC. Analysed through the theoretical lens of Frank Baumgartner and Bryan Jones' Punctuated Equilibrium Theory (PET), this Major Research Paper investigates the forces that contributed to policy stability, and those that contributed to policy change on the issue of SRC. As a policy process theory, the PET documents how policymaking is characterized by long periods of stability and incremental change, only to be punctuated through radical shifts. While most policy process models are interested in understanding either policy stability or change, the PET encompasses both. Our research delineates the contextual conditions and narratives of four SRC incidences, two of which involve athletes at the amateur level (Zachery Lystedt and Rowan Stringer), and two involving professional athletes (Mike Webster and Sidney Crosby). The qualitative data retrieved from our cases is compared with the theoretical components of the PET. Our findings suggest that although SRC have plagued the sport landscape for years, only recently have they risen to the agenda of policymakers and been subject to state intervention in the United-States and Canada. In the 1990s, policy stability on the issue of SRC was the result of a negative feedback process dominated by monopolistic subsystems that dampened change through a supportive policy image. On the contrary, policy change in the last ten years can be attributed to a positive feedback process characterized by policy entrepreneurs who were successful in redefining the issue by using appropriate institutional venues. This Major Research Paper concludes with recommendations for policy entrepreneurs. In particular, our research suggests that policy change goes beyond simple partisan and electoral explanations. Agents of change seeking to alter the mindset of apathetic policymakers should strategically align their lobbying efforts, discourse, and overall actions to create a self-reinforcing process that accentuates change.

Key Words

Sport-related concussions, punctuated equilibrium theory, policy process, agenda setting, issue definition, policy monopolies, policy images, policy entrepreneurs, policy venues

Acronyms

CDC	Centers for Disease Control and Prevention
CIHI	Canadian Institute for Health Information
CTE	Chronic Traumatic Encephalopathy
FIFA	Federation Internationale de Football Association
HDIC	Hockey Day in Canada
IIHF	International Ice Hockey Federation
IOC	International Olympic Committee
LOC	Loss of Consciousness
MTBI	Mild Traumatic Brain Injury Committee
NFL	National Football League
NHL	National Hockey League
PET	Punctuated Equilibrium Theory
SAC	Standardized Assessment of Concussions
SIS	Second Impact Syndrome
SRC	Sport-Related Concussions
TBI	Traumatic Brain Injury

Table of Contents

Chapter 1: Introduction..... 4

 Research Questions..... 5

 Scope of Thesis and Importance of Research..... 5

 Sport-Related Concussion Policies in Canada and the United States 7

 Research Methodology..... 9

Chapter 2: Theoretical Framework: Punctuated Equilibrium Theory 12

Chapter 3: Literature Review: Filling an Empirical Gap 17

Chapter 4: Analysis and Discussions 28

 Negative Feedback Process (Policy Stability) 31

 Positive Feedback Process (Policy Change) 39

Chapter 5: Conclusion 45

 Policy Implications 47

 Looking forward 47

References..... 52

Chapter 1: Introduction

Traumatic Brain Injury (TBI) has been famously coined the “silent epidemic”, in large part because incidences are significantly underreported, and ultimately remain untreated (Kelly et al, 1991; Kiraly, 2007; Buck, 2011; Carroll & Rosner, 2012). As our understanding of the brain evolves and evidence becomes more available, there is a growing awareness of the long-term cognitive effects associated with TBI, which includes physical symptoms (headaches, nausea, fatigue, dizziness), cognitive symptoms (memory, attention and executive function impairments), as well as mental health concerns (depression, anxiety and post-traumatic stress disorder) (Weng, 2015). In recent years, increased awareness of TBI has been driven by the topic of Sport-Related Concussions (SRC), a subset of TBI.

This Major Research Paper is interested in the policy process¹ of SRC in the United States and Canada. In both countries, the issue of SRC has recently shifted from the *systemic* (unofficial) public agenda to the *institutional* (official) agenda. The former refers to all the issues and topics that are perceived as deserving public attention, while the latter consists of those issues that actually receive attention from policy elites. Agenda setting is grounded in the notion that no political system has the institutional capacity to address every problem. In any given social setting, ideas and issues compete against each other to gain political attention, and only a small number of issues from the systemic agenda make their way to the institutional agenda (Cobb & Elder, 1983). Our research is therefore guided by a simple observation: SRC policies² have

¹ The policy process is defined as the study of the interactions over time between public policy and its surrounding actors, events, and contexts. (Sabatier & Weible, 2014). The policy cycle involves a multi-cycle approach which usually includes Policy Identification, Agenda- Setting, Implementation, and Evaluation.

² For the purpose of this research, the term “policy” is used broadly, and does not refer to a specific course of action. As pointed out by Birkland (2014), the study of policy should not be limited to written Laws or Regulations. A policy can be defined as a Statement made by Governments to

been characterized by extended periods of stability and incremental change at the macro-level, but have recently risen to the agenda of policymakers. The focus is on which factors contributed to policy stability, and which ones contributed to change on the issue of SRC.

Research Questions

The research utilizes a qualitative, multiple-case research design (see research methodology section). Four distinctive cases will be analysed, two of which involve athletes at the amateur level (Zachery Lystetd and Rowan Stringer), and two involving professional athletes (Mike Webster and Sidney Crosby). The contextual conditions surrounding these cases, as well as the experience of the actors involved will be analysed through the theoretical lens of the Punctuated Equilibrium Theory. Ultimately, the study seeks to answer the following research question:

What factors contributed to policy stability, and which ones contributed to policy change on the issue of SRC?

The following sub-questions guide the research process:

- Who were the prominent members of the monopolistic subsystem that ensured equilibrium and incremental change?
- What supportive policy image was put in place by monopolistic subsystems?
- Which policy entrepreneurs were successful in creating policy punctuation?
- How did a change in the policy image impact SRC policies?
- Which institutional venues were exploited by policy entrepreneurs to push for policy change?

Scope of Thesis and Importance of Research

Initial studies concluded that 300,000 SRC occurred annually in a country like the United States, but that incidence rate appears to be conservative as it only accounts for athletes who

address a public issue. These statements can be found in “Constitutions, statutes, regulation, agency or leadership decisions, or in changes in the behavior of government officials at all levels.”

suffered loss of consciousness (LOC) (CDC, 1997). Considering that the vast majority (90%) of SRC don't involve LOC, and that cognitive brain injuries are often underreported due to the absence of widespread surveillance mechanisms, the Centers for Disease Control and Prevention (CDC) claimed that a more accurate estimate would be approximately 1.6 to 3.8 million annually (as cited by Langlois, Rutland Brown & Wald, 2006). Children and youth are particularly vulnerable to the negative long-term cognitive outcomes resulting from SRC. The Canadian Institute for Health Information (CIHI) showed a 78% increase in Emergency Department (ED) visits amongst 0-9 year-olds and a 45% increase among 10-17 year-olds for sport-related brain injuries (2016). The situation is just as alarming south of the border, where the CDC (2011) estimates that young people aged 5–18 years sustain 65% of all SRC. As highlighted by Lowrey (2015), the issue of SRC in children and youth is a “double-edged sword”: “Public health interventions, including law and policy, must seek to reduce incidence and severity of sport-related injury, including concussions, while continuing to promote the significant short-and long-term health benefits of physical fitness” (p.62).

This Major Research Paper is relevant and timely given the heightened profile of concussions as a public health issue. In the past several years, the incidence of concussions has received significant media coverage, particularly with respect to children and youth. Despite a need for increased government intervention, most of the academic interest in sports-related public policy has focused on doping, gender equality, persons with a disability, and harassment (Houlihan, 2005). The International Conference on Concussion in Sport held successively in Vienna (2001), Prague (2004), Zurich (2008) and again in Zurich (2012) highlighted the need for a global collaborative approach in addressing SRC. Policymakers are therefore increasingly

interested in exploring avenues to deal with SRC, and states are sought upon to introduce legalisation, programs, strategies and other forms of policies to address the epidemic.

Sport-Related Concussion Policies in Canada and the United States

In June 2016, the Canadian Federal Minister of Sport and Persons with Disabilities met with her Provincial and Territorial counterparts in Lethbridge, Alberta, to discuss a number of issues, including SRC. The Government of Canada expressed its desire to assume a leadership role on the issue, most noticeably by providing \$1.4 million for the Public Health Agency of Canada to "harmonize concussion management guidelines across Canada." (Government of Canada, 2016). The Government seeks to develop a coordinated and collaborative approach with sport stakeholders and the provinces. The work of the Federal Government draws upon existing initiatives from provincial governments, such as Ontario's *Rowan's Law* (2016) which was introduced as a private member's bill and received unanimous consent from the Legislative Assembly. Based on international concussion guidelines developed in Switzerland (2012), the Law focuses primarily on educating athletes, coaches and parents on the long term cognitive impacts of SRC.

The United States remains ahead of Canada when it comes to SRC policies. In 2014, the White House organized a concussion summit, where President Barack Obama opened up the one-day event by stating the need to develop "better research, better data, better safety equipment, and better protocols" (Jackson, 2014). During the summit, the government announced an \$89 million commitment through public-private partnerships to address the issue. At the sub-national level, all fifty states, including the District of Columbia, have enacted a "Return to Play Law". The laws focus on the management of SRC, and on assessing the athlete's ability to return to play. The state of Washington was the first to pass a new bill called "Lystedt Law".

