THE MICROPSYCHOSOCIAL EFFECT OF ACCOUNTING: A HEALTH CARE CONTEXT

DR. MAKINI DI MCGUIRE-BROWN

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Abstract

This dissertation explores the impact of accounting, identified by qualitative accounting scholars interested in the sociology of accounting as active and pervasive, and able to influence organisations and societies, but at the micro level, by studying the psychology and cognitive processes that facilitate the changes in the individual that eventually lead to the macrosocietal change. It delves deeper into our understanding of accounting's impact on payment models and pay-for-performance incentives, often challenging the dominant theories used in these areas, such as agency theory.

A common concept used when assessing the unintended consequences in accounting is performativity. This dissertation examines two of the four types of performativity in accounting as described by Vosselman (2022): accounting as a general frame/discourse and accounting as an act of calculation. Across three empirical papers and two methodologies (experimental and quantitative archival), this dissertation demonstrates that underlying psychology plays a significant role in the response to an accounting tool or policy, with material effect in the chosen industry of study, healthcare.

The first paper demonstrates that policies influenced by economic efficiency, lead to morally ambiguous situations for the doctor. They are unsure as to whether to make decisions about their patient based on the financial frame or the professional one. The first empirical paper finds that the presence of the financial frame, increases the cognitive effort used by doctors, in making a now morally ambiguous decision, and leads to longer patient visit times; the opposite of the desired economic effect. The second paper identifies that fee-for-service payment models disrupt the physician-patient dyad by decreasing the relational aspect of care. This disruption is shown to lead to an increased number of patients visiting the emergency room, thereby creating an external cost driver for emergency room costs. The final paper demonstrates that diverse backgrounds create diversity in motivation. Results show that internationally trained physicians (ITPs) working in Canada do not respond to pay-for-performance incentives in the way that Canadian trained doctors do. The identified effect is directly related to clinical care and decision making.

These results show that there is more to learn about accounting's effect on its environment and the actors in it, and that examination through a psychological lens at the microlevel would be beneficial.

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Introduction

Accounting scholars interested in the sociology of accounting have long since determined and showcased that accounting is not passive nor benign but instead active and impactful. The impact tends to be negative and pervasive, influencing entire organisations, industries, or systems. But while these explore the breadth of the effect, the depth at the micro level has been less explored. Currently, cognitive microprocesses and psychology find their way into accounting in the form of analysing the behaviour of accountants doing accounting or in the form of variations of agency theory in the quantitative stream. This dissertation puts cognitive microprocesses and psychology at the forefront as it explores the depth of the influence of accounting and its tools at the micro level. I argue that the depth of the reach of accounting and its tools has been underestimated. Not only does it affect broadly, as the qualitative scholars have shown, but it affects individuals and one's psychology with a material effect.

The context for the dissertation is the healthcare sector. This sector is a rich setting for such research because accounting has had an increasingly significant role in the management of the sector in modern time. Secondly, there is a hefty body of health accounting research by accounting scholars of all types that can be built on, as well as clinical and health policy scholars involved in health research using a sociological approach. Thirdly, the healthcare industry is relatable and therefore will easily demonstrate the material effect of the depth of impact once found. And yet, it is only a context. One would expect the micro-level psychological effect of accounting and its tools to span other sectors. Particularly those sectors in which there is tension between economic motivations and other influencers such as professional norms and responsibilities or social sector priorities.

This dissertation takes the form of three papers. The first is an experimental study that seeks to show the psychological effects of an accounting decision frame within a simulated context in which policies influence morality and make task performance more difficult. The other two use real health data to demonstrate the effect of accounting and economically favourable policies on the preferred health-related outcome; one being good comprehensive primary care which should lead to no unnecessary visits to the Emergency Department (ED), and the second being appropriate management of the diabetic patient.

The experiment simulates a clinical environment and tests the effects of accounting policies on the cognitive effort required for clinical decision making. Desire to control cost, fuels fee for service payment systems, which in turn creates the frame through which the system operates. This effect builds upon the performative accounting effect noted in qualitative work known as-accounting as a discourse or general frame (Vosselman, 2022). Once accounting becomes the frame/discourse, decisions are framed around it and this study explores the effect of those decisions on a core part of one's psychology: moral identity. With disrupted moral identity, there is increased strain and cognitive effort exerted in the mind of a physician making a decision about their patient. This prolongs visit times which is the opposite of the desired economic effect.

Secondary data analysis using archival quantitative methodology demonstrates that payment models, affect the psychosocial relationship within the physician-patient dyad by disrupting the cognitive frame (how one conceives) with which the dyad typically ensues, and has the material effect of producing an external cost driver for hospital costs through unnecessary Emergency Department (ED) visits from patients who have not bonded with their family doctor. This is a second example of the consequences of when accounting becomes the discourse or general frame in a non-accounting environment (Vosselman, 2022).

The other secondary data analysis focuses on the differing effects of performance incentives on physicians of various backgrounds. Conation, that is, motivated action, is affected by background and thus not everyone will respond to incentives in the same way. This raises considerations for Canada, a country which has a health system that has an increasingly diverse physician population, with growing numbers of internationally trained physicians (ITPs). A 'one size fits all' performance incentive approach may be futile. By diving into conation as the psychological process that means motivated action, this paper explores a deeper understanding of what qualitative accounting has identified as accounting as an act of calculation and the performativity it produces when the calculation is perceived by others (Vosselman, 2022). It reveals that the uptake of incentives varies by background and also that cessation of the incentive could have harmful effect on patient care.

This research can be situated in various schools of accounting research. It ties to qualitative research, grounded in sociology, that explores how accounting influences an organisation or a

social space to create calculable spaces, create territories and change boundaries, and influence perception (Bottausci et al., 2024; Malmmose & Kure, 2021; P. Miller, 2010; P. Miller & Power, 2013; Pflueger, 2016; Pflueger & Pedersen, 2023). It extends this research by exploring the microprocesses that underlie the macro phenomena through applying psychological theories.

This research can also be situated in management accounting research, in which 2 ontologies often compete (Modell, 2020). Economic-theory-based management accounting research treats accounting tools as real objects with predictable uses and outcomes regardless of context and human influence; therefore, lending itself well to quantitative methodologies. This allows for the use of agency theories and economic utility theories to predict decision-making by rooting it in realism (Bai et al., 2010; Fleckinger et al., 2024; Labro, 2015; Mioduchowska-Jaroszewicz & Romanowska, 2016; Pizzini, 2010; Plummer & Wempe, 2021). Sociological-theory-based management accounting research concerns itself with how an actor perceives accounting tools within a social context, thereby lending itself to more inductive approaches (Grossi et al., 2020; Kurunmäki, 2004; Kurunmaki et al., 2003; Malmmose & Liboriussen, 2025; Mouritsen et al., 2022; Shi et al., 2025). A complementary use of both schools of thought has been attempted by using institutional theory to explore how the social context affects the accounting tool in the environment (Ahrens & Ferry, 2018; Amans et al., 2015; Balakrishnan et al., 2010; Modell, 2022). The conversation about if and how to close the gap continues today (Krishnan, 2020; Modell, 2020). Despite repeated calls for an approach to management accounting research that combines both ontologies, dissatisfaction remains as to the success of the combination approaches. Modell (2020) sees social embeddedness combination approaches as never having left the underlying premise of sociological-theory-based management accounting research, that believes in the inextricable nature of economics and social context. Similarly, he views theory juxtaposition approaches to combining the ontologies as never having left the underlying premise of economic-theory-based management accounting research, that the economic and social contexts are distinct. Modell proposes critical realism to close the gap, because there is no apriori assumption as to the relationship between the economic factors and social factors. Krishnan (2020) agrees that there is a need to "study accounting in a more nuanced manner, rather than dressing accounting systems into etic-based straightjackets." However, she cautions against the argument that critical realism does not have aprioris and that sociology does not also juxtapose (eg. decoupling). She also warns against ignoring the reality of economic-based motivations as a

relevant starting point for unearthing practical contributions. This thesis joins this conversation by demonstrating that a strictly economics-based approach could not predict the results found. It also differs in the way that it combines the 2 ontologies. It goes beneath the larger institutional social context literature to show how accounting tools and effects become shaped by institutional and social context as a result of the accounting's impact on the psychological microprocesses of the social and institutional actor. Analysing accounting through this lens can add more nuance as called for by Krishnan (2020).

Finally, and probably most intuitively, this research can be aligned with the behavioural accounting school of research, described by Devine (1960) as "…that part of accounting which is related directly to the psychological reactions of those who consume accounting output or are caught in its threads of control." Devine critiques this field as one that is crude in its assumptions about behaviour, calling for more in-depth use of psychological theory. This paper is a direct answer to this call in behavioural accounting research, in addition to applying the concept of deeper psychological theory across methodologies.

With the evolution of behavioural accounting, 2 main paradigms have emerged (Ashton, 1984): the lens paradigm and the subjective expected utility (SEU) paradigm. SEU centres around an actor being motivated by economic benefit and level of risk aversion. The lens paradigm considers the characteristics of the environment, person and decision making processes and lends itself more to psychological theory application. In more recent times there has also been concern that behavioural accounting research is fading or in need of improvement in part due to a lack of high recognition from accounting academic journals (P. F. Williams et al., 2006), subpar data collection and analysis tools (Arnold et al., 2018; Rotaru et al., 2017), and the need to develop a clear research agenda (Minutiello & Tettamanzi, 2024).

This dissertation adds to the development of behavioural accounting research in two ways: one, by increasing the depth of the use of psychological theory by examining the micro-level psychological processes and two, by redirecting the emphasis from a focus on cost information, the accountant, the use of the accounting information, the user of accounting information, economic benefit and risk appetite, toward how the accounting tool or policy affects the decision making of the actor (not involved in the accounting) within its environment, on the decisions related to non-accounting related work performance.

In many ways the approach that this dissertation takes produces a link between the sociological based accounting research and behavioural accounting decision-making research except that it explores the effect of accounting on the individual instead of exploring the effect of accounting on the society around it. The approach used in this dissertation answers the call for more developed psychological theories, will contribute toward the popularity of behavioural accounting research due to the practical, real world, insights that can be gleaned and generates a new line of research by redirecting the focus away from the effect of accounting on accountants and accounting decisions toward other industry-based effects.

Although this research weaves its way into many areas of accounting research, I choose to position it within that linkage between qualitative sociological based accounting research, and behavioural decision-making accounting research.

This research, therefore, aims to shine a light on healthcare management; and identifies new variables for consideration when doing such management. Secondly, it is hoped that this expands the depth of the use of psychology in accounting. Psychology in accounting research can be used not only to judge the behaviour of accountants in making accounting decisions or evaluate cost information, but to consider the psychological effect of accounting tools and policies on those being acted upon; those not central to the creation of these tools, but who exist in the environment in which these tools work. How these tools affect the psychology on a microlevel of those they act upon, and the ensuing actions makes for an interesting stream of research using both experimental and archival methods. Mostly, I hope that this research brings all accountants– scholar, practitioner, quantitative, qualitative, behavioural– into the fold of recognising the importance of being accountable for our accounting.

Literature Review

Given the various schools of accounting research that this research can extend, it is worth reviewing some papers from each school, beginning with sociology-based qualitative accounting papers, continuing with management accounting and ending with behavioural accounting.

Qualitative papers based in the sociology of accounting speak to the negative effects of accounting on organisations and society (Hopwood, 1994), often with a critique of the positivists for their simplistic neutral assumptions about accounting (Watts & Zimmerman, 1990). Hopwood (1994) describes accounting as a technology (Bottausci et al., 2024; Matringe & Power, 2024), something that facilitates, hinders or transforms activities (Crvelin & Löhlein, 2022; Kraus et al., 2024; Robson & Ezzamel, 2023), a body of rationales under which language and terminology have material effect (Rowbottom et al., 2021), and a constitutor that fashions the economic domain among others (Mehrpouya & Salles-Djelic, 2019).

Dyball and Rooney (2019) show that the technology of accounting transformed Filipino farm worker health into an economic problem necessitating fixing. The logical calculation that worker health was directly proportional to business success created the clear and obvious need to address the health of workers but with complete disregard for the workers' personal boundaries. Fuelling this was the use of accounting language by the doctor commissioned by the Hawaiian Sugar Planters' Association to "bring plantation medicine up from its crude beginnings" (Dyball & Rooney, 2019, p. 8), who Dyball & Rooney, p. (2019, p. 9) note " used the language and calculus of accounting such as returns, value, asset and liability to describe the health of workers". With quotes such as "the health and happiness of workers is a real business asset" and proposals that sought to dictate the diet and reproductive habits of the plantation workers, the workers' health and decisions about it was determined by the return of investment that could be achieved, rather than the workers playing a central role in decisions regarding their own bodies. By using an economic argument, the managers justified controlling the farmworkers' health decisions.

The effect of this accounting decision on the farmworkers and their ability to do their job is something that this thesis would be interested in exploring further. On a micro level, how did the effect of having personal decisions stripped from them affect the way in which they approached daily tasks and what psychological processes may have enabled it. It is well documented that oppression for instance leads to mental health disorders such as stress, depression, anxiety, and

more (M. Williams et al., 2023). It is possible that the intrusive measures taken to increase the return on investment of the "asset" may well have led to oppression-based stress and trauma; measurable and testable on a psychological scale. This research is interested in exploring, testing and answering such questions, to have a deeper understanding of how accounting affects the world in which it operates.

In knowing patients, Pflueger (2016) find a similar trend of invasion of individualism as the accounting system seeks to make patients "knowable". Interestingly the play on words is intended to also position patients as now knowledgeable and a consumer, able to affect the "consumer market". This economic based view of the patient is interesting to this dissertation. If accounting tools and strategies, now position the patient as a consumer in the market, how does this affect the traditional relationship between a doctor and patient and how does it affect how clinical work is done and perceived. By using psychological theories, rooted in relationships, as is done in this dissertation, a better understanding of the effect of accounting on its world can be come by. The reciprocal effect also becomes interesting to explore as you read Pflueger and Pederson (2023). As quality assessment through accounting means is positioned as the 'right' thing to do or as a sign that one is committed to quality, what psychologic effect does this have on the clinician and their relationship with their patient. If checkboxes and numbers are now the gold standard of quality of care, how does this affect the doctor-patient relationship which traditionally went beyond the numbers. Malmmose and Kure (2021), present a situation in which a patient- centred quality management system, gained initial favour with management and clinicians. However, this quickly soured as the technicalities of the system seemed to work against the realities of the clinics. The authors describe the next phase as a resignation and shoulder-shrugging phase. Theories on work satisfaction and performance would be interesting to apply to such a situation to understand the effect of this accounting policy on clinical work. Elements of the importance of studying "individual-level microfoundations" and how they contribute to professional-level institutional logic can be see in a recent paper of a study done in a Finnish healthcare organisation (Rautiainen et al., 2022).

Similarly, other management accounting scholars explore Management Accounting Systems and their influence on the environment in which they are meant to and do transform (Laguecir et al., 2020). Laguecir, Kern and Kharoubi (2020) demonstrate changes in actions to the management

of the public housing sector which has the underlying tension of needing to be financially prudent but supply a social need of affordable housing. Using practice theory and the concepts of new public management perspectives, they show how changes in the management accounting environment in the form of sector policy reforms disrupted the practices of the housing management. Prior to the advent of social accountability, the financial mindset was prevalent at all levels of the company. With the change of government policy to include social accountability KPIs the response of management was to build it into the accounting system by using ABM. The authors go on to detail how practice intelligibility was formed through the institution of the ABM system.