Signed by Governor Christine Gregoire on May 14th, 2009, the Law prohibits children and youth suspected of sustaining a concussion to return to practice or game without the written approval of a licenced health-care provider. **Table 1** offers a more detailed depiction of the different policy initiatives put forth by both countries in recent years:

Table 1.

Sport-Related Concussion Policies in the United States and Canada

United States

State level initiatives

2016: Energy and Commerce Committee Plans to Review Causes, Effects of Concussion

2015: Concussion Treatment and Care Tools Act (ConTACT Act)

2014: Healthy Kids and Safe Sports Concussion Summit at the White House (2014)

2014: \$85M commitment through public-private partnerships (2014)

2013: Secondary School Student Athletes' Bill of Rights (2013)

2013: Collegiate Student Athlete Protection Act (2013)

Subnational initiatives

2009-2015: Zachery Lystedt Law or similar return-to play Laws in all 50 states

Canada

State level initiatives

2016: Governor General Concussion Summit (2016)

2016: \$1.4M commitment to the Public Health Agency (2016)
Parachute

2015: Federal-Provincial/Territorial Workgroup on Concussions and Head Injuries.

2013: \$4.3M Federal Funding to fund 19 research projects on preventing, diagnosing and treating concussions.

Subnational initiatives

2016 : Rowan's Law (Ontario)

2016: The Alberta Brain Injury Initiative– Survival Guide (Alberta)

2015 : Plan d'Action pour la prévention et la gestion des commotions cérébrales (Québec)

2012: Concussion Awareness Training Tool – BC Injury Research and Prevention Unit (British Columbia)

2012: The Pan Am Concussion Program (Manitoba)

1996: The Acquired Brain Injury Partnership Project (Saskatchewan)

Research Methodology

The research design utilizes a qualitative, multiple-case approach, which enables a “replication” logic (Yin, 1984). The multiple-case approach, which treats cases as independent experiments, allows the researcher to replicate findings across cases. For the purpose of this research, the Punctuated Equilibrium theory (PET) is used as a template to compare the empirical results of the study. If two or more cases are shown to support the PET, literal replication may be claimed. Yin (2003) identifies a case study as “an empirical inquiry that investigates a contemporary phenomenon within its real life context, especially when the boundaries between phenomenon and context cannot be drawn clearly or unambiguously” (p.13). Since the ultimate objective is to draw comparisons, it is imperative that the researcher

carefully selects the cases to either a) predict similar results (literal replication) or b) predict contrasting results but for predictable reasons (theoretical replication).

The units of analysis (Rowan Stringer, Zachery Lystetd, Sidney Crosby, and Mike Webster) were therefore selected to achieve analytical generalization, which is the process of linking findings to previously established theories. This can be attained through the analytical strategy of pattern-matching, which fundamentally seeks to compare an empirically-based pattern (findings) with a predicted one (theory) (Yin, 1989). For the purpose of this study, the empirical patterns retrieved from the qualitative data (cases) will be compared to the theoretical components of the PET. It is important to note that pattern-matching as an analytical tool offers no precise comparisons, which may lead to interpretative discretion (Geels & Penna, 2015). Hall (2006) further elaborates on the interpretive nature of pattern-matching: “The observations drawn from the cases are compared with the predictions from the theory to reach a judgement about the merits of the theory, on the basis of congruence between the predictions and the observations. This is a matter of judgment, rather than one of tallying points of congruence” (as cited by Geels & Penna, 2015). In this sense, the analytical strategy may lead to subjective interpretation on the part of the investigator, who may solely rely on information that fits the model (i.e. ‘cherry picking’) (Geels & Penna, 2015).

Creswell (1998) suggested that no more than four cases be examined in order to lead a more thorough analysis, and avoid reducing complex cases to a few comparable variables. The countries selected for this study (United States and Canada) share broadly similar cultural and social traditions. As pointed out by Lijphart (1971), there is much value added in comparing cases in countries that are similar in a number of characteristics (variables). Houlihan (1997) believes the attractiveness of this approach is reflected in the important number of

comparative studies focusing on groups of Scandinavian, Western European or Anglo-American countries with their similar cultural, economic, and legal backgrounds. In that sense, the United States and Canada share a number of important characteristics ideal for comparing sport policy:

“Sport is a significant cultural element, democracy is well established and stable; interest group activity is a major feature of democratic politics; economies are relatively mature; and higher education is well established. Although each country has distinctive features, these are considered to be outweighed by the degree of overall comparability.” (Houlihan, 1997, p.9)

According to Lincoln and Guba (1985), the advantage of using a case study research methodology is that it enables the researcher to use a variety of sources. Yin (2009) identified six sources of evidence for gathering data within qualitative case study research: documentation, archival records, interviews, direct observation, participant observation, and physical artifacts. This research primarily uses documentation (peer-reviewed articles, position papers, reports, and grey literature), as well as archival records (surveys, press releases, government publications). The qualitative data is collected from specialized academic journals in the fields of sports management, policy and health sciences (i.e. *Neurology*, *British Sport Journal*, *Journal of Sports Medicine*, *The Journal of Law, Medicine & Ethic*), mainstream news outlets (i.e. *New York Times*, *Washington Post*, *Globe and Mail*, and the *Canadian Broadcasting Company*) as well as from online government sources. The cases selected, and subsequently the sources used for the research, cover a fifteen year-period (2001-2016), since most of the modern policy discussion on the issue of SRC occurred in the last

fifteen years beginning with the first International Conference on Concussion in Sport held in Vienna (2001).

Chapter 2: Theoretical Framework - Baumgartner and Jones' Punctuated Equilibrium Theory

Our cases will be analysed through the lens of Baumgartner and Jones' Punctuated Equilibrium Theory (PET) (1993). The term "Punctuated Equilibria" is rooted in studies of evolutionary biology and the work of paleontologists Niles Eldredge and Stephen Gould in the early 1970s. The biological premise of the theory claims that evolution does not follow a gradual path, but is rather supported by irregular bursts of activity. Baumgartner and Jones (1993) applied the theory to the political landscape by arguing that public policies are characterized by long periods of stability, only to be destabilised profoundly. The authors put forth the idea that public policies are not "gradual and incremental", but should rather be considered as "disjoint and incremental" (Baumgartner & Jones, 1993). While most policy models are interested in understanding either stability or changes in the policy process, the PET seeks to clarify both.

The PET relies heavily on the notion of *negative* and *positive* feedback processes that result in policy equilibrium and disequilibrium (Baumgartner & Jones, 2002). The authors argue that political stability is the result of a negative feedback process which is "homeostatic" and "self-correcting": "Just as a thermostat adjusts to falling temperatures by putting out more heat, homeostatic devices work to maintain stability" (Baumgartner & Jones, 2002, p.8). Negative feedback systems therefore work to counterbalance, and not reinforce, change coming from the outside environment. On the other hand, positive feedback can be defined as a "self-

reinforcing process”, which ultimately seeks to accentuate change (Baumgartner & Jones, 2002). In 2006, Baumgartner further defined the PET:

“In any case, our use of the PE (Punctuated Equilibrium) paradigm meant that we wanted to explain what we termed positive-feedback processes (things that can create rapid self-reinforcing changes, destabilizing and explosive growth, for example) as well as negative-feedback processes (also self-correcting, or homeostatic processes leading to steady equilibrium-type behaviors over time.”

The next section highlights the key factors that contribute to negative and positive feedback processes.

Negative Feedback Process (Policy Stability)

Negative Feedback and incrementalism in public policy are “twin concepts”, based on the premise that dramatic changes from the status quo rarely occur. Early theorists of incremental policy change relied heavily on Herbert Simon’s notion of *bounded rationality* (1982), which states that policymakers are faced with cognitive limitations when making decisions due to insufficient time and resources. This leads to a climate of uncertainty amongst decision makers, who doubt their ability to predict the outcome of their policies, and therefore favour a risk-averse approach to policy making (Baumgartner & Jones, 1993). To counter the oversupply of information, policy making is delegated to *subsystems*, where specialized interest groups interact to create equilibrium. Baumgartner and Jones (1993) focused on the monopolistic nature of these subsystems. *Policy monopolies* are subsystems made up of government officials, bureaucrats, and private interest groups that reinforce policy stability. These monopolies have the ability to downplay change, and “offset outside calls for reform

and policy change by making minor or superficial adjustments to policy, allowing the subsystem to appear responsive without radically adjusting public policy.” (Boushey, 2013, p.140). In order to maintain policy equilibrium, policy monopolies may employ lobbyists, policy specialists, lawyers, and public relations specialists (Givel & Glantz, 2001). An important component for maintaining equilibrium is the stability of *policy images*. Policy monopolies shape the way issues are collectively understood, and consequently benefit from “a monopoly of understanding” where policymakers accept their preferred way of framing issues and ultimately take it for granted. For Baumgartner and Jones (1993), policy monopolies are also reinforced by powerful core values. These values are communicated through intense imaging and rhetoric. Examples of these core values include concepts such as patriotism, independence from foreign domination, fairness and economic growth (Baumgartner & Jones, 1993). Negative feedback cycles therefore emerge “as a result of the delegation of routine policy-making to policy sub-governments, as a core group of institutional actors make marginal adjustments to policy in response to a dominant policy image” (Boushey, 2013, p.139). Finally, Baumgartner and Jones (1993) believe policy stability can be the result of institutional forces. In a state where numerous legislative bodies interact, such as the United States and Canada, large-scale policy decisions are less likely to occur.

Positive Feedback Process (Policy Change)

When issues promptly make their way onto the policy agenda, the theory of incremental change and negative feedback process is challenged. Baumgartner and Jones (1993) argue that the same forces that maintained equilibrium are responsible for policy punctuation. The authors explain that punctuated dynamics are the result of disproportionate attention towards a specific component of the policy issue. As policy issues are redefined, new participants

penetrate the monopolistic subsystem. Baumgartner and Jones (1993) cited the nuclear experience in the United States. In the 1940s and 1950s, nuclear power was associated with a positive image of economic prosperity. During the 1960s and 1970s, the issue rapidly shifted towards an image of danger and environmental harm. This shift in attention may be the result of a specific event, which opens a *window of opportunity*. As another example, the discourse surrounding immigration shifted dramatically to focus on national security following 9/11 (Harvey, 2013). As these exogenous shocks occur, the changing tone in the media offers society a new perspective on a policy issue. As these images are altered, a new generation of entrepreneurs attempt to shift perceptions on the policy issue. These *Policy entrepreneurs* take advantage of favourable public attention, and move promptly to manipulate elite and mass opposition. The PET puts forth the idea that ideas and policies diffuse and expand across sub-national political systems. Once these sub-national systems pick up on a specific issue, it often becomes unstoppable and change at the macro-level is likely to follow. Boushey (2010) cites the rights of homosexuals as an example of a policy issue that first gained traction through state-level action before gaining macro-level momentum in the United States. Although issue definition is a key factor in ensuring policies make their way onto the agenda of policymakers, entrepreneurs must successfully utilize the appropriate institutional venues. Baumgartner and Jones (1993) therefore argue that there is a second manner in which policies rise and fall on the agenda, which is the strategy of *venue shopping*. Venue shopping can place policy entrepreneurs in a favourable position to challenge predominating images upheld by monopolies: "Images may be accepted or rejected depending on the institutional arena in which they are raised" (Baumgartner & Jones, 1993, p. 31). In that sense, policy images are directly linked to venues.

In summary, both positive and negative feedback processes highlighted in the PET are central in offering a complete view of the political system. As a self-correcting process, the former is put in place through monopolistic policy subsystems and a supportive policy image. The later can be characterized as a self-reinforcing process, which occurs through policy entrepreneurship and the redefinition of a specific issue. Baumgartner and Jones therefore focus on the long-run fragility of policy subsystems. As long as the policy image remains stable, change is unlikely to occur and monopolies will maintain their privileged position by discouraging outside reforms. Incremental change is also reinforced by institutional forces, such as fragmented political jurisdictions, which make it challenging to coordinate policies at the macro-level. That being said, the forces responsible for policy stability also generate policy change. Once issues are redefined and images are altered, the issue can emerge back onto the agenda. Policy entrepreneurs enter the system and seek to establish a new monopoly. This process can be accelerated in a system characterized by multiple sub-national jurisdictions.

Table 2 offers a summary of the main components of the Punctuated Equilibrium Theory:

Table 2.

Negative and Positive Feedback Processes in the Punctuated Equilibrium Theory

Negative Feedback (Policy stability)	<p>Bounded Rationality Policymakers cannot consider every problem at the same time. Policies are subsequently delegated to subsystems.</p> <p>Subsystems and Policy Monopolies Subsystems provide stability for existing equilibrium amongst interests (Baumgartner and Jones, 1993)</p> <p>Core Values Policy monopolies are reinforced by powerful core values (example: patriotism, independence from foreign domination, fairness and economic growth)</p>
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Positive Feedback (Policy change)	Policy Images
	“The creation of and maintenance of a policy monopoly is intimately linked with the creation and maintenance of a supporting policy image (Baumgartner & Jones, 1993, p.26)
	Policy Entrepreneurs
	“As disadvantaged policy entrepreneurs are successful in convincing others that their view of an issue is more accurate, they achieve rapid success in altering public policy arrangements.” (Baumgartner & Jones, 1993, p.4)
	Issue definition
	“Argumentation and creation of a new understanding of an issue are at the heart of the policy process [...] in other words, as the policy image of the issue changed from that of a private misfortune to a public problem amenable to government solutions, the issue rises on the government agenda.” (Baumgartner & Jones, 1993 : 29)
	Policy Venues
	“Images may be accepted or rejected depending on the institutional arena in which they are raised” (Baumgartner & Jones, 1993, p. 31). In that sense, policy images are directly linked to venues.

Chapter 3: Literature Review: Filling an Empirical Gap

Concussions in sport have been analyzed through different lenses since 2001, but a limited number of scholars have focused on the policy process and government intervention. This section begins by defining SRC and its historical development. It is followed by a review of the literature organized thematically to highlight the different medical science fields that have focused on the subject of SRC (Neuropsychology, Medical Ethics, and Mental Health).

Defining Sport-Related Concussions

Defining SRC remains a challenging endeavour. As our understanding of brain injuries evolves and evidence becomes more available, the definition of “concussion” changes and different criteria are used to frame and conceptualize the term (Pearce, 2008). Since the first International Consensus Conference on Concussions in Sport held in Vienna (2001), a group of experts that includes neurologists, neurosurgeons, trauma surgeons, and sport psychologists explored ways of better defining the term. At the latest International gathering in Zurich (2012), the panel offered the most recent and in depth definition. For the purpose of this paper, “concussion” will be defined using the Zurich guidelines (2012):

“Concussion is a brain injury and is defined as a complex pathophysiological process affecting the brain, induced by biomechanical forces. [...] Concussion may be caused either by a direct blow to the head, face, neck or elsewhere on the body with an “impulsive force” transmitted to the head. Concussion may result in neuropathological changes, but the acute clinical symptoms largely reflect a functional disturbance rather than a structural injury and, as such, no abnormality is seen on standard structural neuroimaging studies.” (McCrory et al, 2012, p.1)

Historical Perspectives

According to the *Oxford English Dictionary*, the word concussion is derived from the Latin word *concrete*, which means “shaking or agitating” of the brain. Although the term was not used to describe brain injuries until the 16th century, there are many references to concussive injuries prior to that. References to concussions appear throughout history in medical documents, biblical texts, myths, plays, and poems. The earliest study of the brain dates back to ancient times, documented through the writings of Egyptians, Greeks, and Romans.

The Edwin Smith papyrus (1700 B.C), an ancient Egyptian medical text, documented 48 trauma cases, ten of which explored wounds of the head. Of these ten cases, nine detailed “traditional” and visible head fracture or penetration. However, one case presented a patient who received a blow to the head, but appeared to suffer non-visible neurological change (Verjaal, & Van T Hooft, 1975). In biblical writings, the account of the battle between David and Goliath offered one of the earliest references to concussive injuries, as Goliath experienced LOC after being struck by David’s stone. In his description of the Trojan War, Homer also wrote about how Hector collapsed following a blow to his head during the battle of Troy. According to Homer, Hector would experience different symptoms that included “clouded vision” and “diminished awareness” (Wrightson, 2000). Considered the father of western medicine, Hippocrates (460-377 B.C) commented on the systematic symptoms of brain injury: “In cerebral concussion, whatever the cause, the patient becomes speechless...falls down immediately, loses their speech, cannot see and hear” (as cited by McCroy & Berkovic, 2001).

A turning point in concussion studies came from the work of Persian physician Razes (865–925 AD), who made a clear distinction between concussions and other severe head injuries resulting in visible damages such as a skull fracture. The concept would be further developed during the Renaissance, more specifically through the work of Coitier (1573), who documented symptoms of concussions that included memory impairment, faltering of speech, poor judgment, and difficulty with understanding (as cited by Halstead, 2001). In *The Science and Art of Surgery* (1853), Sir John Erichsen spoke of the long-term symptoms and effect of concussions, stating that some individuals came to recover fully, while others were unable to resume their regular occupation.

In the early 20th century, organized sport became an important feature in advancing the study of concussions. The first American Football game was played between Rutgers University and Princeton University in 1869. In its earlier days, the game was largely unregulated which led to significant violence and abuse. In 1905, following the death of 18 players, President Theodore Roosevelt invited representatives from Harvard, Yale and Princeton to the White House to discuss how to make the game less dangerous (Smith, 2013). Roosevelt's initiative was a pivotal point, as it marked one of the first occurrences of state involvement in regulating organized sport.

Although organized sport played an important role in increasing awareness of concussions, injuries suffered during the two World Wars of the 20th century generated a significant amount of interest in regards to concussions (Zillmer, Schneider, Tinker & Kaisaris, 2006). A number of methods were developed to better evaluate and manage head injuries in the middle part of the 20th century such as neuropathology, neuroradiology, neurosurgery, clinical neurology, neuropsychology, social psychology and sociology (Zillmer et al., 2006). The First World War (1914-1918) generated unprecedented demand to develop neuropsychology programs in order to address the rehabilitation of servicemen (Lezak, 2004). The Second World War (1939-1945) and the conflicts in East Asia and the Middle East paved the way for a new generation of talented neuropsychologists worldwide, and the development of highly sophisticated examination and treatment techniques (Lezak, 2004). As an example, Olivier Zangwill (1945) conducted extensive fitness-for-duty evaluations on British military using intelligence, memory, comprehension, and emotional assessment testing (as cited by Kennedy, Boake, & Moore, 2010).