This case could also have been interrogated using the underlying psychological effect of being managed through NPM for years. Comparing the response of management that have been, and have not been, managed under this type of business perspective on a social need like public housing, and how the response to changes in policy may differ, would be an interest of this thesis. By using financial cognitive neuroscience theories (Frydman & Camerer, 2016), we could uncover how a private firm, which although for-profit, would be able to set and weight their own priorities outside of profit, although they were not managed under NPM. In contrast, a public firm which was managed under NPM, may react differently to social accountability changes. How does the neurocognition differ based on the longstanding effect of imposed NPM versus freedom of financial management in the housing sector with the ability to set their own social goals. Through implementing the use of psychological and cognitive science theories, we can learn more about the effects of accounting.

A commonly used theoretical basis in management accounting is agency theory. The central tenet of agency theory is that information asymmetry exists, such that an agent may have a conflict of interest to perform acts not in line with the interest of the principal whom the agent performs the task on behalf of. Therefore, contracts and incentives are structured in a way to mitigate the risk posed by this conflict of interest and information asymmetry. Pizzini (2010) uses agency theory to show that doctors are more likely to use group-based incentives in settings in which their work is highly dependent on each other. In such cases, it is less likely for one to work against the other. Information asymmetry is decreased as well as the conflict of interest. While the author was able to reject the null hypothesis, a deeper understanding of the

environment created by the incentive can be come by through exploring other theoretical bases. Instead of the principal-agent tension, there could be other considerations for i) the choice of group-based incentives, particularly if managed by a physician administrator versus a non-physician as well as ii) the effect that the type of incentive has, beyond 'free-riding' or not.

For example, core confidence as a construct in psychology has been used to do research on its effect on performance, attitudes and well-being (Stajkovic, 2006). How does this core confidence affect the behaviour of the implementation of incentives. A physician administrator may have a level of core confidence in their colleagues based on professional assessment. This core confidence would either encourage or deter the physician administrator in decisions about group-based compensation, regardless of task interdependency and malpractice risk as studied by Pizzini. This may not hold in a non-physician administrator, since they would have no basis for a profession-specific confidence assessment. Secondly, how does the group-based incentive affect the actor. Does it cause each doctor to limit the scope of their work; to quickly pass off the patient to the next member of the team, does it cause a group-think mentality to have everyone "on the same page" that deprives the patient of individualised and exceptional care. Exploring the effect of group-based incentives on the clinical work outcome is important to understand accounting's effect on the world.

In a review of accounting in heath care contexts, Abernethy et al (2006) find that although most papers tend to locate themselves in either behavioural/organisational or critical/sociological, the categories are not that distinct. Elements of each school play a part in the other. Therefore, there is a need for increased "methodological pluralism" to increase our understanding of accounting in a healthcare context. An examination of papers investigating tax or accounting reporting (Beck et al., 2021; Krishnan & Yetman, 2011) can be seen from both perspectives. Organisational pressures can cause a shift in behaviour to comply with regulation but also, an obvious reshaping of the conceptualisation of the not-for-profit and social need world by the presence of accounting. Cost-shifting behaviour by hospitals for example, is a form of accounting performativity as an act of calculation. It is an unwanted practice that drives hospital care costs and insurance upward, eventually impacting access to care for patients. This thesis suggests that if we understood the underlying psychological process that leads to cost shifting behaviour, this could be applied to policy to reduce cost-shifting, or a better interpretation of

when it occurs. Recent chapters on health care accounting research (Bai et al., 2023) also show the breadth of the research and questions being asked, however, this thesis adds to the line of research by calling for more emphasis on the examination of the underlying psychological factors that lead to the behaviours identified in previous research, thereby deepening our understanding.

Behavioural accounting research which does use elements of cognitive and psychological theories, tends to lean more toward decisions of the 'account-er' while placing much less emphasis on the effect of the account-ing on said 'account-er' and the effect on those in the environment being 'account-ed'. For example, Johnson et al (1998) investigate the decision of the audit manager depending on the gender of the person begin audited and L. G. Eldenburg et al (2011) investigate how incentives may encourage earnings management by non-profit hospital management. These both explore decisions of the account-er, the party doing the accounting. Comerford and Aberbethy (1999) also explore decision making by the account-er, and dive deeper by exploring the several layers of the professional in the role of an account-er. They use psychological constructs of role orientation (G. A. Miller & Wager, 1971) to gain a deeper understanding of how various aspects of the individual may contribute to the accounting decision. Kaplan et al (2020) explore what factors influence investigators (account-ers) to explore reported billing fraud or not.

This thesis suggests that focus be shifted a bit more to the effect of accounting on the environment and at the micro level with the use of psychologic theories. Kelly (2010) concludes that psychological factors may be better able to explain actions and how they change with a given compensation contract rather than economic factors and motivators. Ewelt-Knauer et al (2024), investigate how accounting information in the form of relative performance information (RPI) affects the way in which actors perform their tasks. This is of interest to this dissertation. Particularly, what underlying micropsychological processes occur to trigger the particular response for a better understanding of the effect of accounting on the subjects in its environment.

The studies reported on in this dissertation examine how accounting tools affect a subject's morality, professional relations, and a subject's conation/motivation in an accounting constrained environment. Of note, the subject is removed from taking part in the accounting; the subject is not the account-er.

Conceptual Chapter: From Macrosocietal to microprocessing; using Psychology to deepen our understanding of accounting's effect

Qualitative scholars of accounting use sociological theories to examine the macrosocietal effect of accounting. There has been less attention though on how these macro findings may manifest on the micro level. Sociological theorists have long emphasised, debated and metatheorised on the importance of the macro-micro bridge (Collins, 1988) and finding the elements that are worthy of defining the bridge between micro and macro (Lawler et al., 1993).

The importance of this macro-micro translation lies in a desire to understand the processes that underlie decisions that are associate with accounting's negative impacts and unintended consequences. In a business environment, economic profitability is important. However, there are times when actors can be deemed to have "crossed the line". For example, whilst the politicians, farm owners and profiting stakeholders of the Hawaii plantations (Dyball & Rooney, 2019) would not be expected to accept a loss; there should be limits to actions that can be taken to ensure a profit. Invading personal boundaries for the sole purpose of profit should be deemed unacceptable. It would be useful to understand the psychology behind how one crosses the line from understanding a worker's personal boundaries, to justifying crossing the line using economic reasoning. This can only be understood by analysing psychological microprocesses. The macrophenomenon of accounting's impact in shaping decisions can be seen, but what microprocesses are involved in fueling the action. "Bridging micro and macro levels of analysis is an important task for the development of robust and predictive social theories." (Lawler et al., 1993, p. 268). "Micro/macro theory is not just an opportunity for metatheoretical debate. More importantly, it is also a path for building substantive theory, for connecting different arenas of sociological research. And that means seeing things about the world that we did not see before." (Collins, 1988, p. 252).

Organisational behaviour scholars have similarly taken to understanding the importance of research and analysis on different levels and considerations as to how it should be integrated (Chan, 1998), (Rousseau, 2010). The focus here is one of more accurate data analysis rather than theories and meta-theories as in sociology. In both fields, however, there is an acknowledgment

of the necessity of making the link. The thesis proposes that the overarching reason for the necessity is the desire for a deeper, more comprehensive understanding of research phenomena. This is applicable to all methodologies. For the sociology-based researcher, this may mean understanding which micro processes lead to macro-societal phenomenon and indeed which would not. For the experimental or quantitative based researcher this may mean how true the analyses and findings are if translated to a higher or lower level. Both involve a more thorough understanding of the research phenomenon.

Historical archival researchers implicate accounting as something that constructs and is constructed, causing and caused by societal change, dating back centuries. Toms (2010), in his examination of the birth of the capitalist mentality, demonstrates that even the parameters used for calculating profits have been constructed over time. Production forces, law/doctrine changes, the socialisation of capital and more, all helped determine what calculative practices were in favour at the time.

The idea that accounting can indeed construct change is also captured by Espeland and Sauder (2007) as they explore how the institution of performance measures can affect the behaviour of the actors being measured, at times in unintended ways, calling it *reactivity*. They identify 2 main forms of reactivity in response to metric measures: self-fulfilling prophecy and commensuration. In the self-fulfilling prophecy form of reactivity, a performance metric, for example, creates an expectation, and therefore people behave as is expected by the metric. This has repercussions as the reactivity continues based on, external public response to the metric, how the metric affects business operations, such as through funding, and the ripple effect of how activities and decisions change to accommodate what is being measured. Commensuration is the form of reactivity that speaks to cognitive changes due to the imposed metric. The need to quantify, reduce, simplify and amalgamate changes the focus of what can be measured. Things that are measurable become most important. This poses a problem for sectors like health in which, as Weiner (2000, p. xi) puts it, "Frequently, however, finer distinctions of a job well done do not lend themselves well to quantitative measurement."

Also, common (and similar), is the term "*performativity*" and a dedicated line of research that seeks to expose it. Performativity can be understood as the characteristic of non-human things to

have constitutive power, to shape the world around them. This thesis uses the performativity concept as a bridge or anchoring link between the macro-societal and individual micro consequences of accounting.

Recently, there has been an attempt to classify the different ways in which accounting exemplifies performativity. Vosselman (2022) describes these categories but also points out that- 'what's missing is the how'. How is accounting going about this constitution? In some ways, this dissertation aligns with this question. Whilst Power (2021) develops a 3-stage process theory on how the macroinstitutional phenomena are built up from microfoundations, Vosselman (2022) argues that it falls short, not fully able to explain how accounting truly transforms reality. The dissertation builds on this argument and proposes that what is missing is what psychological micro-processes underlie the changes that accounting brings about.

Vosselman presents four conceptions of accounting's connectivity to performativity. Examples can be found in the health accounting literature. They are accounting as an act of calculation; accounting as a discourse or general frame; accounting as a relational and dynamic actor; accounting as a material discursive practice.

As **an act of calculation**, two features are important; what the calculator intended with the calculation and how the calculation is received and acted upon by another. This takes on real life in the health accounting literature. Budgeting tools like diagnostic related groups have been implicated in calculative performativity.

From the calculator's perspective, Diagnostic Related Groups (DRG) help to contain costs by designating an "appropriate" level of spending per disease group. In The Elusive Quest (Wiener, 2000) hospitals were awarded for spending the average amount of resources associated with a particular diagnosis as per the DRG system. The effect however was one in which the actor receiving the calculation, interpreted it differently and acted differently than intended. Hospitals began "upcoding" their patients, that is, citing a more severe plausible diagnosis that was of low probability for example identifying an inflamed stomach as a possible bleeding ulcer in order to avoid being penalised for spending extra resources on a patient who probably genuinely needed it. Whilst the concept of performativity describes what has occurred, still unanswered are the following questions: how did the institution of these monetary categories constrain the actors, what underlying psychological process stimulated the chosen course of action (upcoding) that

may help determine who would choose this action versus who would not, how could this system work to limit hospital cost without the unintended performativity? These are the questions being asked by this thesis. The use of psychological theories can help us have a more complete understanding of the phenomenon.

As a **discourse or general/circulating frame**, accounting becomes a self-fulfilling prophecy, it defines the boundaries of the world and then the world must live within it. It makes it such that actions outside of the prescribed boundaries are an anomaly simply because of how accounting defines the world, regardless of the relevance of the action being performed to the substantive work of whatever the industry space is, for example, health. Accounting research in this area therefore seeks to identify the boundaries that accounting creates and explores cases in which the boundary is ignored and how/why.

Accounting can be seen to frame the outlook of what is a 'good performance' in a medical facility (Llewellyn & Northcott, 2005). The setting of performance benchmarks established the boundaries for what performance is. Performing within these benchmarks was all that was necessary. Instead of a medical professional framing of striving to provide the highest quality care to every patient, Llewellyn and Northcott (2005) describe how benchmarks of performance promoted and established becoming 'average' as an aspiration. By meeting the standard, hospitals felt accomplished. What is unclear is how such benchmarks transform a professional norm of achieving the best possible patient outcome to one of acceptance of average. How do these accounting benchmarks compete against the professional norms of quality and disrupt them to the extent that the average hospital is an aspiration? Which professionals and institutions would cross these boundaries and still define performance based on a medical frame and why. How could they be identified and what does it mean for accounting policy and tool creation and use.

As a **dynamic relational actor**, accounting plays a part (as an actor) in how relationships build and proceed. Although there may be an element of calculation, this category goes beyond just the effect of the calculation. It reflects the dynamism of how accounting creates and transforms relationships and ensuing actions.

As an act of calculation, pay for performance measures may create unwelcome behaviour motivated by financial reasons. But seen as a dynamic relational actor, accounting plays a role in

creating relationships made necessary through an accounting policy or through the process of accounting. Conrad and Guven (2011), use Institutional Theory to analyse how the implementation of Pay by Results (PbR) accounting performance management/measurement system changed the way in which different actors in the organisation related to each other. In their analysis there is evidence that the institution of the PbR created the "impetus for closer working relationships between accountants and clinicians." The presence of the new system changed the relationship between the accountant and clinician such that there was more conversation about "clinically meaningful things". Here we can see relational agency that Vosselman (2022) describes. What is interesting is that not all participants reported that the relationship between clinicians and accountants changed in this way. Questions can be asked about what micro level differences may exist that enables this relationship change versus not. What facilitates accounting's relational agency within an individual.

As a **material-discursive practice**, there is often an apparatus, usually in the form of a tool or software, that becomes a part of service delivery. It does not only participate post-action but becomes intertwined in performing the action itself. It influences which action is taken and how. It becomes the pillar through which tasks are included or excluded and is therefore seen as an exclusionary practice.

In health and accounting the institution of electronic health records (EHR) has provided a new avenue for research. How EHR affects the ability to collect accounting data as well as if it improves hospital financial performance have been some elements of this area of research (Collum et al., 2016; Ginn et al., 2011). Less identified however is how this apparatus which has been noted to help with efficiency, accountability, auditing and compliance, and performance and quality management intrudes on the practice of care. How does it define what is done or isn't done. How does it affect decisions in health service that wouldn't have been affected otherwise. Qualitative studies in Health service management have identified sentiments from clinicians that suggest that care is affected through time consumption, the ability to copy and paste notes, detracting from an individualised patient note and detracting from quality care (Upadhyay & Hu, 2022). An evaluation of how the approach to a patient encounter differs with and without EHR is of interest. How is the psychology of the clinician and the performance of the clinical role affected when boxed into computerised structures and templates.

This sample highlights that accounting plays an active role in healthcare and has the potential to change practices, relationships, operations and more. Given the importance of this sector, we should be compelled to know the most we can about how it can be affected by the accounting tools as thoroughly as possible. Without a psychological micro perspective, current understanding is incomplete. By exploring the microprocesses that occur, the health sector can enjoy the benefits of accounting tools without the potentially detrimental unintended consequences or at least limit them. This dissertation attempts to make an incremental step in that direction.

Empirical Papers

I. Paper 1: Accounting and the disruption of the moral self

Introduction

"Patients should limit their time with the doctor to 1 major issue or 2 minor issues." In the offices of several family physician offices in Ontario you can find a sign with these or similar words. This not only rude but preposterous request would require patients to assess their own symptoms to determine severity and then make the uninformed choice to withhold information they innocently yet ignorantly deem as 'minor' from their physician. News outlets have covered this story from the patient angle and the physician angle and shared quotes from provincial medical regulatory bodies across Canada (Adhopia, 2019). Regulatory bodies warned against it, the medical insurance companies warned against it and in Manitoba there was a case in which the one issue policy precluded a patient from talking about her chest pain and she died of a heart attack not long after. Meanwhile, some physicians justify it as spreading their services equitably amongst patients (Adhopia, 2019). This forms the basis of the morally ambiguous environment that is the focus of this paper.