Famously coined the decade of the brain by former president George W. Bush, the 1990s were a period where policymakers sought to “enhance public awareness of the benefits to be derived from brain research” (Egolf, 2012, p.4). Concussions in US football, soccer, ice hockey, and rugby became a major topic in the United States. Most of the work initiated in the second half of 20th century is still ongoing today. The next section highlights different medical fields that have addressed the issue of SRC since that time.

Neuropsychology

Neuropsychology can be defined as the study of brain-behaviour relationships. In simple terms, neuropsychologists are interested in exploring what makes people do what they do, and how (Lezak, 2004). Although more traditional neuroimaging techniques such as Magnetic Reasoning Imaging (MRI) and Computed Tomography (CT) have been extremely valuable in detecting visible abnormalities such as skull fractures, these mechanisms cannot detect the microscopic physiological and chemical damage that result from SRC (Bigler & Snyder, 1998; Moser et al, 2007; Zillmer, Hong, Weidensaul, & Westerfer, 2011). Concussions lead to functional impairment, not structural, which led Dr. Mortimer Mishkin to famously declare that when dealing with concussions, “Imagining is not enough”. For that reason, neuropsychological testing offers the most objective and reliable method in measuring SRC (Zillmer et al, 2006). Clinical neuropsychologists provide assessments and treatment recommendations for people experiencing difficulties with memory, learning, attention, language, reading, problem-solving, decision-making or other aspects of behaviour and thinking abilities (Australian Psychological Society, 2016). Athletes dealing with muscular or structural injuries follow a somewhat predictable rehabilitation process (Caron, Bloom,

Johnston & Sabiston, 2013), but the process is much less linear for SRC, making it one of the most “puzzling abnormalities” facing sport physicians (Echemendia, 2006).

Neuropsychological Testing (NP) has therefore been seen as a “cornerstone” in identifying SRC in professional, collegial and high school sport settings (Echemendia, 2013). Initial on-site assessments of SRC can be straight forward in cases where the athlete suffers LOC. In 90% to 95% of the cases however, cerebral concussions involve no LOC (Starkey & Johnson, 2006; Halstead & Walker, 2010). It becomes particularly challenging to assess and quantify the athlete’s symptoms in the absence of LOC. Facial expressions (dazed, stunned, “glassy eyed”) are often the most relevant indicator in promptly recognizing the presence of SRC, followed by uncharacteristic behaviour from the athlete, such as “running the wrong the play, or returning to the wrong huddle” (Starkey & Johnson, 2006, p.79). In cases where the athlete showcases any of the symptoms mentioned above, the athlete must be removed from the playing surface, which coined the famous sentence “when in doubt, sit them out”. In recent years, more harmonized guidelines and personalized guidelines have been developed for sideline diagnosis, such as the SCAT3 which incorporates the Maddocks’ questions and the Standardized Assessment of Concussions (SAC) (see appendix A).

Over the years, a number of grading schemes have been developed by scholars for SRC, and were subsequently used to determine return to play decisions (Webbe & Zimmer, 2015). In his earliest work, Cantu (1998, 2001) explained that the two most important features to determine a concussion’s severity were the presence and duration of LOC (as cited by Webbe & Zimmer, 2015). By 2001, there was an evident need to develop a coordinated approach for SRC rehabilitation and to set return-to-play guidelines. Organized by the International Ice Hockey Federation (IIHF), the Federation Internationale de Football Association (FIFA), the

Medical Assessment and Research Centre and the International Olympic Committee (IOC) Medical Commission, the first International Conference on Concussion in Sport was held in Vienna, Austria. A group of leading medical professionals assessed the state of SRC, and provided future guidance on how to deal with the issue. Much emphasis was put on the importance of NP testing as a means to determine return-to-play guidelines. Although the experts acknowledged the important work done on elaborating previous grading models, they believed no single grading system should continue to be endorsed (Aubry et al, 2002). The medical community concluded that time frames for return-to-play should not be based on the severity of the initial injury, but should take into account whether the athlete is asymptomatic or not. The first International Consensus had significant impact on the management of SRC, and this new approach to concussion management clearly underlined the importance of NP testing in the initial diagnosis, and subsequently in determining the athlete's readiness to return to competition.

Ethics

Medical ethics as a scholarly discipline encompasses notions of medicine, sociology, history, theology, anthropology and philosophy (Munyaradzi, 2012). The four principles (respect for autonomy, beneficence, non-maleficence, and justice) were first introduced by Beauchamp and Childress in their book *Principles of Biomedical Ethics* (2001), and are widely considered to have shaped the standard theoretical framework of medical ethics. However, in light of the long-term cognitive risks associated with SRC, there was a need to develop a more specialized ethical framework for care givers dealing with patients experiencing SRC. Drawing extensively on the work of Beauchamp and Childress, a group of researchers published a guide for physicians treating SRC. The report highlighted 5 ethical components to bear in

mind when dealing with athletes experiencing SRC: professionalism, informed decision-making, beneficence and nonmaleficence, conflicts of interest, and distributive justice (Kirschen, Tsou, Nelson, Russel, & Larrivière, 2014).

Professionalism requires physicians to “practice only within the scope of his/ her training, experience, and competence” (American Academy of Neurology Code of Professional Conduct, 2009). Although professionalism ought to be an integral part of any work environment, it is particularly important when dealing with a patient’s brain. Bypassing return-to-play guidelines, for instance, can have devastating effects and significantly alter the patient’s cognitive wellbeing, leading to long-term impairments in neurocognitive functioning and behavioral problems. In return, athletes have an obligation not to hide potential SRC symptoms. There is a long standing tradition in sports to play hurt (Hecht, 2012), and a dominant culture that encourages athletes to treat their bodies mechanically (White, Young, & Mcteer, 1995). Professional sport played an instrumental role in fueling this mentality, exemplified by iconic images such as Kirk Gibson pumping his fist and limping around the bases after his 1988 World Series home run. In an anonymous survey of a collegiate cohort of 262 athletes, 43% reported that they “knowingly” hid their symptoms from the coach or athletic trainer (Torres et al., 2013). Similarly, a team of researchers from the University of McGill and the University of Toronto recently conducted a series of interviews with five former National Hockey League players who retired following SRC, with the aim of understanding how the injury shaped their professional careers, personal relationships, and quality of life. The researchers concluded that retired athletes often took advantage of the invisibility of SRC. One interviewee spoke of the warrior mentality associated with hockey, which encouraged him to hide a symptom (impaired vision) during a game: “I went to the

penalty box and couldn't see out of my left eye. My vision was all blurry. Everything was blurry in the whole eye. Couldn't see out of it, but I played the rest of the game. But I was obviously worried because I couldn't see." (Caron, Bloom, Johnston & Sabiston, 2013, p.171).

If physicians are to fulfill their professional duties, the patient's cooperation is imperative and must be absolute.

Informed decision-making and respect for autonomy implies that physicians have the duty to educate the patient on the health risks associated with SRC, and to do so using accessible language (Gillon, 1994; Kirschen, Tsou, Nelson, Russel, & Larrivière, 2014). Awareness should be a central focus in the rehabilitation process, and care givers have the duty to be straightforward with the risks associated with high impact sports. Different tools, such as videos, web sites, lectures, and handouts are developed and made available to parents, coaches and athletes to make evidence-based decisions. Once this factual information has been provided to the patient, physicians should endorse the concept of autonomy. Central to medical ethics, autonomy entails that professionals obtain informed consent in order to protect their patients. Patients increasingly require a wealth of information and are more involved in deciding their medical issues (Gillon, 1994; Lukow & Rozynska, 2015). Autonomy therefore entails that patients have the last word in choosing between all possible medical options. In the case where the SRC has reached a severity level that hinders the athlete's cognitive ability to make a decision on his future, medical professionals have the ethical obligation to protect their client, and should provide evidence-based and reliable information to family or members of the athletic staff to ensure the patient's safety. As Robeson and King (2014) put it, "consent that is based on inadequate disclosure is not informed."

Beneficence and nonmaleficence (do not harm) are concepts that emphasize putting the patient's short and long term well-being above all else. Although respect for autonomy has been considered an important aspect of medical ethics, it does not outweigh all the other ethical implications: "A physician's commitment to beneficence and duty to protect his or her patient from harm may occasionally supersede patient autonomy from an ethical perspective" (Kirschen et al, 2014). It becomes imperative that medical professionals strike the proper balance between respecting their patient's autonomy and ensuring their well-being. This can be achieved by being aware and sensitive to the factors that influence the patient's decision to return to play. In sport settings, these factors may include career aspirations, commitment to a school, scholarships, family expectations, coach's demand etc. (Kirschen et al, 2014).

Conflict of interests is a concept that is particularly present in professional sports, where the stakes and outcomes are often higher. Medical professionals who are employed by athletic teams may find themselves in a situation where their professional duty towards an athlete's well-being conflicts with the interest of their employer. For instance, medical professionals may receive pressure to prematurely clear athletes to return to play. It becomes crucial that they prioritize the athlete's health over the interest of the employer, fan base, or any other stakeholder that may benefit from the athlete's return to play. Despite significant loopholes in ensuring that SRC management is free of conflict of interest, professional sport leagues such as the National Football League and the National Hockey League are seeking to address the issue of conflict of interest. As an example, every game has the presence of independent "spotters". These spotters are in attendance during every match, and have the discretion to alter the games at any point if they believe a player may have suffered a head injury (Lawrence, Hutchinson & Comper, 2015).

Finally, *distributive justice* implies the fair and equal distribution of resources. In terms of care delivery and medical services, the concept of distributive justice has been well documented with diseases such as Parkinson's disease. Unfortunately, in terms of assessing and managing concussions, not all athletes receive the same treatment. This is particularly true of rural or underserved areas, where there are fewer concussion experts. Schools and athletic organizations have an important role to play in that regard, and should make sure athletes have concussion evaluation mechanisms available to them. Economically disadvantaged individuals may also be at a greater risk of not receiving proper health care. Finally, schools and sport organizations with fewer resources may not have the adequate sport equipment to ensure player safety (Kirschen et al, 2014).

Mental Health

A number of recent studies highlighted that repeated concussions may induce long-term mental health outcomes. Public attention on the link between TBI and mental health was amplified following studies on Iraq and Afghanistan war veterans (Lew et al, 2008; Schneiderman, Braver & Kang, 2008). In consulting with former college athletes, researchers found a linkage between SRC and depression, impulsivity, and aggression (Kerr et al, 2014). The same conclusions were drawn from a study with 1044 former National Football League players that experienced SRC, which found that 106 (10,2%) of the respondents were clinically diagnosed as being depressed after their careers (Kerr, Marshall, Harding & Guskiewicz, 2012). Despite the amount of work being done on SRC and mental health, a recent study conducted in Canada identified a knowledge gap in terms of the mental health symptoms associated with SRC. In a survey administered to youth athletes, parents, coaches and medical professionals across the country, the authors concluded that participants are likely to be

familiar with physical symptoms (headache, nausea, fatigue and dizziness) and cognitive symptoms (memory, attention and executive function impairments), but are often unaware of mental health concerns (depression, anxiety and post-traumatic stress disorder) (Weng, 2015). Our literature review covered only a small segment of the work done by academics on SRC in the last two decades. Scholars have questioned other components related to SRC. Does gender play a role in the severity of SRC (Colvin et al, 2016)? Which sports are most likely to produce SRC (Marar, McIlvain, Fields, & Comstock, 2012)? Is protective equipment useful in preventing concussions (Benson, Hamilton, Heewisse, McCrory, & Dvorak, 2009)? Despite this wealth of research, one area of study that remains relatively unexplored is the policy process of SRC. Although scholars and practitioners have focused on the implementation (Lowrey & Morain, 2014) and the evaluation phase (Covassin, Eblin & Sarmiento, 2009) of SRC, to our knowledge, no previous studies have analysed how SRC have risen to the agenda of policymakers.

Chapter 4: Analysis and Discussions

Our analysis now shifts its focus to a series of events that have shaped the discourse around SRC policies in the United States and Canada. At the outset, a brief descriptive overview of these cases will be presented. Subsequently, the contextual conditions and narratives surrounding these events will be thoroughly analysed through the Punctuated Equilibrium Theory.

Zachery Lystedt

As previously mentioned, *Lystedt Law* is named in honor of Zachery Lystedt, who collapsed on a football field in October 2006 after suffering back-to-back blows to the head. The 13-year

old received an initial concussion when he was tackled to the ground by an opponent. The youngster was seen lying on the ground with both hands clutching each side of his helmet before the referee called an injury time out. Lystedt would sit out the rest of the first half, but made his return to the playing field in the 3rd quarter. After sustaining more hits during the second half, Lystedt collapsed and was airlifted to the hospital where he underwent emergency surgery to remove the left and right side of his skull to release pressure from his swelling brain. Nine months later, Lystedt spoke his first word, and the teenager stood up on his feet for the first time in 2009, three years after that October football game.

Mike Webster

No single event had a more profound impact on the advancement of concussion awareness and management than when forensic neuropathologist Dr. Bennet Omalu assessed Mike Webster's brain. In 2002, Omalu performed an autopsy on the 17-year Pittsburgh Steeler veteran, and discovered the presence of Chronic Traumatic Encephalopathy (CTE) (see appendix B). CTE can be defined as a progressive degenerative disease which affects the brain of athletes who received repeated concussions throughout their careers. According to the Boston University's Alzheimer Center, common symptoms of CTE include memory loss, confusion, impaired judgment, impulse control problems, aggression, depression, suicidality, Parkinsonism, and eventually progressive dementia. Before dying of a sudden heart attack, Mike Webster struggled with much of these symptoms, spending the last decade of his life in a state of confusion, where he was forced to sleep in his truck or local bus stations. Although the presence of CTE had previously been identified in former boxers since the 1920s, Omalu's

study was the first to discover the disease in other athletes. In July 2005, Dr. Omalu published his findings on Mike Webster's brain in the journal *Neurosurgery*.

Rowan Stringer

Ontario's Rowan Law is named in honour of 17-year-old Rowan Stringer, who died in May 2013 after sustaining two concussions in a week playing rugby. Stringer died from a condition called Second Impact Syndrome (SIS). Her brain tissue was donated to the Boston University's Centre for the Study of Traumatic Encephalopathy. Stringer's death triggered an inquiry, where it was determined that the fatal outcome could have been avoided, and 49 recommendations were presented by the inquest jury. The Ontario legislation mandates the creation of a committee to determine how best to act on the 49 recommendations from the Rowan Stringer coroner's inquest.

Sidney Crosby

Commonly referred to as a "generational hockey player", Sidney Crosby was sidelined for most of 2011-2012 due to repetitive concussions. Crosby sustained his first blow to the head during the Winter Classic on January 1st, 2011. Crosby promptly returned to play only 4 days later on January 5th, despite suffering from neck pains (McGannon, Cunningham & Schinke, 2013). Crosby was on the receiving end of another blindside hit that night, but remained in the game. The next day, he was finally diagnosed with concussion symptoms, and would not play another National Hockey League (NHL) until November of the next season. That season, Crosby was limited to 28 of a possible 88 games, and continued to battle effects of his concussions

Negative Feedback Process (Policy Stability)

Policy Monopolies

As pointed out earlier, bounded rationality prevents policymakers from addressing every problem simultaneously. Political issues are therefore disaggregated to *policy subsystems*, which seek to maintain their privileged and monopolistic position by undermining the work of "outsiders" (Baumgartner & Jones, 1993). Greer (2014) argued that governments have historically been apathetic to SRC because elected officials believe there are more pressing issues than, for instance, "ensuring the safety of football players" (p.211). Similarly, Koller (2016) stated that a predominating notion amongst policymakers has been that governments should not regulate sport. The issue of SRC was therefore delegated to monopolistic policy subsystems. As we analysed the contextual conditions surrounding the Webster and Crosby cases, our findings suggest that the NFL and NHL contributed to such monopolies by ensuring policy equilibrium on the issue of SRC. This was accomplished in two ways. Firstly, when called upon to bring changes to the games of football and hockey, both leagues made superficial adjustments and favoured an approach of incremental change. Secondly, the leagues systematically downplayed exogenous shocks by undermining the work and credibility of outsiders.

Incremental Change

As pointed out by Baumgartner and Jones, monopolies have the ability to downplay change, and "offset outside calls for reform and policy change by making minor or superficial adjustments to policy, allowing the subsystem to appear responsive without radically adjusting public policy." (as cited by Boushey, 2013, p.140). When the issue of SRC started

becoming more important in the early 1990s, the NFL established the Mild Traumatic Brain Injury (MTBI) committee to conduct research on the impacts of repeated head trauma in football. Composed of medical experts with close ties to the NFL, the MTBI began writing a series of papers on SRC, and in 2003, published in the renowned journal *Neurosurgery*. The MTBI repeatedly told the world that the issue of SRC was overblown, and that no relationship exists between hitting your head in football and later in life problems. According to William Barr, researcher of the New York University Medical Center, the MTBI committee lacked objectivity, and focused on a small percentage of preselected data to draw premature conclusions (as cited by Greer, 2014). A New York Times investigation would later reveal that the NFL's Mild Traumatic Brain Injury (MTBI) committee had omitted more than 100 cases of concussions when conducting studies from 1996-2001 (Schwarz, Bogdanich & Williams, 2016). On October 2009 and January 2010, the House Judiciary Committee held two congressional hearings, which forced the NFL to modify its concussion protocol. Shortly after, the NHL would also revisit its protocol. Despite these changes, both leagues have received sharp criticism for enacting "soft" policies that are not objective and lead to conflicts of interests. (Orentlicher & William, 2013; Tamburri, 2013; Patridge & Hall, 2014; Miller, Wendt & John, 2015). Koller (2016) claimed that these protocols, and overall lobbying efforts by the NFL, were strategically crafted to bring about only incremental change: "NFL's lobbying efforts were used to define the issue as reducing the harmful consequences of concussions, not reducing the incidence of initial concussion injuries. This ensured that legislative outcomes did not directly regulate the content, rules, or procedures of football itself" (p.687). For Baumgartner and Jones (1993), policy monopolies maintain their privileged position by focusing on a single dimension of the issue, which explains in part why the NHL and NFL's concussion protocols

focused solely on managing the *symptoms*, and not the *cause* of the issue. In summary, the creation of the MTBI committee, changes to the NFL and NHL's concussion protocols, and lobbying efforts exemplify the type of incremental change that monopolistic subsystems rely upon to maintain a position of power.