It is popularly thought that the reason for such signs is the fee for service payment system. With this model, the more visits a patient has, the more pay the doctor will receive from fee for service billing. Desire to control cost fuels fee for service payment systems, which in turn creates the frame through which the system operates. It produces boundaries of what is "normal" from an accounting standpoint. Once accounting becomes the frame/discourse, decisions are framed around it (Vosselman, 2022). To investigate the effect and consequence of this frame in health care services, this paper will examine how it affects a core part of one's psychology: moral identity. Moral identity is a well researched topic (Aquino & Reed II, 2002; Shao et al., 2008) but there has been less connection of it to the variable of task performance. By exploring how an accounting decision frame interacts with moral identity in a morally ambiguous environment and its effect on task performance, we gain further insight into the effect of accounting as a general frame/discourse. The salience of this is that the potential effect on the ability of the affected individual to proceed with the given task can have ramifications for the person receiving the service (eg. patient) the individual performing the task, team, and organisation. In a health context, this takes on even more significance.

Several papers in management accounting explore a similar topic, though from a different perspective. Multidimensional task literature investigates effort level and its interplay with effort allocation when multiple tasks or multi-dimensional tasks are required (Brüggen & Moers, 2007). As will be observed in this dissertation, there is an interplay between financial incentives and social incentives. Brüggen & Moers (2007) find that when a social incentive in line with the actors' interests is aligned with a financial incentive, it improved the effectiveness of the financial incentive. While this dissertation will take a different approach, by examining disruption of moral identity, similarities can still be found with Brüggen & Moers (2007) study. By introducing an appealing social incentive with the financial incentive, one could say that the social incentive distorted the accounting decision frame, made by the financial incentive.

Another paper shows that effort allocation can be distorted by receiving detailed information on performance metrics and that this eventually leads to poorer task performance (Hannan et al., 2019). The study shows that when employees are given very detailed information on task performance and incentives, employees' efforts were distorted away from certain tasks. The concept of performativity highlighted by this thesis can provide a more complete understanding of this phenomenon. In short, with detailed information about the task performance and incentives, employees may have engaged in the type of performativity labelled accounting as an act of calculation. It is possible that effort allocation was being determined by the potential benefit of the performance metric and incentive.

Both management accounting papers represent a situation in which there were competing priorities or decision-making factors. This paper will also present competing priorities in the form of an accounting decision making frame versus a professional one. This paper will approach the analysis from the perspective of how the accounting frame creates a morally ambiguous situation and disrupts moral identity, leading to increased cognitive strain and poorer task performance.

Moral ambiguity has been used in research to mean uncertainty as to whether a decision or action is morally right or wrong. Morality has been found to hold a significant place in an individual's being, mostly referred to as moral identity (Aquino & Reed II, 2002) and moral identity compels moral action (Hardy & Carlo, 2011). Moral identity contains several features, moral unity, moral conviction, moral continuity and moral self-recognition (Thomas, 1997). Moral unity refers to

the integration of all parts of one's moral self and moral conviction refers to how certain you are that moral values and judgement are correct. These are the two components of moral identity that this study is concerned with. It will explore the effect of moral ambiguity on moral unity and the resultant effect on task performance and consider the likely moderating effect of moral conviction on moral unity and on task performance.

If doctors find restricting patient complaints to be morally ambiguous, it will likely disrupt their moral unity. They have come to regard their profession as ethical and follow medical norms, this would be well integrated with their personal ethics over time. As an accounting frame positions itself, medical norms become greyed as limiting patient complaints becomes instituted; justified by some within the profession but in no way a norm. This disrupts the integration of morality, that is, moral unity. Since moral identity compels moral action, and we have a disruption of both moral identity and ambiguity surrounding the morality of the action, this would cause an increased cognitive effort (Cooper-Martin, 1994) by doctors who find it hard to decide what to do each time they see a patient. This may be more significant in individuals with high moral identities (Hardy & Carlo, 2005).

This paper uses an experimental methodology to test the disruption of moral identity by disrupting moral unity and relates it to task performance through increased cognitive effort. It goes on to test how the effect may change in the context of individuals who have high moral conviction. In a real sense, if most clinic staff are firm in their moral convictions, does this affect the influence of the accounting frame on decision making? These results would be a practically significant consideration as it shows the depth of effect of seemingly straightforward accounting tools and policy and the consequences that ensue.

Theory and Hypothesis Development

Moral Ambiguity

Moral ambiguity as a research construct has been treated quite literally in the literature and the paper follows this trend by combining the American Psychological Association's definitions of 'moral' and 'ambiguity' (APA, 2022) to define it as a behaviour, behaviour pattern, or situation that might be interpreted in more than one way relating to it being right or wrong. A three-paper series by Waters and Bird provides helpful background context to this study. The first paper concludes that people experience moral issues in performing everyday work tasks (Waters et al., 1986). In the second paper they discern that, when considering decisions, people draw on several intuitions to establish moral standards to guide their decisions (Bird & Waters, 1987). The third paper in the Bird and Waters series reveals that ambiguity in acceptable moral standards, within an organisation, leads to moral stress amongst the employees and that clarity about what is considered moral and not, is helpful (Waters & Bird, 1987).

In our context, healthcare professionals must deal with rationing care despite their dedication to the oath to 'first do no harm'. With conflicting views as to the morality of the policy, it can be seen as morally ambiguous, and make task performance more difficult. I expect poorer task performance in situations of higher moral ambiguity, and I hypothesise that:

Hypothesis 1: There will be a main effect of moral ambiguity on task performance such that high moral ambiguity will lead to poorer task performance.

Cognitive Effort

Cognitive effort has become intuitively understood over the years, however, debate still exists as to the best way to capture it in psychological research. In the APA dictionary, mental effort is defined as the amount of cognitive work required by a given task and effortful processing refers to mental activity that requires deliberation and control and involves a sense of effort or overcoming resistance. Russo and Dosha (1983) call it the total amount of cognitive resources – including perception, memory, and judgment - needed to complete a task and Cooper-Martin (1994) fits a model of total cognitive effort, cognitive strain and decision time as the best model for cognitive effort. While Cooper-Martin uses both subjective and objective measures, Westbrook and Braver (2015) favour subjective methods only. They also favour an underlying

economic basis for assessing cognitive effort. Given that this study focuses more on morality and ethics, rather than economics, I follow a modified Cooper-Martin approach. The choice to end a patient's visit requires deliberation and judgement and with additional policy restrictions adds the necessary resistance to be overcome. The Cooper-Martin models, when evaluating the cognitive effort construct, explore cognitive strain by self reporting and decision time objectively. The self-reported cognitive strain aspect of the cognitive effort construct showed better predictive value for "wanted to choose the best" when making a decision while objective decision time was a better predictor of "considering all important features" when making a decision. Both are relevant in our context.

I would expect that doctors in a context of higher moral ambiguity would exert more cognitive effort leading to a longer decision time and poorer task performance in the form of a longer time to complete the task of seeing all patients.

Hypothesis 2: There will be an indirect effect of moral ambiguity on task performance mediated through cognitive effort such that a greater level of perceived moral ambiguity will lead to increased cognitive effort, resulting in poorer task performance.

Moral identity and Moral action

Management research has an interest in the moral action of its employees to preclude fraudulent and other nefarious activity. Psychological research has continued to search for antecedents to moral action. Moral reasoning and judgement (Shao et al., 2008) were initially thought to be good predictors of moral action/behaviour but have since largely been replaced by moral identity in predicting moral action (Hardy & Carlo, 2005). Moral identity has been cited to perhaps be the best predictor of moral action (Hardy & Carlo, 2011). There are several approaches to describing moral identity (Shao et al., 2008) but they all see moral identity as a component of a person's being.

Many like Aquino and Reed (2002) draw on trait associations to speak to the development of the moral identity, Thomas (1997) similarly suggests that moral identity develops over time due to several factors: environmental factors such as association with parents, teachers and other agents, moral encounters and experiences; in conjunction with personal factors such as cognition, genetics, working memory and long-term memory. Out of this moral development comes his

characterisation of moral identity comprising four components, moral unity, moral conviction, moral self-recognition and moral continuity. Moral unity refers to how well integrated the self's moral unit is, given the multiple inputs during development. Thomas proposes that moral unity, that is, a well integrated moral self, provides the functionality for moral decision making and action. This suggests that a disruption of moral unity can make functioning within a situation involving morality, difficult. Given that analysis of environmental cues over time play a role in moral development, this study predicts that morally ambiguous change in the work environment, serves as a disruptor to moral unity, and this dysfunction makes decisions involving morality more difficult.

Moral Unity, Cognitive Effort and Task Performance

As previously discussed, moral functioning depends on moral unity. Without this consistency, the self has difficulty determining the correct moral action. In the context of morally ambiguous change, I propose that identity becomes de-unified because the self cannot integrate the new ambiguity in a cohesive way, thus leading to dysfunction. Moral decisions should thus require more deliberation particularly because the desire for moral consistency within self has been identified as salient (Aquino & Reed II, 2002). I propose that this leads to the need for increased cognitive effort when performing the task of seeing a patient with more than the policy-allowed number of issues. Cognitive effort consists of both cognitive strain and time. If effort is increased because of additional deliberation due to the disruption of moral unity, then a longer time will be taken to successfully complete the task of seeing the patient. This can be seen as poor task performance since the additional time was spent in deliberation rather than directed at the specific task, addressing the patient's concerns.

In this way, I link morally ambiguous change to a decrease in task performance due to a disruption of moral unity which increases the required cognitive effort. I hypothesise the following:

Hypothesis 3: There will be an indirect effect of moral ambiguity on task performance, serially mediated through moral disunity and cognitive effort such that a greater level of perceived moral ambiguity will lead to increased moral disunity and cognitive effort resulting in poorer task performance.

Moral Conviction

Another important element of moral identity as theorised by Thomas (1997) is the idea of moral conviction. Moral conviction refers to confidence in one's moral judgment/values, that is, the extent to which you believe that your morality is correct. The potential danger of strong moral conviction has been noted in the literature. The desire to fulfil the moral mandate that conviction requires can result in the means being disregarded (Skitka & Mullen, 2002). Moral conviction has also been found to promote disobedience to the rules, sew strong ties to positive and negative emotion and produce difficulty in conflict resolution (Skitka, 2010). I postulate therefore that in the context of morally ambiguous change, higher levels of oppositional moral conviction will moderate the effect of the disunity on task performance. Such individuals will be compelled to decide whether limiting care is immoral or not and will stand firm in their conviction, thereby decreasing the amount of cognitive effort needed each time, decreasing the negative effect on task performance.

I therefore hypothesise the following:

Hypothesis 4: Moral conviction will moderate the effect of moral ambiguity on task performance such that higher levels of moral conviction will decrease moral disunity, and therefore lead to decreased cognitive effort, resulting in better task performance.

Figure I-1 represents the theoretical model that will be tested:

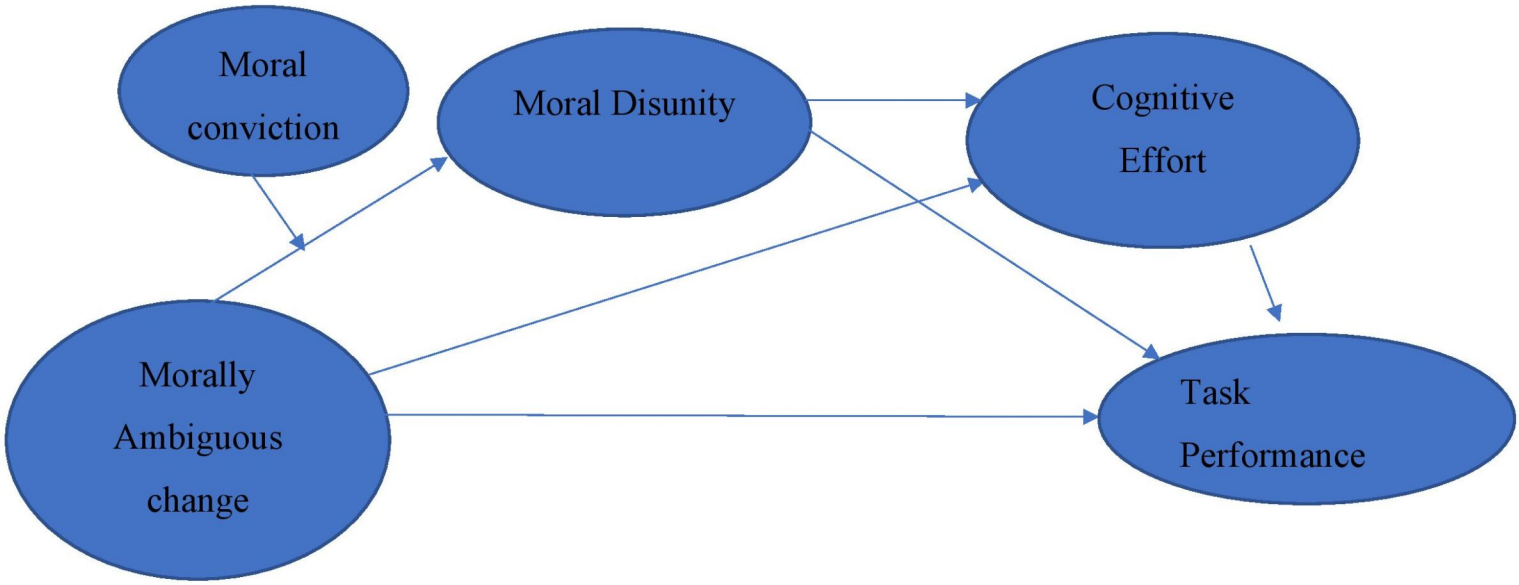


Figure I-1: Theoretical model for testing the effect of morally ambiguous change on task performance

Methodology

Participants and Design

Doctors across Canada were recruited via professional associations and snowballing, to participate in this study without incentive (N=84 F=58, M=26). They were assigned at random to one of 2 conditions (high moral ambiguity vs moderate moral ambiguity) in a computer clinical case-based, between-subjects experiment.

Cases for the study were developed based on the most common presenting complaints and most diagnosed medical conditions in primary care across Canada (Finley et al., 2018), to provide realistic scenarios and scenarios that should be analysable by any doctor. Piloting the experiment involved, seeking feedback on the case content from a focus group of physicians practicing in Canada and making appropriate edits. A separate group of physicians were then asked to participate in the experiment as a pilot and give feedback afterward. Although the manipulation check was significant in the pilot, post-pilot feedback suggested that there were other contributors to their decision making including medical ethics violations, public health violations and clinical considerations. Despite this feedback there was nothing more than could be done to the cases to reduce the influence of these factors.

Cases were created such that, physicians received all the information about their patient's symptoms from the beginning and were also told about the main presenting complaint. This created a situation in which they had all the information needed to make a holistic assessment from the beginning. The cases were built such that, deciding not to attend to another of the patient's symptoms would not result in immediate harm to the patient. This takes away the clinical reactions to fear of an emergency, allowing the decision to be solely based on providing holistic care to the patient or following an accounting inspired clinic policy.

Each of the 10 cases involved a decision screen used to operationalise moral ambiguity for each of the patients' complaints. The moderately morally ambiguous condition was one that any doctor faces, that is, deciding when to move on to another patient, despite continued complaints from the current patient, therefore serving as a control. The highly morally ambiguous condition is one in which administrative clinic policy supports a one-complaint-per-patient cut off policy, thereby increasing the strain on what is the "right thing to do".

Independent, mediating and moderating variables were captured in the post-experiment questionnaire with 15 items measured on 7-point scales. To capture the manipulation, participants were asked 3 items on a 7-point scale (agree/disagree) in the post-experiment questionnaire. The first question assessed the extent to which they agreed that a moral component existed in the decision, to establish morality as factor that could affect decision making. The second question formed the bases for the moral ambiguity variable and asked whether they believed there to be a clearly right or wrong answer (agree/disagree, 7-point scale).