Undermining the work of "outsiders"

When Dr. Omalu published his findings on CTE in 2005, he was immediately accused of "fallacious reasoning" by members of the MTBI committee. The NFL downplayed Omalu's accusations, stating that the MTBI committee operated within the scientific evidence that was made available at the time: "His description of CTE is completely wrong. The diagnosis of a chronic condition requires a medical history indicating a long-standing nature of the illness... such a history is completely lacking in Omalu's report" (Parr, 2014). Similarly, a 2014 lawsuit against the NHL (still pending) argued that "the NHL hid or minimized concussion risks from its players, thereby putting them at a substantially higher risk for developing memory loss, depression, cognitive difficulties, and even brain related diseases such as dementia, Alzheimer's disease, and Parkinson's disease" (The Associated Press, 2014). NHL executives promptly downplayed the accusations. In June 2016, Richard Blumenthal, Democrat of Connecticut, wrote a letter to Commissioner Gary Bettman about the effects of SRC in hockey. Bettman responded by denying the existence of a link between CTE and repeated blows to the head in hockey: "The science regarding CTE, including on the asserted 'link' to concussions that you reference, remains nascent, particularly with respect to what causes CTE, and whether it can be diagnosed by specific clinical symptoms" (Branch, 2016). Bettman blamed the media for creating a narrative around the game of hockey and CTE, stating that the issue of SRC should be left to medical experts and not be subject to public debate. For Baumgartner

and Jones, policy subsystems spend most of their time convincing the public that outsiders are not qualified to make decisions in a given area, which is accomplished by “arguing that the questions to be decided are highly complex technical matters” (1993, p.6).

Fragmented Political Jurisdictions

Policy monopolies also maintain their privileged positions are a result of fragmented legislative jurisdictions. For Baumgartner and Jones (1993), in a state where numerous legislative bodies interact, large-scale policy decisions are less likely to occur. Both the United States and Canada are characterized by a federalist system, which adds a level of complexity when trying to coordinate a macro-level initiative. In 2014, the Canadian Concussion Collaborative released a poll of 44 national and provincial sport organizations, and the results showed that rules were significantly different from province to province or city to city (Hall, 2015). The federal minister of Sport and Persons with Disabilities recently commented on the inherent challenges of developing federal legislation on SRC: “Given the realities of federal jurisdiction and the limits that a federal law would have, a more collaborative and coordinated approach is probably going to get the better buy-in from the sport stakeholders and from governments.” (The Canadian Press, 2016). Furthermore, since education is a matter of provincial jurisdiction in Canada, it becomes challenging for a centralized government to establish concussion protocols in schools. Similarly, in the United States, the “world of youth sport is large, diverse, and decentralized”, making it difficult to coordinate state-level initiatives (Adler, 2011 p.722) On that note, state legislatures and provinces in the United States and Canada have historically weakened the ability of federal government to bring about macro-level change, which is a common theme, according to Baumgartner and Jones, in a system characterized by a negative feedback process.

Policy Images

The stability of the policy monopoly is highly dependent on a positive and supportive policy image (Baumgartner & Jones, 1993). For years, the policy monopoly around SRC maintained its privileged position by upholding a constant image. It can be argued that hockey and football have historically embraced a culture where violence was glorified, and blows to the body and head were consequently celebrated (White, Young & Mcteer, 1995). Scholars determined that hockey's dominant narrative has been associated with a culture of risk, which embraces, applauds, and rewards pain (as cited by McGannon, Cunningham & Schinke, 2013). One's willingness to sacrifice his/her body is therefore perceived as a desirable attribute. This appears to be especially true of Canadian hockey, as Europeans are known to put far less emphasis on aggression and toughness within the game (Rasanen, 2016). In the early stages of the injury, Crosby himself bought into that culture of normalization of violence: " I know it's a fast game, and I think if anybody understands it's a fast game – I've been hit a thousand times [...]. But when you get hit like that, there's nothing you can do. There's no way you can protect yourself. "(as cited by McGannon, Cunningham & Schinke, 2013). Similarly, when he was inducted into the Professional Football Hall of Fame in 1997, Mike Webster also referenced the *hero* culture inherent to the game: "You only fail if you don't finish the game," he said. "If you finish, you won"(as cited by Litsky, 2002).

When professional athletes embrace this culture of risk, it ultimately creates a trickle-down effect at the grassroots level. During the first day of testimony at the inquest into Rowan Stringer's death, friend Judy Larabie commented on the innate toughness that characterized her friend: "If she got a bruise or something she would wear it with pride — a warrior wound" (as cited by Cobb, 2015) . The inquest also revealed that Stringer exchanged a series of text

messages with her friend following her first concussion. When asked if she would play the next game despite doubts of being concussed, Stringer responded: “Nothing can stop me! Unless I’m dead.” (Cobb, 2015). The context surrounding Zackery Lystedt’s incident exemplifies similar behavior. In a recent testimony to the National Center of Injury Prevention and Control, Zachery’s father spoke of his son as someone who “always wanted to be part of the play”, even after sustaining an important blow to the head.

Core Values

For Baumgartner and Jones (1993), policy monopolies are also reinforced by powerful core values. These values are communicated through intense imaging and rhetoric. Examples of these core values include concepts such as patriotism, independence from foreign domination, fairness and economic growth (Baumgartner & Jones, 1993). The game of football and hockey are entrenched in American and Canadian nationalism respectively, and both the NFL and NHL contribute significantly to the economy. The NFL, through active and efficient branding, has skillfully aligned its product with the fabric of American society and Culture (Gambrell, 2015):

“From the singing of the national anthem to jet flyovers, fireworks, flag waving, military band marches—and, of course, the selling of patriotic merchandise—representations of American identity have been strategically woven into the very fabric of NFL pageantry. Each year, these rituals are played out in supreme fashion during the Super Bowl championship game—a multi-million dollar extravaganza described by one former NFL commissioner as the winter version of the Fourth of July celebration.” (p.1)

Following this logic, if you question the game of football, you consequently question what America stands for. When Nigerian born Bennet Omalu published his article on CTE, his actions were ultimately seen as an outside threat to the "American way of life". This rhetoric is not only present at the professional level, but may also affect the way football is viewed at the grassroots level. In a recent interview, Dr. Omalu recalled having a conversation with an NFL team doctor who told him that "If 10 percent of mothers in this country would begin to perceive football as a dangerous sport, that is the end of American football" (Brinson, 2013). Similarly, Wideman (2012) reflects on the patriotic and economic characteristics of football as a reason why governments have been reluctant in regulating the game: "Some violent sports, like mixed martial arts, are banned in certain areas—New York, for example. It's unlikely that football will suffer the same fate any time soon, not as long as it's worth so much money to so many people"³ (p.2).

The NHL has employed the same patriotic rhetoric. In Canada, hockey is used as a tool of nation building, and plays an instrumental role in uniting fragmented communities such as the English, French, Indigenous Peoples⁴ and New Immigrants. The Canadian Broadcasting Corporation (CBC), the country's English-speaking public broadcaster has been the primary driver in promoting Canadian culture through hockey. Since 2001, the CBC has aired a special program entitled Hockey Day in Canada (HDIC):

"The show features three NHL hockey games involving as many Canadian teams as possible. However, the most interesting part of the show in terms of nationalism is

³ The state of New York lifted the ban on mixed martial arts in 2016.

⁴ The term "Indigenous Peoples" in Canada includes First Nations, Inuit and Métis

actually the rest of HDIC coverage. Between the games – and the usual shots of Canadian military troops playing-pick up hockey on a mission in some far-flung part of the globe, thus underscoring the age-old association between sport and war – HDIC presents short segments depicting the Canadian way of Life. ” (Patoine, 2015).

As we have seen, when incidents are introduced in a system characterized by negative feedback processes, monopolistic subsystems ensure policy equilibrium is maintained. In that sense, the privileged groups (such as the NFL and NHL) embrace incremental change, undermine the work of outsiders, and use a supportive policy image to maintain the status quo. In summary, monopolies give up a small degree of power when attacked, but they ultimately retain their essential superiority (Baumgartner and Jones, 1993). **Table 3** offers a summary of our findings.

Table 3.

<i>Sport-related Concussions – Factors contributing to a negative feedback process</i>		
Policy Image	Normalization of violence	“Nothing can stop me! Unless I’m dead.” - Rowan Stringer
	Culture of risk	“He (Zachery) Always wanted to be part of the play” - Zachery Lystedt’s father
	Hero Culture	“You only fail if you don’t finish the game.” - Mike Webster
		“I’ve been hit a thousand times [...]. But when you get hit like that, there’s nothing you can do.” - Sidney Crosby
Policy Monopolies	Interest Groups	NFL’s Mild Traumatic Brain Injury (MTBI) committee.
	Technical Experts	NHL and NFL executives denying existence of Chronic Traumatic
	Lobby Groups	Encephalopathy.

Core Values	Patriotism	Promotion of Canadian culture and nation building through Hockey.
	Economic Growth	The NFL as a fabric of American society and culture. NFL and NHL are multi-billion dollar industries that contribute to job creation and wealth.
Fragmented jurisdictions	Provinces	Federalism in the United States and Canada adds a level a complexity when implementing macro-level policies.
	States	

Positive Feedback Process (Policy Change)

Baumgartner and Jones (1993) argue that the same forces that maintain equilibrium on a specific policy issue are responsible for policy punctuation. In that sense, a positive feedback system can be defined as a “self-reinforcing process”, which ultimately seeks to accentuate change. As pointed out earlier, policy entrepreneurs play a critical role in redefining the symbolic representation of a policy image to implement their own monopoly (Baumgartner & Jones, 1993).

Issue Definition

Our findings suggest that policy entrepreneurs successfully redefined the issue of SRC, making it more attractive to previously apathetic groups. The narratives from the four cases we studied contributed to a significant culture shift in sport, and ultimately helped reframe the issue of SRC. According to McGannon, Cunningham and Schinke (2013), Sidney Crosby’s absence from the ice was seen as an opportunity to reflect on the culture of the game. As Crosby’s symptoms increased, and the injury became more serious, the media narrative shifted to highlight the problematic surrounding hockey culture. The authors found that newspaper articles covering the issue treated Crosby’s concussion as a *cautionary tale* and a

political platform. The cautionary tale focused on awareness, and condemned certain actions from the league, such as Crosby's premature return to play (McGannon, Cunningham & Schinke, 2013). The political tale drew attention to the institutional forces, and questioned the regulatory mechanisms in place to safeguard an athlete's safety. The study concluded that these media narratives focused on the harm associated with the culture of risk in hockey (McGannon et al, 2013). Ultimately, this had a profound impact on softening the masculinity culture that has historically been predominant in the world of hockey.

Rowan Stringer's case also exposed the need for a culture shift when it comes to the narrative on SRC. Stringer's parents were particularly involved in pushing for legislation in Ontario, and have spoken extensively about the need to change culture in grassroots sport. During the inquiry into Stringer's death, her father spoke of the need to change the hero culture inherent in sport: "We've got to get out of this mindset that there is a minor concussion or a major concussion. A concussion is a concussion. We need better education and better communication, but we mostly need to change this 'culture of invincibility' that sports has." (as cited by Macgregor, 2013). Similarly, Zachery Lystedt and his entourage have played a significant role in increasing awareness around SRC.

Venue Shopping

Although issue definition is a key factor in ensuring policies make their way onto the agenda of policymakers, entrepreneurs must successfully utilize the appropriate institutional venues. Baumgartner and Jones (1993) believe that there is a second manner in which policies rise and fall on the agenda, which is the strategy of *venue shopping*. Venue shopping can place policy entrepreneurs in a favourable position to challenge predominating images upheld by monopolies: "Images may be accepted or rejected depending on the institutional arena in

which they are raised” (Baumgartner & Jones, 1993, p. 31). In that sense, policy images are directly linked to venues. Bennet Omalu’s proactive efforts to shed light on the NFL’s concussion crisis offers a good example of venue shopping. When Omalu’s findings were first published in the *Journal of Neurosurgery*, members of the MTBI committee immediately wanted his article to be retracted. As Omalu would later find out, most members of the MTBI committee were medical experts on the NFL’s payroll. Omalu soon questioned his ability to reach out to the public through scientific peer-reviewed articles, and opted to take his story to the mainstream press.

Media Coverage

On September 14th, 2005, Omalu and colleague Cyril Wecht published an article in the *Pittsburgh Post-Gazette* on Terry Long, another former NFL player diagnosed with CTE by Omalu (Laskas, 2015). This led to increased media scrutiny, coming most notably from Pulitzer prize-nominated journalist Alan Schwarz. Omalu’s findings received national exposure when the *New York Times* featured a front page story written by Swartz entitled *Expert ties ex-player’s suicide to brain damage* (as cited by Laskas, 2015). Other mainstream media outlets, such as *GQ*, *The New Yorker*, *Forbes*, and *60 Minutes* suddenly started paying attention to the issue (Hanna & Kain, 2010). The public affairs program *Frontline* aired a highly critical documentary entitled *League of Denial: The NFL’s concussion crisis*. The first hour of the documentary focused on Mike Webster’s story, and the “immediate” and “fierce” response from the NFL that followed (Shaw, 2013). The documentary received critical acclaim, and a number of viewers expressed their discontentment with NFL executives and the MTBI

committee's approach to SRC (Katzowitz, 2007). More recently, the release of Sony Motion Picture's film *Concussion* (2015), starring actor Will Smith as Bennet Omalu, gave unprecedented attention to the issue of SRC. Despite increasing efforts by the NFL to silence some of its critics, the idea that SRC causes CTE, and can ultimately lead to the death of former football players, gained significant traction when it was picked up by the mainstream press. According to Baumgartner and Jones (1993) "technical expertise, inside contacts, and legal skills may prove to be of no value when an emotional public media campaign is waged." (p.9)

Committee Hearings

Another important institutional venue for policy entrepreneurs was the House Judiciary Committee, which held two congressional hearings in October 2009 and January 2010 on brain injuries in football. In the United States, "non-legislative⁵ hearings are an important part of a process through which issues are raised, redefined, and put on the table for serious consideration" (Talber, Jones & Baumgartner, 1995, p.400). During the October hearings, California representative Linda Sanchez compared the NFL's stance on concussions to tobacco companies, and accused commissioner Roger Goodell and the NFL of denying the risks associated with playing professional football: "The NFL sort of reminds me of the tobacco companies, pre-'90s, when they kept saying, 'no, there is no link between smoking and damage to your health.'" The congressional hearings and most notably Sanchez's declaration had a profound effect on public perception of the NFL, and a week later the controversial

⁵ "Legislative hearings are those that consider bill referrals. All others, including oversight and investigative, are considered non-legislative" (Talber, Jones & Baumgartner, 1995, p.385)

MTBI committee was disbanded. The same logic can be applied to the Zachery Lystedt Law introduced in the State of Washington. According to lawyer Richard H. Adler, hearings were instrumental in pushing legislation forward:

“ In the legislative process, bills are introduced and then assigned to committees that preside over the subject matter of the proposed legislation (...) if a bill is stopped in any committee in either the house or Senate side, then it is likely going to die in committee and never come up for a vote. From January to May 2009, keeping the bill alive was a daily effort. Our presentations were well received in each committee hearing, likely because of the simple and clear message, as well as the strong and diverse coalition of supporters including advocacy groups, youth sport organization groups, insurance risk pool groups, athletic trainers and physicians” (Adler, 2011, p. 725)

Courts

When Baumgartner and Jones (1993) gave examples of policy venues, they referenced congress, executive branches, but also the courts. When redefining the policy image of SRC, the courts represented an important institutional policy venue. As previously mentioned, both the NFL and the NHL have been subject to lawsuits. By bringing the issue to the courts, the plaintiffs were successful in their attempt to shift the policy image and reach out to a broader audience. In 2013, the NFL agreed to pay \$765 million to settle a lawsuit brought forth by over 4,500 players and their families. The plaintiffs argued that for decades, the NFL did not properly warn its players about how head trauma could affect their long-term cognitive well being (Belson, 2013).

Subnational jurisdictions

As previously highlighted, Baumgartner and Jones (1993) believe that when numerous legislative bodies interact, large-scale policy decisions are less likely to occur. That being said, the authors also believe that at times, subnational jurisdictions can be drivers of policy change. In that sense, institutional venue shopping can also be done horizontally. Zachery Lystetd and his family successfully lobbied the state of Washington to get SRC legislation passed (Adler, 2016; Koller, 2016). The idea gained significant traction at the subnational level, and since 2009, Sates have led the way in terms of SRC policies. Similarly, Ontario's Rowan's Law was the result of proactive efforts at the provincial level. Rowan Stringer's family has now started campaigning for concussion laws to be put in place in all provinces of Canada (Tater, 2016). The Federal Sport Minister said Rowan's Law was important in increasing awareness on SRC: "Rowan's Law is a step in the right direction (...) it builds on work that has been underway with our provincial and territorial colleagues for some time" (CBC News, 2015).

In summary, Baumgartner and Jones (1993) argue that images are linked to institutional venues. Interest groups and policymakers are interested in finding suitable venues to redefine policy images and get the attention of previously apathetic groups. As we have seen, venues are important for policy entrepreneurs who seek to have a particular image accepted. Baumgartner and Jones (1993) argue that issues rise and fall on the agenda depending on the venues in which they are presented. Our findings suggested that policy entrepreneurs were unsuccessful in pushing the issue of SRC in certain venues, but successful in others. The research showed that attention on the issue of SRC was heightened because of venues such as mainstream media outlets, congressional committee hearings, the courts, and subnational jurisdictions. **Table 4** offers a summary of our findings

Table 4.