Measures of moral disunity (4 items assessing whether the decisions made were in keeping with their moral self- agree/disagree, 7-point scale) and moral conviction ("I was sure that the decisions I made were morally right"- agree/disagree, 7-point scale) were also assessed subjectively via post experiment questionnaire.

Cognitive effort was assessed in two ways, subjectively using questions adapted from Cooper-Martin (1994) (7 items on a 7-point scale; 6 of them as agree/disagree and the other as very little effort to a great deal of effort) and secondly, by length of time taken on the decision-making screen. The full experiment and post-experiment survey can be found in Appendix A: Experimental Survey Instrument.

Procedures and Dependent Measures

Doctors received a link to the secure online testing platform (PsyToolkit) to begin the experiment. They were assigned into the high or moderate moral ambiguity conditions randomly by the software. The opening screens explained that the project sought to explore micropsychology in accounting and that healthcare was being used as the context. Once online consent was obtained, the participants were made to answer 2 demographic questions: "Are you a doctor?" And then, "family doctor or specialist?". A negative response to the first question would have resulted in them being screened out of the experiment. The following screen set the scene by informing them that they were the only doctor at a clinic with 10 patients waiting to be seen. For the condition of high moral ambiguity only, participants also had this phrase on the scene setting screen: "The following sign is viewable to patients in the waiting room: 'Please limit your complaints to 1 major issue per visit'".

Participants then start with a medical vignette for patient 1 and then go on to manage the presenting complaint for which management was given. Once the first complaint was managed and for each subsequent complaint, participants would see one of the following versions of a decision screen: for moderate moral ambiguity- "What would you like to do next? Address another of this patient's issues? OR See another patient?"; for high moral ambiguity- the decision screen read: "You have seen 1 major issue for this patient as clinic policy supports. What would you like to do next? Address another of this patient's issues? OR See another patient?". Doctors were not required to give clinical management content, only to decide when to move on to another patient. There was no direct detrimental effect to the patient, if the doctor chose to move on.

Once all ten patients were seen, the post experiment survey began with 2 demographic questions, age and sex and then 15 items measured on 7-point scales to assess independent, mediating and moderating variables, as above.

The dependent variable, task performance, was measured as the time taken from patient number one until complete with patient number ten. Time was chosen as the measure of task performance for two reasons. Firstly, the cases were not designed to evaluate the doctor's clinical management. In each case, standard management was shown to the participant once they decided to see a particular complaint, therefore a measure of performance that tested quality of clinical management was not the intention. Secondly, in the accounting frame, the expected situation is one in which the larger number of patients that is seen the better for the economical goal. Therefore, the faster you see a patient, the more patients you can see and therefore earn more. Using time to assess task performance therefore reflects the efficiency mindset of the accounting frame.

Data Analysis and Results

Assumptions

Data were evaluated for normality and heteroskedasticity using Shapiro-Wilk and Breusch Pagan tests and found to violate these assumptions. Robust methods in PROCESS were therefore used to conduct the analyses, including bootstrapping and heteroskedasticity-consistent standard error, HC4. Upon evaluation for outliers and influence, one value was found to affect the regression significantly, (Cook's D=0.5). Upon review it was deemed likely that the data was as a result of a participant not completing the study in one sitting leading to excessively long times posted and thus this participant was removed from the sample. Visualisation of scatter plots showed that the linearity assumption was not violated.

There was no evidence of multicollinearity between the independent and mediating variables (VIFs <1.05). Incomplete observations were removed from the dataset by the statistical software. The final sample size was n= 74.

The interaction between the independent variable and the mediators were not statistically significant, as is required for testing mediation models to ensure that the mediator is not acting as a moderator ($p>0.1$).

Manipulation check

The manipulation checks on moral ambiguity consisted of 2 questions in the post experiment survey. One question assessed whether participants felt that there was a moral component to the decision that they had to make. This was measured on a 7 point-scale of agree/disagree. There was no statistically significant difference in means. Both the control group (M=5.44; SD= 1.33) and the treatment group (M= 5.65; SD=1.59) agreed that the situation contained a moral component ($t(74.72)$; $p= 0.53$). The second element of the manipulation check involved answering a question on the moral ambiguity of the decision they had to make. Participants were asked whether there was a clear right/wrong answer to the decision they had to make. Results showed that participants in the high moral ambiguity group perceived a greater level of ambiguity (M=5.08; SD= 2.03) than participants in the moderate moral ambiguity group which acts as a control (M= 4.1; SD= 1.96). The difference in means was done via Welch two sample t-

test due to unequal variance in the sample and the difference was found to be statistically significant (t (72.01) = 2.14; p= 0.035).

Factor reliability analysis

Reliability coefficients are shown in Table I-1. All four items for Moral Disunity (M= 5.6; SD= 1.17) were reliable at α= 0.93. After recoding reverse items for self-reported Cognitive effort (M= 4.62; SD= 1.43), four items, questions 2, 3, 5 and 7 were found to improve the reliability to α= 0.82. The reliability for moral conviction (M= 5.06; SD= 1.71) increased from 0.75 to 0.9 upon dropping item number 3. Table I-2 shows means and standard deviations for all variables used in the study. Questions asked related to the constructs can be found in the post experiment questionnaire in Appendix A: Experimental Survey Instrument.

Table I-1: Reliabilities and coefficients of variables

Variable	Reliability (α)	Mean (SD)	Correlations					
			Moral Disunity	Moral Ambiguity	Cognitive effort- self	Cognitive effort- times	Performance	Moral Conviction
Moral Disunity	0.93	5.60 (1.17)	1					
Moral Ambiguity	-	0.55 (0.5)	-0.17	1				
Cognitive effort- self	0.82	4.62 (1.43)	-0.25	0.03	1			
Cognitive effort- times		0.10 (0.07)	-0.16	0.33	0.23	1		
Performance		10.22 (7.66)	-0.19	0.27	0.10	0.50	1	
Moral conviction	0.90	5.06 (1.71)	0.09	0.30	0.04	0.13	0.17	1

Table I-2: Descriptive statistics of variables by condition

Variable	Mean (SD) control	Mean (SD) treatment
Moral Disunity	5.81 (0.94)	5.43 (1.31)
Moral Ambiguity	4.1; (1.96)	5.08 (2.03)
Cognitive effort- self	3.99 (0.99)	4.31 (1.03)
Cognitive effort- times	0.73 (0.32)	0.75 (0.43)
Performance	7.91 (3.58)	12.07 (5.11)
Moral conviction	4.48 (1.79)	5.52 (1.49)

Hypothesis testing

Hypotheses 1, 2 and 3 were assessed using PROCESS MACRO model 6 and hypothesis 4 using PROCESS MACRO model 86. Table I-3, Table I-4, Table I-5 and Table I-6 show the results of model 6.

Table I-3: Results of PROCESS MACRO Model 6; regression coefficients and (SE(HC4)) DV= MD, CE

DV= Moral Disunity (MD)	
Intercept	5.82*** (0.16)
Moral ambiguity	-0.39 (0.26)
R-squared (MD)	0.03
No. of observations	74
DV= Cognitive effort; self-report	
Intercept	3.19***(0.81)
Moral ambiguity	0.32 (0.29)
Moral Disunity	0.22 (0.14)
R-squared (Cog effort; self)	0.05
No. of observations	74
DV= Cognitive effort; timed	
Intercept	0.11** (0.05)
Moral ambiguity	0.04*** (0.01)

Moral Disunity	-0.01 (0.01)
R-squared (Cog Eff; timed)	0.12
No. of observations	74

The model that included cognitive effort- self assessed (M= 4.31, SD= 1.03), supported hypothesis 1 demonstrating a direct effect of moral ambiguity on task performance (M= 12.07, SD= 5.11) in which the participants in the higher moral ambiguity group (M= 5.08, SD= 2.03), took 3.51 minutes longer on average to see all of their patients (t=2.29, p=0.025; cohen's d= 0.2) as seen in Table I-5.

Table I-4: Results of PROCESS MACRO Model 6; regression coefficients and (SE(HC4)) DV= Performance

DV= Performance	Cog eff; self Model	Cog eff; timed Model
Intercept	11.15*** (4.55)	8.23 (5.31)
Moral ambiguity	3.51** (1.54)	1.58 (1.74
Moral Disunity	-1.17 (0.86)	-0.69 (0.87)
Cog effort	0.81 (0.49)	50.4** (24.21)
R-squared (Performance)	0.28	0.28
No. of observations	74	74

Table I-5: Total, direct and indirect effects of ambiguity on performance (cog effort-self assessed)

Model Effects		Bootstrapped CI Lower Limit	Bootstrapped CI Upper Limit
Total Effect	4.16** (1.59)		
Direct Effect	3.51** (1.54)		
Indirect Effect (MD)	0.46 (0.53)	-0.23	1.80
Indirect Effect (Cog eff- self)	0.26 (0.32)	-0.29	0.99
Serial Indirect Effect (MD, Cog eff; Self)	-0.07 (0.10)	-0.36	0.03

In the model using cognitive effort-timed, the direct effect of moral ambiguity on task performance is not statistically significant (1.58, t=0.91, p=0.37) as seen in Table I-4. For at least one model therefore the difference in the ambiguity context, prolonged the task completion time.

The indirect effect of cognitive effort on the relationship between moral ambiguity and performance is statistically significant in the cognitive effort-timed model (M=0.75, SD= 0.43) with a coefficient of 2.19 and bootstrapped confidence intervals of 0.6 to 3.94 as seen in Table I-6, lending support for hypothesis 2. The indirect effect is not significant in the model that tests cognitive effort-self, with a coefficient of 0.26 (0.32) and bootstrapped confidence intervals of -0.29 to 0.99.

Cognitive effort when interpreted as cognitive strain and measured through a time variable denotes that the participant is 'considering all important features' (Cooper-Martin, 1994). This implies that when 'considering all important features', of identical medical cases, participants took a greater time in consideration in the higher moral ambiguity context, giving credence to the argument that the clinic policy created additional cognitive strain. The added accounting policy consideration in this setting caused greater time in decision-making that extended task performance time by 2.19 minutes. While the direct effect of the increased ambiguity on task performance was not significant in this model, when the more ambiguous context caused greater time in decision making, it decreased performance by lengthening task completion time.

Table I-6: Total, direct and indirect effects of ambiguity on performance (cog effort-timed)

Model Effects		Bootstrapped CI Lower Limit	Bootstrapped CI Upper Limit
Total Effect	4.16** (1.59)		
Direct Effect	1.58 (1.74)		
Indirect Effect (MD)	0.27 (0.42)	-0.36	1.36
Indirect Effect (Cog Eff; Timed)	2.19 (0.85)	0.60	3.94
Serial Indirect Effect (MD, Cog eff-Timed)	0.12 (0.21)	-0.13	0.69

When cognitive effort is measuring the "intent to choose best" as in the self-assessment model, there is no indirect effect through cognitive effort (0.26, BSCI -0.29-0.99). Therefore, no conclusion can be made about the effect of the ambiguous context on performance as it relates to it being mediated through cognitive effort-self assessed. In terms of ecological plausibility, all doctors, regardless of the ambiguity context, have the "intent to choose best" for their patient, making the findings plausible, however, no conclusion can be made about a null effect. The direct and total effect however remain in keeping with predictions.

Neither model leant support to the serial mediation hypothesis as seen in Table I-5 (-0.07, BSCI=-0.36-0.03) and Table I-6 (0.12, BSCI=-0.13-0.69). I cannot reject the null hypothesis for hypothesis 3. There is not enough evidence to support a disruption of moral unity caused by the differing moral contexts as seen in Table I-3 (-0.39, t=-1.49, p=0.14). These models explain 28% of the variation in performance ($R^2 = 0.28$).

Table I-7: Results of PROCESS MACRO Model 86; regression coefficients and (SE(HC4)) DV= MD, CE

DV= Moral Disunity (MD)	
Intercept	5.29*** (0.62)
Moral ambiguity	-0.41 (0.89)
Moral Conviction	0.12 (0.12)
Ambiguity*Conviction	-0.02 (0.17)
R-squared (MD)	0.05
No. of observations	74
DV= Cognitive effort; self-report	
Intercept	3.54***(0.87)
Moral ambiguity	-0.76 (1.19)
Moral Disunity	0.21 (0.14)
Ambiguity*Conviction	0.21 (0.22)
R-squared (Cog effort; self)	0.06
No. of observations	74
DV= Cognitive effort; timed	
Intercept	0.10** (0.05)
Moral ambiguity	0.04 (0.05)

Moral Disunity	-0.01 (0.01)
Ambiguity*Conviction	0.0001 (0.009)
R-squared (Cog Eff; timed)	0.12
No. of observations	74

Hypothesis 4 expects that moral conviction should moderate the relationship between moral ambiguity and task performance because those with higher moral conviction should not be as affected by moral ambiguity. However, we cannot reject the null hypothesis for hypothesis 4. The interaction between moral ambiguity category and moral conviction does not have a statistically significant effect on the relationship between ambiguity on moral disunity (-0.02, t=-0.11, p=0.91), cognitive effort-self (0.21, t=0.95, p=0.34), or cognitive effort- timed (0.0001, t=-0.11, p=0.91), as seen in Table I-7.

Table I-8: Results of PROCESS MACRO Model 85; regression coefficients and (SE(HC4)) DV= Performance

DV= Performance	Cog eff; self Model	Cog eff; timed Model
Intercept	10.21** (4.59)	7.76 (5.16)
Moral ambiguity	1.52 (4.83)	-1.09 (4.03)
Moral Disunity	-1.27 (0.90)	-0.78 (0.89)
Cog effort	0.77* (0.45)	49.92* (28.62)
Conviction	0.38 (0.46)	0.23 (0.36)
Ambiguity*Conviction	0.28 (0.84)	0.44 (0.74)
R-squared (Performance)	0.13	0.29
No. of observations	74	74

Data did not support that moral conviction was a moderator of the direct relationship between moral ambiguity and performance (0.28, t=0.34, p=0.73; 0.44, t=0.59, p=0.56) as seen in Table I-8. Indices of moderated mediation were similarly not statistically significant as seen in Table I-9 and Table I-10.

Table I-9: Index of moderated mediation Cognitive Effort-self assessment model

Index of Moderated Mediation- Cog Eff-Self model (DV= Performance)		Bootstrapped CI Lower Limit	Bootstrapped CI Upper Limit
Amb*Conv (MD)	0.02 (0.27)	-0.5582	0.6012
Amb*Conv (Serial, Cog Eff-Self)	-0.003 (0.04)	-0.0775	0.1145

Table I-10: Index of moderated mediation Cognitive Effort-Timed model

Index of Moderated Mediation- Cog Eff-Timed model (DV= Performance)		Bootstrapped CI Lower Limit	Bootstrapped CI Upper Limit
Amb*Conv (MD)	0.01 (0.20)	-0.3642	0.4803
Amb*Conv (Serial, Cog Eff-Timed)	-0.006 (0.09)	-0.2370	0.1584

In summary, the participants in the high moral ambiguity group were more likely to take a longer time to complete the task of seeing all ten patients. This effect was mediated through cognitive effort as it relates to "considering all important features". I could not find evidence to support that there was a disruption of moral unity or that moral conviction could moderate the effect.

Discussion

In a world in which health systems continue to be in turmoil either because of inadequate access to care, inequitable access to care, overwhelming physician to patient ratios or the rising cost of healthcare, it is important that the focus on medicine and caring for the patient is not lost. While doctors are intent on ensuring the good health of their patients, conflicting priorities may arise, sometimes subconsciously, if policies that aid economic and financial performance are at odds with the clinical priorities. Accounting as a general frame or discourse imposed upon clinical care can disrupt task performance.

Canada is currently experiencing a shortage of family doctors and long specialty wait times. Efforts to increase the rate at which patients are seen as well as collect the monetary benefits of more appointments lead to policies like limiting patient complaints at a single visit. In this paper, the experimental results show that such policies can indeed lengthen the time that doctors take on decision making, not because of clinical complexity but instead, the morally ambiguous situation increases the cognitive effort that is needed to make the decision as they have to now consider administrative policy on limiting patient complaints as an additional variable.

These results call into question whether such policies help to reduce patient wait times and increase access to care or whether they hamper the clinical decision-making process which should be the main consideration when managing a patient.

This study is limited because the doctors were not allowed to ask clarifying questions to make nuanced decisions about a patient and could not use alternative forms of consultation such as telehealth. However, despite the shortcomings in ecological validity, and the multitude of factors that go into clinical decision making, the mediation of moral ambiguity negatively affecting task performance through increased cognitive effort still explains 28% of the model, making a strong case that administration should be keenly aware of the potential for unintended consequences when imposing policies that create moral ambiguity.

These findings can be tested in other industries and contexts to confirm external validity. Theoretically, there is the potential for task performance to be affected when administrative policy threatens professional ethics and thus, I would expect the results to be replicated.

On a broader level, this paper contributes to our understanding of performativity in accounting by demonstrating the cognitive strain within the individual that occurs when accounting defines the boundaries of what the norm is. By being forced to conform to the acceptable decisions and actions defined by accounting as the general discourse of frame, the non-accounting actor is significantly impacted. This increased cognitive strain can lead to far reaching effects that may extend into job dissatisfaction, physician burnout and loss of health workforce. This paper, by identifying the underlying factor, can prompt discussions on and further research into mitigating this effect. For example, in this case it may mean a removal of the clinical policy, to allow doctors to make their own clinical decisions without the imposition of the boundaries of the accounting frame. But in another situation, if cognitive strain is found to underlie accounting's effect on its environment, cognitive load reduction techniques may be a viable option.

The benefit of seeking out the underlying microprocesses is that it brings us closer to possible improvements and solutions to decrease the unintended effects of accounting in our world.

II. Paper 2: Accounting for Continuity of Care- An empirical analysis of the use of FFS compensation in health and the unintended consequences.

Introduction

"Visits to Ontario's emergency departments increased by 11.3% over the last six years, to 5.9 million in 2017/18 from 5.3 million in 2011/12. Visits by high-acuity patients – those with more serious conditions – rose at an even higher rate, up by 26% to 4.1 million from 3.3 million." (Health Quality Ontario, 2018)

Relational Continuity of Care is associated with decreased visits to the Emergency department and hospitalisations, including those with chronic and/or complex conditions. (Accelerating Change Transformation Team, 2017)

"Continuity implies a sense of affiliation between patients and their practitioners (my doctor or my patient), often expressed in terms of an implicit contract of loyalty by the patient and clinical responsibility by the provider."(Haggerty et al., 2003)

The above statements motivate this study. Over the past decade, Ontario's health care costs have continued to rise, and the top 2 contributors have historically been and continue to be hospital costs (36%) and physician payment (22%) (Gurnham et al., 2019). Both are areas within which management accounting scholars and practitioners alike participate. Hospital cost drivers, how to adapt accounting systems to recognise them and how to properly identify them by including such predictor variables as complexity along with the traditional volume variable has been a topic of interest (Cardinaels et al., 2004; Cardinaels & Soderstrom, 2013; L. G. Eldenburg et al., 2017; L. Eldenburg & Krishnan, 2006). Physician payment model studies tend to use various versions of agency theory to examine how the information asymmetry between physician and compensator is or may be exploited (L. G. Eldenburg et al., 2017; L. Eldenburg & Krishnan, 2006). Far less studies have investigated physician payment models in the community that produce hidden costs that drive hospital costs upward. This study investigates if the type of payment model used for family physicians in the community has an effect on the number of emergency room visits of their patients and thus increases hospital costs.

Of the range of payment models used for primary care physician compensation, they can be grouped into two categories: 1) Fee for Service models and 2) Salary-based models. Fee for

Service (FFS) models pay after billing has been made for a specific pre-determined code. Salary-based models pay a set amount for a specific cap of patients. Each model has been researched for their effect on physician work effort (Anumudu et al., 2019), clinical choices (Scott et al., 2011) and cost-value benefit (Leone, 2002), with varying results according to context, methodology or variables used. The main concepts that are considered are whether salary-based models encourage ample work effort per patient versus whether FFS models encourage excess testing and expense.

This study builds on these concepts but considers the psychosocial aspect of the physician-patient relationship, how it is affected by these models and the resultant effect on costs. This study is an example of the influence of accounting as general frame or discourse (Vosselman, 2022). The intention of this payment model is to control cost and be able to track expenses more accurately, however, the effect is one of a change in the frame of the patient-physician relationship. I argue that salary-based models support relational continuity of care in which there is strong loyalty and responsibility for care between physician and patient because a non-financial frame is induced while FFS models will not support relational continuity of care because a financial frame is induced. This is supported in the management context by the relational perspective theory that emphasises the importance of the social relationship, even in business relationships (Chen & Miller, 2017) and in the health literature as the importance of relational continuity of care (Accelerating Change Transformation Team, 2017). Given that relational continuity of care depends on an established loyal relationship and that relational continuity of care has been proven to reduce visits to the ED, I hypothesise that physicians paid predominantly by salary-based models will see fewer ED visits made by their patients than those paid predominantly by FFS models. The economic impact of this cannot be understated as in Canada the average visit to a primary care physician in a fee-for-service model costs $51.01 while the average hospitalization cost is $6,349 (Canadian Institute for Health Information, 2019).

This study uses data from the Institute for Clinical Evaluative Sciences (ICES) to determine dominant payment models for primary care physicians in Ontario and analyse it against the data for numbers of emergency room visits by their patients using the general linear model, to determine whether payment model influences emergency room visits.

The findings will be relevant both economically and theoretically and to both scholars and practitioners. By shining a light on community factors affecting hospital cost, this adds a new variable to the cost driver stream of research and adds further considerations determining best compensation models and how to research and modify them.

Theoretically, this study uses a relational perspective theory to apply to physician payment model compensation research. It demonstrates that not only agency problems are relevant in this area of research but also a psychosocial component. In this case, a psychosocial approach can better explain the findings since agency theory would lead to the opposite result and incomplete explanations. It challenges the dominating theory used in this area of research and opens the doorway to new hypotheses within this line of research.

Literature Review

Health Industry Cost Structure and Driver Research in Accounting

Research into hospital cost structure within accounting and economics research revolves around budgeting, contracting and capital structure and uses primarily economic based theories. In addition, managerial accounting focuses on performance measurement and compensation and uses primarily, agency theory (L. G. Eldenburg et al., 2017; L. Eldenburg & Krishnan, 2006).

The economic approach, among other things, attempts to identify costs and drivers of costs and how the accounting systems interact with cost and production factors. Historically, volume has been the primary variable used as a cost driver (Foster & Gupta, 1990) and studies continue to demonstrate that this is so but add onto it by considering complexity (Balakrishnan et al., 1996; Macarthur & Stranahan, 1998), and uncertainty in the market (Kallapur & Eldenburg, 2005), physician compensation within the hospital framework (Cardinaels et al., 2004). Cost containment efforts such as reimbursements through Diagnostic Related Groups (DRG) (Lehtonen, 2007) and ABC costing have also been researched (Marques & Alves, 2023), as well as an interest in how information on spending reduces physician use of service (L. Eldenburg, 1994). That is, that one way to contain costs is to show the physician how much each service costs in an effort to influence the booking of tests, visits and general management toward an economic-friendly direction. This raises similar concerns to the concerns of this thesis namely: should physicians decide on patient care through the lens of accounting as the general frame and how does this affect them and the patient.

This paper adds to this research by identifying a hidden cost factor that can only be identified by venturing outside the hospital boundaries. It demonstrates that cost-drivers do not only originate inside a department but from the outside. Regardless of cost containment techniques within the department, costs will continue to rise unless the external cost drivers are addressed. It also explores the cost driver from a psychological theoretical perspective rather than an economic one.

Physician Compensation Model research in Accounting and Health Research

Even more extensive is the literature on physician compensation models. This stream of research spans accounting and health journals. Researchers explore the incentives that different payment

models give to physicians to overprovide services, leading to increased cost, or models in which this incentive is not present and whether quality is affected (Feldman & Sloan, 1988). The two overarching models researched are FFS and salary-based models. The effect of the models on physician behaviour and clinical choices (Anumudu et al., 2019;, Scott et al., 2011), how it changes practice structure and operations as well as multidisciplinary teamwork (Friedberg et al, 2015) also form elements of this stream of research. Leone (2002), investigates how payers use uncertainty and risk to determine which payment models to use for primary care physicians versus specialists.

Much of this research is heavy on the use of agency theory to examine how the information asymmetry between physician and compensator is or may be exploited. This study does not continue evaluating physician overprovision or threats to quality but rather examines how the physician-patient relationship is affected by compensation models.

This study, therefore, joins the conversation of these two streams of research simultaneously, by investigating whether the effect of the payment model on physician-patient relationships in the community, particularly primary care physicians, produces a hidden cost driver at the level of the hospital, particularly the emergency department.

Theory and Hypothesis Development

The review of the literature indicates the interest in management accounting literature in using agency theory to determine how payment models incentivize the actor, in this case the physician. In this section, I develop hypotheses that use theories from psychosocial literature to contribute to this area of research.

The theoretical basis for hypothesis development stems from the underlying concept that medical care while a job and therefore financially aligned, requires a social or interpersonal component for quality care. Financial and social motivations are often found to be antithetical (Heyman & Ariely, 2004). Given the constant interplay and the necessity to strike a balance, there may be some contexts that favour tipping the scale to either side. This paper posits that FFS payment models, favour the side of financially motivated actions. To develop the hypotheses, first is an exploration of philosophies from both health literature and management literature.

Relational Continuity of Care- health context

Quality health care depends not only on apt clinical skills but on the social relationship developed between physician and patient. Relational continuity is related to better health outcomes in many parameters, particularly the one that this study explores, less visits to the Emergency Department (Accelerating Change Transformation Team, 2017). "[It] implies a sense of affiliation between patients and their practitioners (my doctor or my patient), often expressed in terms of an implicit contract of loyalty by the patient and clinical responsibility by the provider. Relational continuity bridges not only past to current care but also provides a link to future care. This is most valued in primary and mental health care… a consistent core of staff provides patients with a sense of predictability and coherence (Haggerty et al., 2003)"

Such a concept favours payment models that are salary based and do not assign a fee to every service performed. It favours a consistent family doctor over drop-in service, and it favours serial preventative care over acute episodic care. This study will test this theory empirically as this specific link between the development of relational care and payment model has not been widely tested, to the best of my knowledge.

The Relational Perspective- management context

Chen and Miller (2017) describe the differences in Eastern and Western approaches to management using the Relational Perspective theory. They suggest that Western managers can benefit from an inclusion of this relational perspective used by Eastern cultures to achieve best results in business practices. This perspective embraces the "both/and" approach. "In such a system, paradox is not an irrational state; that is, a paradox need not be rendered rational through the cancellation of one or the other of opposing entities of which it is composed. Instead, the two entities simply exist with respect to and within the context of one another" (Chen & Miller, 2017). It aims for balanced harmony, which for this study implies a state of balance between the necessity for earning from the job and the relational development required for quality care.

Therefore, approaches that embrace the antithesis of financial and non-financial motivations can allow for a greater development of relational care. That is, care that is holistic, that does not dissect services, that depends on relationships and that embraces the entire patient journey. The paper proposes that a salary-based rather than fee-for-service based care would be better able to induce this balanced harmony. This is already reflected in comments from Canadian physicians: "fee-for-service doctors don't get paid a lot to have conversations" (Glauser, 2020).

It follows that when comparing fee for service payment models to salary-based models, there will be less fostering of relational continuity of care and since relational continuity of care bridges past, current and future care, then those patients seen under the fee for service model are less likely to develop the 'my doctor' relationship leading to increased emergency department visits once this relationship is not fostered.

It is from this logic that I hypothesise the following:

H1- Relational care will mediate the effect of payment model on emergency department visits such that doctors seeing patients for relational care that are paid via fee for service will have a higher number of patients with emergency department visits than doctors seeing patients for relational care under salary-based payment models.

Emergency department visits may be high urgency or acuity, or low. A lack of a fostered relationship may cause an increase of both types. Patients with low acuity concerns that could have gone to a family doctor won't be inclined to, causing low acuity visits to increase at the Emergency Department. Patients with underlying chronic illnesses that often lead to high acuity

visits could end up at the emergency department due to a lack of proper follow-up or remaining undiagnosed. Given that there exists incentivized programs and standardized testing for screening and monitoring popular high-acuity visit causing illnesses, such as diabetes, it is possible that avoiding hospital visits with this type of care may require less social fostering.

Therefore:

H2- There will be a significant interaction between the indirect effect of payment model on emergency department visits mediated through relational care and the acuity of the emergency department visit, such that the effect of relational care on the emergency department visit will be larger with a low acuity visit than with a high acuity visit.

It is worth nothing that agency theory, as is usually employed in physician compensation research, would most likely predict the opposite of the suggested hypotheses because it focusses solely on information asymmetry without considering these psychosocial factors. Agency theory would predict that considering the information asymmetry between provider and payer, those under the salary-based model will exert less effort and therefore be less likely to develop relational continuity of care than the FFS model who would perform excessive service. Excessive service in itself could not create that social relationship and so agency theory would fall short in being able to predict the relationships hypothesized. This study therefore assists this line of research with new theoretical groundings through which future research may continue.

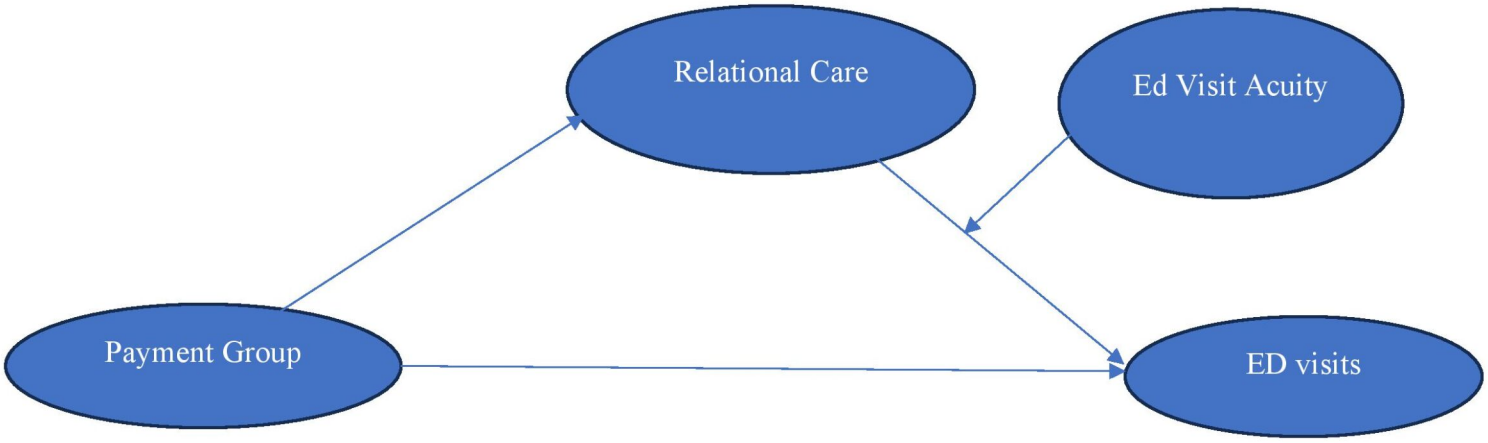


Figure II-1: Theoretical Model to test the effect of Physician Payment group on Emergency Department Visits

Data and Variables

This study contracted ICES Data & Analytic Services (DAS) and used de-identified data from the ICES Data Repository[1]. The study uses 230892 physician level observations across a 9 year period (2012-2021). PROCESS for R was used to test the hypotheses using the general linear model. Model 14 was used to test the moderated mediation model as in Figure 1.