<i>Sport-related Concussions – Positive Feedback Process</i>		
Issue Definition	Paradigm Shift	<p>“We need better education and better communication, but we mostly need to change this ‘culture of invincibility’ that sports has.” - Rowan Stringer’s father (Macgregor, 2013)</p> <p>“You need a protocol or a process that protects the athlete from all that external pressure. If he sprained his ankle instead of his brain, he wouldn’t be on the field.”- Carla Qualtrough, Minister of Sport (Hall, 2013)</p> <p>“The culture of football is changing in a positive way, and it’s still more popular than ever. People say this law is nothing more than common sense, but common sense isn’t so common in the heat of a game.” Zachery Lydsted’s father (Frollo, 2012)</p>
Policy Venues	Mainstream Media	<p>New York Times Front Page (2007)</p> <p>Documentary “League of Denial” (2013)</p> <p>Major Motion Picture “Concussion” (2015)</p>
	Courts	NFL (settled) and NHL (pending) subject to lawsuits by former players.
	Committee Hearings	<p>Congressional hearings in October 2009 and January 2010 on brain injuries in football.</p> <p>Committee hearings key in pushing Lystetd Law</p>
	Provinces and States	<p>Zachery Lystetd in Washington</p> <p>Rowan’s Law in Ontario</p>

Chapter 5: Conclusion

This Major Research Paper has sought to demonstrate the forces behind policy stability and change on the issue of SRC. Baumgartner and Jones (1993) presented a framework that goes beyond partisan and electoral explanations of policy change. Political scientists and analysts

have historically attributed policy change to the arrival of a new government, or to the right-left leaning preferences of policymakers. Our study shows that the issue of SRC came to the agenda of policymakers because it was successfully redefined by entrepreneurs using appropriate institutional venues

Our introductory section offered a historical outlook on SRC. Although the issue has been around forever, only recently has it risen to the agenda of policymakers and been subject to state intervention in the United States and Canada. Our review of literature also highlighted the empirical gap on SRC from a policy process perspective, since most of the academic interest focused on other areas such as neuropsychology, mental health, and ethics.

Using a multiple-case study approach, we examined the contextual conditions and narratives of four athletes who suffered SRC. These cases were analysed and compared with Baumgartner and Jones' Punctuated Equilibrium Theory. The PET suggests that policymaking is characterized by long periods of stability and incremental change, only to be punctuated through radical shifts. Policy stability is the result of monopolistic subsystems and a supportive policy image, which the authors argue contribute to negative feedback process that ensures equilibrium. Policy change is the result of proactive effort on behalf of policy entrepreneurs who are successful in redefining the issue by using appropriate institutional venues.

Our research suggested that the PET is a valuable framework to understand the process leading to policy change and stability on the issue of SRC. The cases suggested that monopolistic subsystems, such as the NFL and NHL, maintained their privileged position by putting emphasis on a supportive policy image (normalization of violence, hero culture etc.)

On the contrary, policy entrepreneurs, such as neurologists Bennet Omalu, Zachery Lystedt, and the Stringer family, were successful in redefining the image of SRC by utilizing venues such as mainstream media outlets, congressional committee hearings, and the courts.

Looking forward

As our findings illustrated, the issue of SRC has undeniably risen to the agenda of policymakers, and states are taking a proactive approach to regulate sport and protect athletes. Policy entrepreneurs have been successful in breaking the negative feedback cycle that rejected change for many years. That being said, there remains an undeniable challenge for decision makers: how do you encourage and promote physical activity, while being mindful of the risk of SRC? As highlighted by Lowrey (2015), the issue of SRC in children and youth is indeed a “double-edged sword”: “Public health interventions, including law and policy, must seek to reduce incidence and severity of sport-related injury, including concussions, while continuing to promote the significant short-and long-term health benefits of physical fitness” (p.62).

Recently, we have seen the emergence of a movement claiming that the scope of the issue of SRC has been overblown, and that we are consequently “obsessing” over concussions (Susan, 2016). Proponents of this idea believe we should “let kids play”, and that regulating sport has a negative impact on physical activity and sport participation rates. In 2015, Neurologist Steven M. Rothman wrote a critical piece in the New York Times entitled *Parents Stop Obsessing over Concussions*. In his article, Rothman noted that that “excessive fear of concussion may discourage parents and medical professionals from letting kids play healthy team sports.” (Rothman, 2015). The opinion piece received mixed reviews from the medical community.

Florida State University professor Francis Conidi said the piece was “irresponsible”, and that it could “set the public’s understanding of concussions by 10 -20 years.” (as cited by Susan, 2016). On the other hand, Kevin E. Crutchfield, director of the sports neurology program at Sinai Hospital of Baltimore, said that Rothman’s article deserved some credit: “some doctors may be so quick to buy into the possibility of concussion that they overlook other potential causes of headache, such as sleep problems, depression, or a neck injury” (as cited by Susan, 2016). In 2015, the Canadian non-profit organization ParticpACTION released its annual report card which assesses the state of physical activity in Canada. The organisation coined the term *the protection paradox*, which means that we have a tendency to overprotect children and youth, which ultimately does more harm than good.

“Long-term health should be valued as much as safety. We need to consider the possibility that rules and regulations designed to prevent injuries and reduce perceived liability consequences have become excessive, to the extent that they actually limit rather than promote children’s physical activity and health. Adults need to get out of the way and let kids play.” (ParticpACTION, 2015)

According to a recent study, grade 5 and 6 students who are allowed to go out and explore unsupervised get 20% more heart-pumping activity than those who are always supervised (Mitra, Faulkner, Buliung, Stone, 2014).

It thus appears that there is a new generation of policy entrepreneurs slowly emerging, one that uses an evidence-based approach to caution parents against “overprotecting” their children due to the fear of injuries such as SRC. If these entrepreneurs seek to change the image of SRC and attract the attention of policy elites, they should look no further than the PET as a

useful framework. Indeed, more than two decades later, the PET continues to further our understanding of the complexity behind the policy process. Agents seeking change would benefit from strategically aligning their lobbying efforts, discourse, and overall actions to create a positive feedback process enabling change. In the future, proponents of the idea that we are overprotecting children and youth would benefit from using the same mechanisms that helped a generation of policy entrepreneurs before them push for more rigorous SRC policies. By using appropriate institutional venues and redefining the policy image, this generation of policy entrepreneurs was successful in shifting the mindset of previously apathetic policymakers on the issue of SRC.

Appendix A

Maddock's questions and Standardized Assessment of Concussions (SAC)

"I am going to ask you a few questions, please listen carefully and give you're your best

Modified Maddocks questions (1 point for each correct answer)

What venue are we at today?	0	5
Which half is it now?	0	5
Who scored last in this match?	0	5
What team did you play last week/game?	0	5
Did your team win the last game?	0	5
Maddocks score		of 5

Orientation

What month is it?	0	5
What is the date today?	0	5
What is the day of the week?	0	5
What is the day of the week?	0	5
What time is it right now? (within 1 hour)	0	5
Orientation score		of 5

Immediate Memory

	Trial 1		Trial 2		Trial 3	
Elbow	0	1	0	1	0	1
Apple	0	1	0	1	0	1
Carpet	0	1	0	1	0	1
Saddle	0	1	0	1	0	1
Bubble	0	1	0	1	0	1

Total

Immediate memory score total of 15

Concentration : Digits Backward

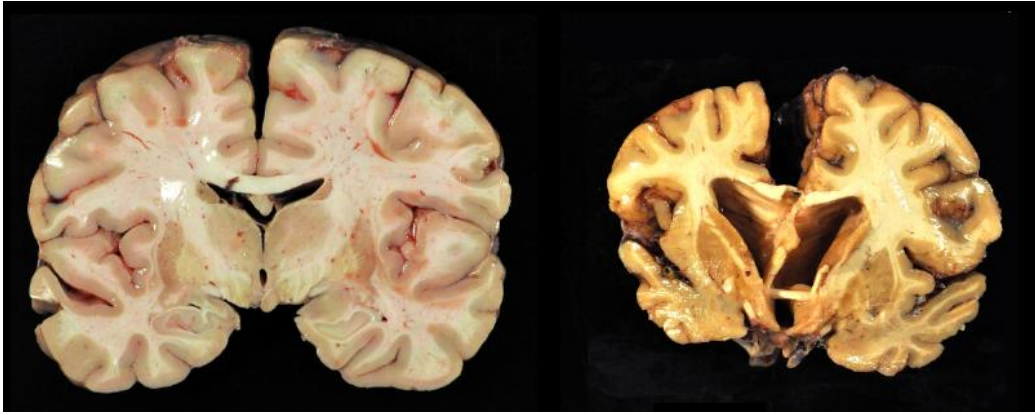
List		Trial 1
4-9-3 0	0	1
3-8-1-4	0	1
6-2-9-7-1	0	1
7-1-8-4-6-2	0	1
Total		of 4

Concentration: Month in Reverse Order

Dec-Nov-Oct-Sept-Aug-Jul-Jun-May-Apr-Mar-Feb-Jan	0	1
Concentration score		of 5

Appendix B

Normal brain (left) and brain with advanced Chronic Traumatic Encephalopathy (right)



Source: CTE Center - Boston University Alzheimer's Disease Center.

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