Variables

Payment group- From the ICES dataset, I used the ratio of fee for service payments received to total payments received per physician to determine those that are mainly paid via the FFS model. Physicians paid under salary-based models may still receive a minimal amount of payment via FFS from drop ins, out of province patients, international visitors or other such special circumstances. Therefore, the independent variable, payment group, is formed by using those who receive more than 10% of their earnings via fee for service into the FFS group, dummy coded as 1 and those that receive less than 10% of their earnings via ffs into the No FFS group, dummy coded 0.

Relational Continuity of Care- This variable is operationalized using healthcare codes[2] that are used for general visits and check-ups, not initiated because of a specific acute or chronic illness. These visits represent the most opportune moments to develop relational care. This is used as the mediating variable and called Care Codes.

Emergency department visits (ED visits)- This is the mean number of Emergency Department visits of patients per physician across all acuity levels of the Canadian Triage And Acuity Scale (CTAS) and is used as the dependent variable.

Ed visit Acuity (Acuity)- Low acuity (less severe) visits are those that are classified under CTAS levels 4-5 and high acuity (more severe) visits are those that are classified under CTAS levels 1-

[1] This study contracted ICES Data & Analytic Services (DAS) and used de-identified data from the ICES Data Repository, which is managed by ICES with support from its funders and partners: Canada's Strategy for Patient-Oriented Research (SPOR), the Ontario SPOR Support Unit, the Canadian Institutes of Health Research and the Government of Ontario. The opinions, results and conclusions reported are those of the authors. No endorsement by ICES or any of its funders or partners is intended or should be inferred.

[2] K017, K130, K131, K132, A003

3. I used these variables from the ICES dataset and code low acuity visits as 0 and high acuity visits as 1 to create the moderator variable.

Covariates- A physician's patients emergency department visits can result from many reasons including access to the emergency department due to rurality, number of chronic patients per physician and total number of patients per physician. I therefore use these variables to demonstrate the results of the model tested despite these factors. The chronic illnesses used are some of the most common to cause disease burden in Ontario (Public Health Ontario, 2019) and thus tracked reliably. They include cardiovascular diseases, chronic lower respiratory diseases and diabetes. Cancer was not used due to its unique elective presentation to the ED and the fact that total care is taken over by the specialist Oncologist, leaving little in the hands of the family doctor.

Table II-1, Table II-2 and Table II-3 show descriptive statistics for the variables used in the model.

Table II-1: Descriptive Statistics, Correlations and Reliabilities

Variable	Mean (SD)	Correlations			
		Payment group	Rel care visits	Mean ED visits/pt	Rurality
Payment group	1.76 (0.43)	1			
Care Codes	1.24 (0.22)	0.086	1		
Mean ED visits/pt	0.27 (0.65)	-0.023	0.063	1	
ED visit Acuity	1.5 (0.5)	0	0	0.135	
Rurality	8.7 (16.81)	-0.123	-0.134	0.094	1
No. of pts	1927 (1534)	0.108	-0.044	0.028	0.023

No. Chronic-diabetes	0.11 (0.10)	-0.076	0.175	-0.083	-0.009
No. Chronic-asthma	0.16 (0.14)	-0.082	0.135	-0.109	-0.065
No. Chronic-cardiac	0.02 (0.02)	-0.136	0.094	-0.044	0.105
No. Chronic-copd	0.07 (0.07)	-0.139	0.073	-0.040	0.155
No. Chronic-htn	0.23 (0.21)	-0.139	0.162	-0.088	0.029

Table II-2: Descriptive Statistics, Correlations and Reliabilities cont'd

Variable	Correlations					
	No. of pts	No. Chronic-diabetes	No. Chronic-asthma	No. Chronic cardiac	No. Chronic-copd	No. Chronic-htn
No. of pts	1					
No. Chronic-diabetes	-0.319	1				
No. Chronic-asthma	-0.353	0.775	1			
No. Chronic-cardiac	-0.282	0.739	0.570	1		
No. Chronic-copd	-0.290	0.718	0.612	0.768	1	
No. Chronic-htn	-0.359	0.921	0.788	0.799	0.795	1

Table II-3: Descriptive statistics for variables

Variable	Mean (SD) no FFS group	Mean (SD) FFS group
Care Codes	1.02 (0.25)	1.48 (0.9)
Mean ED visits/pt	0.44 (0.5)	0.1 (0.67)
ED visit Acuity	1.2 (0.44)	1.8 (0.67)
Rurality	7.4 (3.22)	10 (12.02)
No. of pts	1208 (989)	2654 (1251)
No. Chronic-diabetes	0.08 (0.03)	0.14 (0.07)
No. Chronic-asthma	0.10 (0.1)	0.22 (0.13)
No. Chronic-cardiac	0.016 (0.006)	0.024 (0.015)
No. Chronic-copd	0.085 (0.006)	0.055 (0.005)
No. Chronic-htn	0.19 (0.10)	0.27 (0.13)

Results

Assumptions

Data were evaluated for normality and heteroskedasticity using Shapiro-Wilk and Breusch Pagan tests and found not to violate these assumptions. Upon evaluation for outliers and influence, none were identified Cook's D <0.3). Visualisation of scatter plots showed that the linearity assumption was not violated.

There was no evidence of multicollinearity between the independent and mediating variables (VIFs <1.05). Incomplete observations were removed from the dataset by the statistical software. The final sample size was n= 230892.

The interaction between the independent variable and the mediator were not statistically significant, as is required for testing mediation models to ensure that the mediator is not acting as a moderator (p>0.2).

Hypothesis testing

As we move from the No FFS payment group to the FFS group, there is increasing booking of the Care Codes (0.04, M= 1.48, SD= 0.9, t=42, p<0.001) as seen in Table II-4. As theorized, this is not unexpected, because with FFS, I propose that financial motivations would have a larger influence than with No FFS. This may drive increased bookings.

Table II-5 shows that FFS leads to an overall decrease in ED visits with the direct effect of FFS on ED visits being -0.05 (t=-15, p<0.001). Increased Care Code bookings are associated with less ED visits (-0.25, t=-13, p<0.001). This concurs with this study's theorizing because as discussed, these visits present a chance to develop a my-doctor relationship which may lead to primary care that decreases ED visits of all types. In general, high acuity ED visits are less frequent than low acuity visits (-0.27, t=-17, p<0.001).

Table II-4: Regression coefficients (SE) of Final Model- DV= Care Codes

	DV= Care Codes
Intercept	1.13*** (0.002)
Payment group	0.04*** (0.001)
No. of pts	<0.001*** (<0.001)

No. Chronic-diabetes	0.25*** (0.011)
No. Chronic-asthma	-0.06*** (0.006)
No. Chronic-cardiac	-0.44*** (0.038)
No. Chronic-copd	-0.25*** (0.011)
No. Chronic-htn	0.21*** (0.007)
Rurality	-0.002*** (<0.001)
R-squared (Care codes)	0.06
No. of observations	230892

Standard errors are reported in parentheses. *, **, *** indicates significance at the 90%, 95%, and 99% level, respectively

Table II-5: Regression coefficients (SE) of Final Model- DV= ED visits

DV= ED visits	
Intercept	0.47*** (0.025)
Payment group	-0.05*** (0.003)
Care codes	-0.25*** (0.019)
Acuity	-0.27*** (0.015)
Carecodes*Acuity	0.36*** (0.012)
No. of pts	<0.001*** (<0.001)
No. Chronic-diabetes	0.21*** (0.034)
No. Chronic-asthma	-0.41*** (0.017)
No. Chronic-cardiac	0.89*** (0.115)
No. Chronic-copd	0.42*** (0.032)
No. Chronic-htn	-0.44*** (0.021)
Rurality	0.004*** (<0.001)
R-squared (Care codes)	0.05
No. of observations	230892

There is a positive and significant interaction between the mediating and moderator variable, suggesting that the effect of the Care Codes on ED visits varies by the level of acuity of the ED visit. The index of moderated mediation was significant at 0.0126 (SE: 0.007; LLCI: 0.0053; ULCI: 0.0321)

Table II-6 shows that for low acuity level visits the effect that the Care Codes visits have on ED visits (0.12) is less than their effect on high acuity level visits (0.46).

Table II-6: Conditional Effects (SE) of Carecodes at levels of Acuity

Carecodes*Acuity	
Low acuity	0.12*** (0.009)
High Acuity	0.46*** (0.009)

Hypothesis 1 predicts that there will be a positive indirect effect of the Care codes on the relationship between the FFS payment group and ED visits. Table II-7 demonstrates that we can reject the null hypothesis. While the direct effect of FFS on ED visits was -0.05, for those paid via FFS, there was an increase in ED visits for all acuity levels (low=0.01, high=0.02) through the indirect effect of the Care codes versus those in the No FFS group. This indicates that patients seen for general care by those in the FFS group are more likely to visit the ED than those seen for general care by doctors in the No FFS group.

Hypothesis 2 predicts that the indirect effect of the Care code visits on the relationship between FFS and ED visits would be greater for low acuity visits. As seen in Table II-7 and in Figure II-2, the conditional indirect effect is less for low acuity visits (0.01; 0.002-0.10) than for high acuity visits (0.02; 0.011-0.038). As discussed in hypothesis development, it is possible for a lack of relational care to affect both acuity levels. The results show that for doctors that belong to the FFS group, the effect of the Care code visits on ED visits affected both acuities and was greater for high acuity visits. The index of moderated mediation was 0.02 (0.005-0.032).

The model is only able to explain 5% (r squared=0.05) of the variation in the dependent variable, ED visits, but this is not surprising as reasons for ED visits vary widely.

Table II-7: Conditional indirect effect (SE) of Care Codes on the relationship between payment group and ED visits; moderator:Acuity

DV= ED visits		Bootstrapped CI (5000)	
Low acuity	0.01 (0.002)	0.002	0.010

High Acuity	0.02 (0.007)	0.011	0.038
Index of moderated mediation	0.02 (0.007)	0.005	0.032

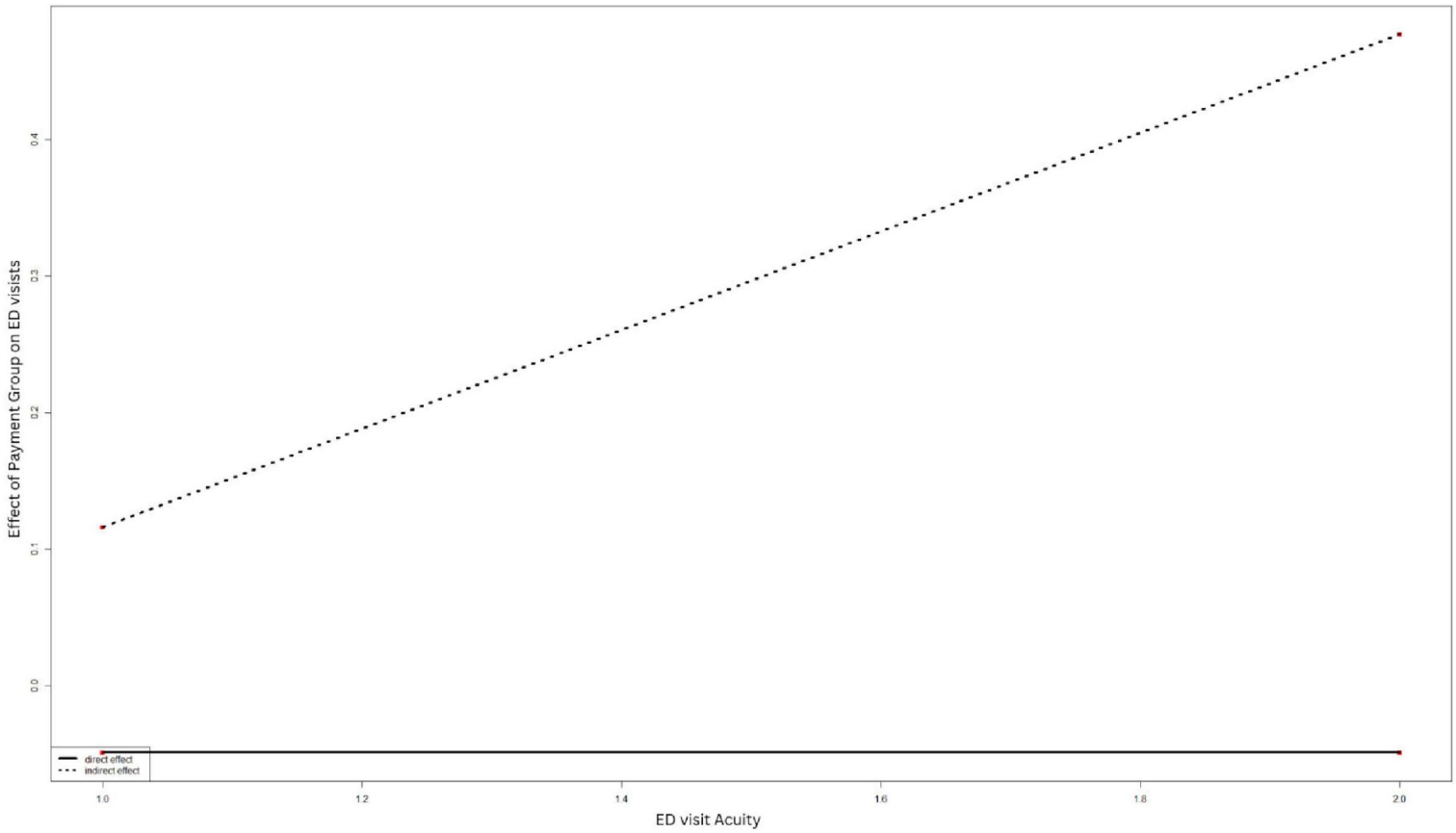


Figure II-2: Conditional indirect effect of Care Codes on the relationship between payment group and ED visits

In a practical sense, these results imply that there is a possible increase of low acuity mean ED visits of 1% and high acuity mean visits of 2% for every doctor the government pays via FFS. Using the conditional indirect effect of 0.02 (0.005-0.032) implies that mean ED visits per patient per doctor increases by 0.02 times for every doctor the government pays via FFS.

Currently 70% of family doctors are paid via FFS, that is, 11, 256 doctors (16080*0.7 (Dale McMurchy Consulting, 2023))). Mean ED visits per patient per doctor in this sample is 0.27 and a shift in payment model would decrease it to 0.26 (0.27- (0.27x0.02)). Ontario family

physicians take on about 1200 patients each (OCFP, 2023) which, using this sample mean, equates to 324 ED visits per physician.

The results of this study suggest that this could be reduced to 312 visits per physician by simply changing the model, but not the value of physician payment, amounting to savings of $43.6M (12 visits x $323 cost of ED visit (Dale McMurchy Consulting, 2023) x 11256 doctors). This is approximately 4% of current total ED expenses by the government ($1.1781B total ED expenses (CIHI, 2022)).

For further materiality, the estimated additional funding needed to clear the COVID-19 induced backlog of Coronary Artery Bypass Graft (CABG) in Ontario is approximately $38M and $26M and $34M for hip and knee replacement backlogs respectively (CMA & Deloitte, 2020). All less than the estimated savings of $43.6M above.

Discussion

This paper makes linkages between streams of accounting and health policy research. It has contributed to the accounting and health policy literature in two ways. First, by exploring payment models from a psychological-relational perspective, it has drawn attention to the existence of an external cost driver to hospital expenditure. Secondly, by using the relational perspective it offers a new theoretical lens to use in management accounting studies on payment models, offering an alternative perspective to the traditionally used agency theory.

The findings of this paper also paint an interesting picture of how the effect of accounting as a general frame or discourse on an individual can lead to a systemic issue. When the accounting is the frame, it disrupts the relationship that the physician develops with the patient, the disruption is felt at the societal level, with strained hospital resources and increased hospital costs. The connection between micro processing and the macrophenomenon is almost tangible. This means that the solution also seems clearer. The potential for a change in the predominant payment model to restore the physician-patient relationship and thereby reduce hospital costs, is made visible by exploring the performativity of accounting at the micro level.

The paper also makes a practical contribution. Policy makers and hospital managers must now be cognizant of the fact that external cost drivers exist in the community and should be considered. The lesson to be learnt is that when instituting cost control measures in hospital settings, community factors and primary care factors should also be considered as potential external cost drivers.

In the wake of the COVID-19 pandemic which created additional costs, compensation contracts which remove these hidden costs by fostering relational continuity of care may be beneficial. Results from this study suggest that as much as 4% of ED expenses could potentially be saved, almost $44 million, enough to cover major backlogs from the COVID-19.

Further investigation into how community factors affect hospital costs should be explored. Future research may test the mechanism of relational continuity experimentally. It may also apply psychosocial concepts to compensation contracts within the hospital to determine the best compensation model policy in-hospital. By understanding the mechanism through experimental research, it would be easier to theorise for a situation in which there may be less opportunity for a relational setting, such as a high acuity or busy hospital department. Can compensation models

have any effect in improving relational care in these settings? Does this improve patient outcomes in these settings?

This paper makes significant practical and theoretical contributions that span accounting and health policy research and presents us with a clear visualisation of performativity at the individual level translating into consequences at the systemic level.

III. Paper 3: Performance incentives and differing contextual conation by Canadian Medical Graduates (CMGs) versus Internationally Trained Physicians (ITPs)

Introduction

Healthcare is a heavy cost on the government (Gurnham et al., 2019). The government therefore demands quality and uses performance metrics to provoke and measure it. Accounting tools such as the diabetes code evaluated in this paper and previously (Kiran et al., 2012) are one example of attempting to get value from money spent. The diabetes incentive implemented by the Ontario government in 2002 paid a monetary incentive (up to 3 times per year per patient) to physicians who managed their patient according to the prescribed measures as dictated by the policy. It is the hope of the implementors, that quality care is produced through monetary motivation, thereby creating value for them. Attempting to produce quality through metrics (in health) has been thoroughly questioned and ends in a contemplation about what quality is (Mol, 2008). Accounting as a calculative act (Vosselman, 2022) as can be found in performance incentive codes produces a performativity that calls quality into question as patients become a single decision: should I invoke my incentive on this patient or not.

Performativity and the unintended consequences of performance incentives such as pay for performance measures (P4P) have been explored in various industries. In public sector management, models have been developed to capture what situations lead to dysfunctional consequences of performance incentives, such as gamesmanship and negative attitudes (Siverbo et al., 2019). Siverbo, Cäker and Åkesson (2019) examine the system, context and outcome but not the underlying psychological processes within the individual that the incentive is meant to incentivise, and what differences in effect there may be because of individual psychological differences.

Within the accounting area this research tends to focus mostly on agency theory. Pizzini (2010) uses agency theory to show that doctors are more likely to use group-based incentives in settings in which their work is highly dependent on each other and therefore, situations in which information asymmetry is reduced. This paper goes beyond the agency theory concepts to do a deeper dive into the psychology of motivation at the micro level using a hierarchical model of motivation (Vallerand, 1997). The importance of the deeper psychological dive is that motivation comes through a variety of factors and the differences in the contributing factors therefore create

differences in the response to an incentive/"motivator". Such insights can improve the way that incentives are conceptualised and allow for more informed expectations of the results of such incentives.

Vallerand's model uses various areas of an individual's life historically and presently, as important elements of motivation. The model explores domains such as school/education, leisure, home, job/career and how motivation is cultivated in these domains during formative years. This history feeds into the response to incentives in the present. Therefore, increased diversity in experiences within these domains across a population historically, may result in increased variability of the response and effect of an imposed incentive across a population in the present day. This will be explored by examining the response to the use of a diabetes incentive code among physicians in Ontario; a diverse physician population.

Within the Canadian health care context, there is diversity in the physician population that may affect the expected response to a pay for performance incentive like the diabetes code. Internationally Trained Physicians (ITPs) make up more than a quarter (27%) of the physician workforce in Canada and as much as 31% in Ontario (Canadian Institute for Health Information, 2024). Given the varying backgrounds of Internationally Trained Physicians (ITPs), (sometimes referred to as International Medical Graduates (IMGs)) and the differences in health systems across the world, attention must be placed on how these factors affect responses to contracts, incentives, and performance measures. This paper seeks to explore differences in response to incentives based on historically varied experiences with incentives and performance metrics.

Many ITPs come from countries that are not heavily metric-based. They work long hours and see too many patients with no incentive tied to a diagnosis, patient volume, treatment measures or outcome measures. Their work is therefore almost wholly intrinsically motivated. When they immigrate to Canada and begin their work in the Canadian health system, although they are acclimatised to the technical aspects through training and to social customs through day-to-day interactions, nothing specifically addresses the differences in contracting, payment and performance measurement that are known to impact motivation. They enter into a system that has extrinsic factors that attempt to motivate specific actions, but no research has shown whether these extrinsic incentives would produce the same effect on someone not accustomed, historically, to external incentives.

Conation or the purposeful part of motivation is considered one of the core aspects of psychology. Therefore, it actively influences everything a person does and is. This is the aspect of motivation that inspires action, and the one that we will be addressing in this study.

By exposing differences in microprocessing in reaction to accounting tools such as performance incentives, one can identify elements that have the potential to be addressed. This paper therefore contributes practically because considering different incentives, varied incentives, that motivate a person in a way that is right for them according to their core psychological functioning could be explored. The findings are also based off a dissection of Vallerand's model (1997) of hierarchical motivation and therefore I make a theoretical contribution by demonstrating that even with two elements of the hierarchy held constant, (global/personal, situational), contextual differences are enough to produce a varied enough response that fuels performativity and unintended consequences.

Literature review

Health researchers and healthcare professionals have been concerned about the effects of performance incentives for some time. Qualitative accounting scholars have complemented this literature by focusing on the transformation of the medical profession and institution by these increasingly calculative practices and measures of evaluation. Other management accounting researchers have focused on using agency theory as the main source of determining how best to compile and weight contracts and incentives at the physician level or at the level of the hospital/institution. This paper will show that there is more to be considered when exploring contracts and incentives than just information asymmetry and gain seeking.

Clapp et al (2020) review the effects of a new incentive implemented for least complications in term newborns. This incentive rewarded centers that did not have to engage in emergency transfer of a term newborn (among other things). Clapp et al point out and Nelson and Spong (2020) agree that the unintended consequences of this obstetric incentive could be dire. Hospitals with a higher capability for high-risk cases, a higher capacity and tertiary centres with subspecialists are easily favoured by this incentive as these hospitals and centres would have little need to engage in emergency transfers. Even worse, hospitals and centres without the capability to accommodate high risk newborns would be incentivised not to engage in transfer for fear of penalty, budgets cuts and reputational concerns brought about by the implementation of the incentive program.

Wasfy et al (2015) have similar complaints, as problematic calculative assessment of quality of care received by cardiac patients is further compounded by incentives implemented for public reporting of said calculative metrics outcomes. There were a few challenges with the metrics such as not adequately considering disease severity, difficulty in condensing it for the public while maintaining accuracy, little influence on referral patterns of physicians despite the published results and little evidence that it affected patient decisions either. As reimbursement became tied to publishing the reports, the authors highlight a particularly ominous problem. Empirical evidence could be found that doctors in reporting states were hesitant to perform certain procedures on high- risk patients for fear of complications. Statistically significant differences could be found in the cardiologists' choice to perform procedures on higher risk patient than not. Fear of decreasing revenue for their institution and the accompanying public

display precluded physicians from making a clinical decision that they would have otherwise made.

The World Health Organisation's World Health Report (Elovainio, 2010) makes a clear distinction between "system level" incentives and "individual", "explicit" incentives that target provider behaviour. The focus of that report and of this paper is on the latter. The report summarises criticisms of performance management schemes, having such grouses as incomplete measurement, incentivising low-hanging fruit, and creating a risk that constraining physician freedom will limit the physician's ability to "deconstruct evidence and apply it critically in a biopsychosocial model" (Elovainio, 2010).

The three papers above demonstrate the material effects that cost containment, contracting, budget-planning tools and pay for performance incentives have in health and the concerns in the medical community about them.

The qualitative accounting community has contributed to this conversation by showing the macro level effect of how accounting's calculative practices transform healthcare. Conrad and Guven Uslu (2011) demonstrate the difficult and varied processes needed to legitimate the accounting logic in different Trusts in the UK. Ultimately, some conformed and transformed while others did not. Samuel, Dirsmith and McElroy (2005) evaluate the birth of an economic meaning of 'care'. No longer rooted in sociology and medicine, care became an economic commodity. Thus like every economic commodity in the market, stakeholder economic interests were incentivised accordingly. Kurunmaki (2003) demonstrates two different ways in which accounting may exert its effect. Accountingisation which produced a more pervasive calculative mentality that made accountants out of physicians and disrupted the clinical base as their primary decision-making tool versus legitimation in which accounting continued to clash with professional thinking but held its position as a necessary part of managing the organisation.

Quantitative accounting research in this area should be expanded to improve the understanding of how accounting and economics-based incentives produce such unwanted behaviour. This understanding opens the door to more conscientious incentive creating and hopefully more effective. Research into the effect of these calculative practices on the subjects upon which they act is important. Currently, much of the research in this area uses agency theory as its base. This helps us learn things such as when group-based incentives are most likely to be used (Pizzini,

2010), how incentives affect information exchange (Kelly, 2010) and when incentives influence organisational structure (Feltham et al., 2016). However, these results all take place under the lens of the concept of information asymmetry, disregarding the wealth of factors that can influence a reaction to an incentive. This thesis proposes that much more can be gleaned by applying a psychological lens.

Other management accounting research explores the addition of non-financial performance measures when thinking through physician compensation packages (Dikolli, 2010) and considerations of how much the manager identifies with a firm in determining their response to incentives (Heinle et al., 2012). The complexity of a task and the matching of it with the correct incentive scheme has also been a topic of interest (Bonner et al., 2000).

This paper therefore engages with research in accounting on incentives, but from the viewpoint of performativity in which accounting is conceived as an act of calculation. The paper will also examine the difference in the impact and enactment of this performativity depending on an actor's motivational background as theorized in Vallerand's hierarchy (Vallerand, 1997).

Theory and Hypothesis development

Incentive codes are meant to inspire a certain action. What compels us to action? What compels us to a specific action? Conation, or the proactive part of motivation that connects knowledge, affect, drives, desires, and instincts to action (APA, 2022) is a popular research topic. This study is interested in conation, the active part of motivation but the words conation and motivation will be used interchangeably. Within this body of research 2 concepts (among others) have survived interrogation. Firstly, there is intrinsic and extrinsic motivation (and other broad types are being suggested) (Ryan & Deci, 2000), (Locke & Schattke, 2019). Secondly, stimulating extrinsic motivation pathways (sometimes) crowd out intrinsic pathways (Frey & Oberholzer-Gee, 1997). Intrinsic motivation means that the actor is motivated to action by purely internal factors. These factors tend to be more altruistic in nature. Extrinsic motivation means that the actor is motivated to action by an external incentive, usually monetary in nature.

Health researchers have shown interest in investigating whether doctors fall prey to disruption of their intrinsic motivation to do the absolute best for the patient, a tenet that is very important in medicine in which one of the founding principles is primum non nocere (first, do no harm). This investigation has been met with mixed results (Gosden et al., 2000), (Glazier et al., 2019) which

in itself is concerning as one would never want to conceive of an instance in which the care that a doctor gives to a patient is dependent on external incentives.

I propose that one reason for the mixed results is the broad level of analysis. Just like no individual is the same, no physician is the same. There are differences in knowledge, desires, drives, desires and instincts that would make responses to incentives different even among what would seem like a homogenous professional group like physicians. Approaching the analysis on a micro level would enable one to glean more insights into what factors may determine responses to incentives. This is valuable information for creating accounting policies and incentives that cause the least possible unintended consequences.

To increase the depth of analysis it is helpful to use which considers three different levels of motivation; each level can be affected differently. For the purposes of this study it is most important to understand i) what each level means ii) the concept that most commonly, higher levels feed down into lower levels and iii) an outcome of being motivated is action. There are 3 levels of the hierarchy. The global level is the most historical, it refers to a formation of personality which is influenced by genetic and environmental factors from birth. Such personality factors influence how one is motivated and influences actions. It speaks to an individual's general liking for certain things innately and needing more external motivation for others. These global factors and how they affect motivated action/conation at an overarching level, feeds into the contextual level.

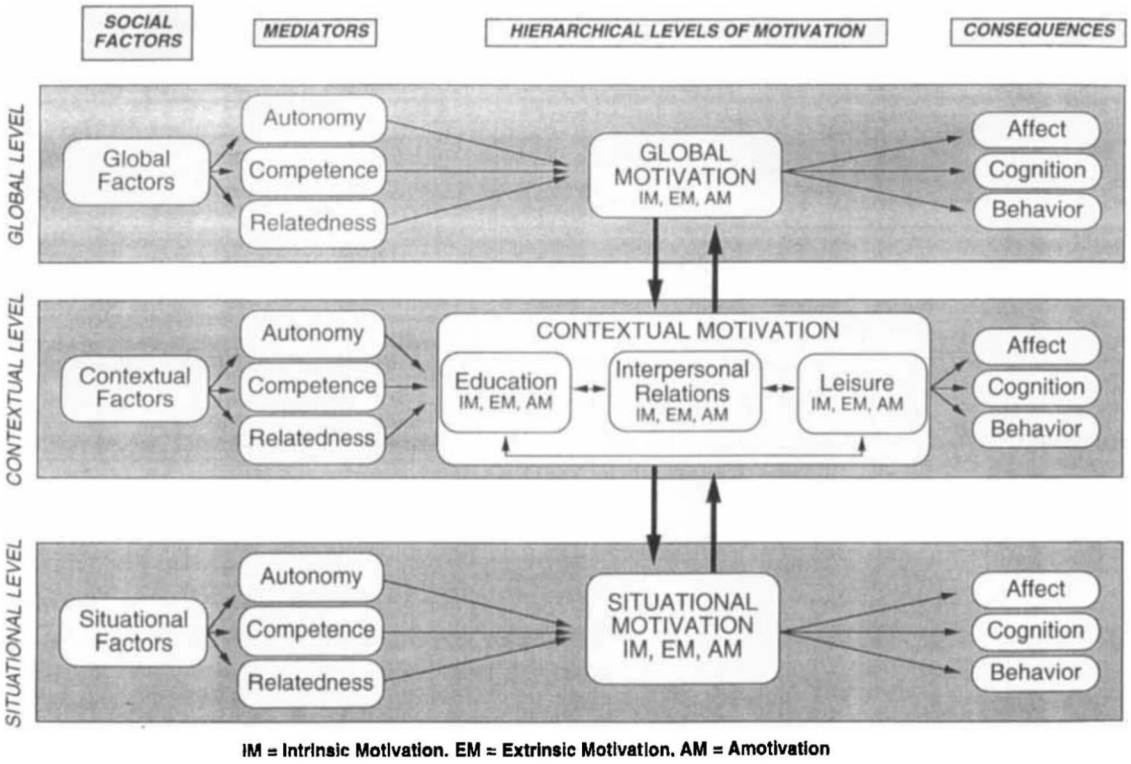


Figure III-1: The Hierarchical Model of Intrinsic and Extrinsic Motivation Vallerand, 1997

The contextual level involves influences in certain major aspects of life such as school/education, family and social relationships, religious affiliation, and profession. How these areas of our lives are influenced during the formative years affects our motivation within them later on and feeds into the lower situational level. The situational level refers to the current state and context, what motivating factors exist within them and how an individual reacts to them.

To use this model to explore how an external factor may influence motivation differently amongst individuals, there needs to be heterogeneity in at least one level. In Canada, which has an increasing Internationally Trained Physician (ITP) workforce, location of clinical background and therefore the culture within which medical education and work takes place, that is, contextual factors, is different and therefore a likely source of this heterogeneity.

Using the hierarchical model of intrinsic and extrinsic motivation (Vallerand, 1997), at the global/personality level, most physicians are intrinsically motivated (Delfgaauw & Dur, 2008); this would be for both ITPs and CMGs (Canadian Medical Graduates). At the contextual level, however, differences will exist between ITPs and CMGs. The contextual level considers life's

various domains, such as school/education and job/career and how motivation is cultivated in these domains during formative years. A WHO report (Elovainio, 2010) shows that most countries situated outside of North America have less incentive-based health systems, particularly for explicit incentives that target provider behaviour. The diabetes incentive code would fall into this category. A lack of a background with extrinsic incentives during medical education and training as well as physician job duties for most ITPs, may cause them to be motivated intrinsically in the context of job duties. CMGs, however, who are more accustomed to pay-for-performance schemes may be more responsive to extrinsic motivation in the context of job duties.

Vallerand (1997) proposes that there is a top-down effect (in most circumstances) in which the immediate higher level affects the immediate lower level. The situational level therefore is affected by the contextual level. In this paper, we study a situational level that is the same for ITPs and CMGs. Both populations of physicians receive the same external incentive: the Diabetes Incentive Code. However, the differing contextual level conation in ITPs versus CMGs may mean that, for ITPs, this code may not prove to be particularly motivating, whereas for CMGs, it may.

In hypothesis 1 therefore, I will examine the difference in uptake of using the Diabetes incentive billing code studied in Kiran et al. (2012) between CMGs and ITPs; expecting that CMGs would use it more often. The Diabetes incentive billing code represents an external incentive that would be more likely to motivate the CMG who has previous priming toward external incentives at the contextual level and therefore more likely to be motivated extrinsically. The ITP would use the code less because they have less experience with external incentives at the contextual level and are more likely to be intrinsically motivated.

Hypothesis 1

There will be a direct effect of location of medical training on the use of the Diabetic Incentive code such that ITPs will use the code less the CMGs.

Consistent with the theme of heterogeneity, ITPs are also a broad group. Some ITPs may come from countries that do incentivise. Articles from papers studying health incentive schemes, (Eijkenaar, 2012; Elovainio, 2010; Kovacs et al., 2020; Milstein & Schreyoegg, 2016), can help

separate ITPs into those that come from countries that do incentivise (pay-for-performance-P4P) and those that do not (no pay-for-performance-nP4P).

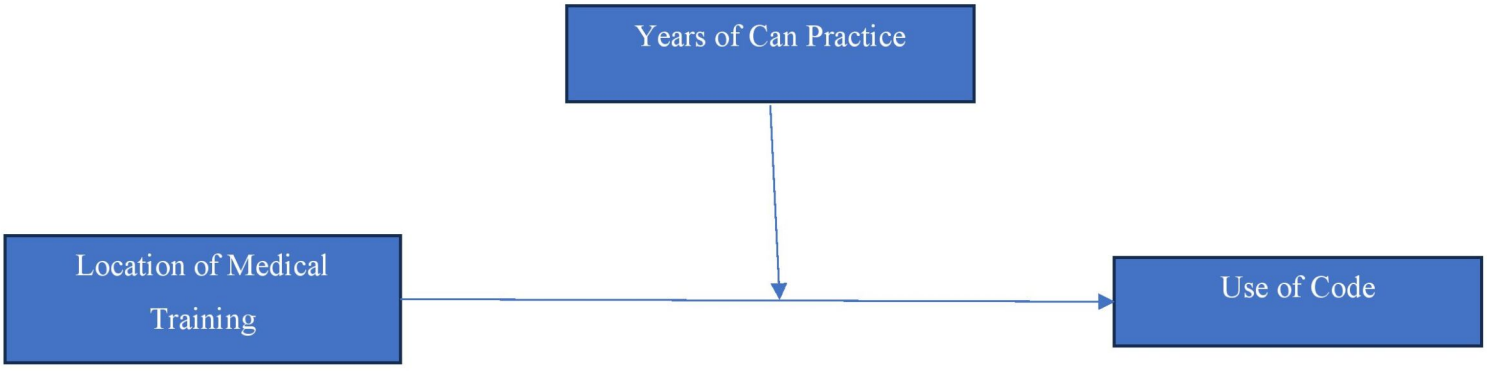
With increasing years of practice, one would expect that those ITPs that come from countries that do have some incentives, would have already experienced some level of external incentive in parts of this life domain (contextual level). These ITPs (P4P) would begin using the code more often with years of practice within a situational norm of the presence of the incentive code. This is because the contextual level feeds into behaviours at the situational level. Those ITPs that do not come from contexts in which pay for performance incentives are common would be less likely to adapt to the situational expectation. The contextual level of no or limited external incentives will feed into behaviour to not use the code at the situational level. Therefore, I hypothesise that:

Hypothesis 2

There will be a conditional effect of years of Canadian practice on the relationship between location of medical training and the use of the Diabetic Incentive code such that with more years of Canadian practice there will be an increase in the use of the code by ITPs that come from incentivizing countries (P4P) compared to those that do not (nP4P).

The model used to test Hypotheses 1 and 2 can be seen in Figure III-2.

Figure III-2: Model for testing the effect of location of medical training on use of the diabetic incentive code



One reason that incentives can fail is that they change the perception of a task to the actor (Gneezy et al., 2011). This is particularly dangerous upon withdrawal of the incentive because

intrinsically motivated actors tend to exert less effort at the task than the pre-incentive effort when the incentive is withdrawn, due to crowding out of intrinsic motivation (Gneezy et al., 2011). The incentive changes the actor's perception of the task by attaching the value of the task to the financial incentive, crowding out the previously intrinsic value of the task for the actor.

Most doctors are intrinsically motivated on at least one level (global/personality level), therefore upon withdrawal of such an incentive as the Diabetes code there is a risk of crowding out for all. However, the group that is likely to be most susceptible to crowding out is the group most heavily influenced by intrinsic motivation, that it, the nP4P group. If physicians within this group start to use the incentive code during their time in practice in Canada, the task of managing their diabetic patients may become attached to the value of this incentive. They may start to experience crowding out of their intrinsic motivation whereby caring for their diabetic patient was internally motivated by the desire to provide proper medical care. The effect of crowding out would be seen most clearly upon cessation of the incentive. When the incentive is removed and they are required to care for their diabetic patients without an attached incentive, they may exert less effort to do so than they would have prior to starting to use the incentive codes.

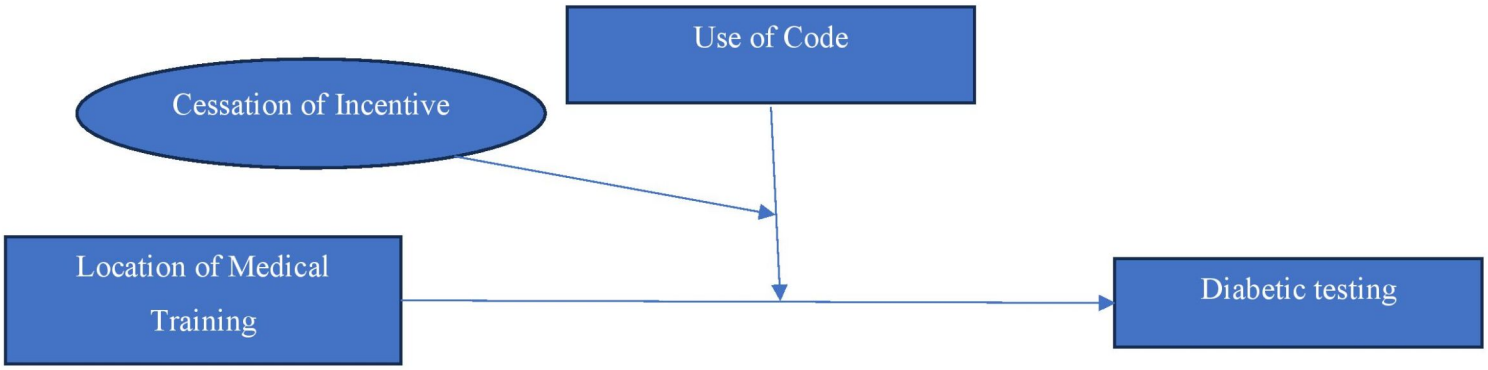
In this study, I theorise that when nP4P physicians, who may be motivated intrinsically at all three levels of the hierarchy, do use the code, they would be the most susceptible to crowding out of intrinsic motivation upon withdrawal of the code. Crowding out in the case of this incentive would mean that the management of their diabetic patients may be compromised. For example, standard monitoring of blood glucose levels via blood tests, that should be done whether incentivised or not, may be done less if crowding out occurs after withdrawal of the incentive. I therefore predict the following:

Hypothesis 3

There will be a significant three-way interaction between location of medical training, use of the incentive code and cessation of the incentive, such that nP4P ITPs that had high use of the incentive code prior to cessation, will have the largest decrease in diabetic testing after cessation of the incentive.

The model tested for Hypothesis 3 can be seen Figure III-3.

Figure III-3: Model for testing the effect of location of medical training on diabetic testing



These results of these hypotheses open some important considerations for health and accounting policy, contract and incentive makers as physician diversity becomes a reality as ITPs are integrated into the Canadian Health System to improve access to quality care. On a theoretical level, these hypotheses use the hierarchical model of motivation to explore how theorised differences in contextual motivation, despite similar global level motivation, may cause varied responses to incentives at the situational level.

Data and Variables

This study contracted ICES Data & Analytic Services (DAS) and used de-identified data from the ICES Data Repository[3]. The study uses 121890 physician level observations across a 9-year period (2012-2021) to test Hypotheses 1 and 2 and a subset of the data, years 2019 and 2021, to test Hypothesis 3 (23,152 observations). PROCESS for R was used to test the hypotheses using the general linear model. Model 1 was used to test the moderation model as in Figure III-2 and Model 3 for the moderated moderation model in Figure III-3.

Variables

Location of Medical Training (medtrain)- The independent variable is composed of Canadian Medical Graduates (CMGs), Internationally Trained Physicians (ITPs) that come from

[3] This study contracted ICES Data & Analytic Services (DAS) and used de-identified data from the ICES Data Repository, which is managed by ICES with support from its funders and partners: Canada's Strategy for Patient-Oriented Research (SPOR), the Ontario SPOR Support Unit, the Canadian Institutes of Health Research and the Government of Ontario. The opinions, results and conclusions reported are those of the authors. No endorsement by ICES or any of its funders or partners is intended or should be inferred.

incentivizing countries (P4P), and those ITPs that don't (nP4P). It is a dummy variable assigned 0 for CMGs, 1 for P4P and 2 for nP4P, created from ICES data of country of medical graduation for practicing Canadian physicians. Countries were grouped based on evidence from publications that analysed incentive programs or lack thereof, in several countries (Eijkenaar, 2012; Elovainio, 2010; Kovacs et al., 2020; Milstein & Schreyoegg, 2016), and were grouped into pay-for performance countries (P4P), non-pay-for-performance countries (nP4P) (based on evidence against pay-for performance schemes or no publications documenting schemes in the country). Please see Appendix B: List of ITP Countries for the full list of the countries used in the analysis.

Use of Code (code)- Number of patients per family physician with Q040 diabetes management incentive code billed per 2-year period. This code may be billed by a physician for a monetary bonus when all diabetic testing/management criteria imposed have been met for a diabetic patient within a year. This is used as the dependent variable in H1 and H2 and a moderator in H3.

Years of Canadian Practice (canprac)- To create this variable I use the absolute number of days from the data year back to the day the physician first became eligible for licensure under the CPSO (College of Physicians and Surgeons of Ontario), then divided by 365 to give the unit in years. This is used as the moderator in Hypotheses 1 and 2.

HbA1c testing- HbA1c is a commonly used blood test to monitor diabetic glucose management and is also included in the Q040 code management criteria as necessary to be able to bill the code. This is used as the dependent variable for Hypothesis 3.

Cessation of Incentive Code (year)- 2020 is being used as a natural cessation of the code due to the COVID-19 pandemic. During this time doctors were unable to use the code for a while due to the requirement of in person visits. There would have also been a decreased patient pool due to lockdowns, and therefore less ability to meet management criteria to bill the code. 'Year' is therefore used as a dummy variable in which 0 represents 2019, before a natural cessation of the use of the code because of COVID-19 and 1 represents 2021, a natural resumption of the possible use of the code due to better control of COVID-19 and more patients being seen in person and in primary care. This is used in H3 as the secondary moderator.

Control variables- Billing the diabetic incentive code could be dependent upon the number of diabetic patients a physician has and therefore I use number of diabetic patients as a control variable to demonstrate the results of the models despite the number of diabetic patients a physician has.

Table III-1 shows descriptive statistics for the variables used in H1 and H2.

Table III-1: Descriptive Statistics, Correlations and Reliabilities (H1, H2)

Variable	Mean (SD)	Correlations			
		Code	Med Train	Yrs of Can Practice	No. Chronic-diabetes
Code	21.23 (41.69)	1			
Medical Training	0.44 (0.75)	0.03	1		
Years of Can Practice	18.65 (10.66)	0.09	-0.22	1	
No. Chronic-diabetes	101 (111)	0.63	0.13	0.17	1

Table III-2 shows descriptive statistics for the variables used in H3.

Table III-2: Descriptive Statistics, Correlations and Reliabilities (H3)

Variable	Mean (SD)	Correlations				
		HbA1c	Med Train	Code	Year	No. Chronic-diabetes
HbA1c tests	44.14 (54.38)	1				
Medical Training	0.44 (0.75)	0.14	1			
Code	15.77 (37)	0.67	0.06	1		
Year	0.5 (0.5)	-0.12	-0.003	-0.1	1	
No. Chronic-diabetes	103 (116)	0.9	0.18	0.56	-0.12	1

Table III-3: Descriptive statistics for variables by condition

Variable	Mean (SD) CMG	Mean (SD) P4P	Mean (SD) nP4P
Code	25.33 (15)	19.46 (11)	18.88 (12.3)
Years of Can Practice	23.44 (8)	15.32 (7.2)	17.22 (10.1)
No. Chronic-diabetes	123 (88)	84 (45)	97 (56)
HbA1c tests	46.55 (30)	43.21 (24)	42.80 (29)
Year	0.6 (0.2)	0.38 (0.3)	0.48 (0.34)

Results

Assumptions

Data were evaluated for normality and heteroskedasticity using Shapiro-Wilk and Breusch Pagan tests and found not to violate these assumptions. Upon evaluation for outliers and influence, none were identified Cook's D <0.14). Visualisation of scatter plots showed that the linearity assumption was not violated.

Incomplete observations were removed from the dataset by the statistical software. The final sample size was n= 121890.

Hypothesis testing

Table III-44 shows the regression results from model 1 of PROCESS for R. This model can explain 40% of the variation in the use of the Diabetic code (R-squared= 0.40). As per hypothesis 1, both groups of ITPs use the code less than CMGs. -7.2, t=-14, p<0.001 for the P4P group and -6.7, t=-14, p<0.001 for the nP4P group. The null hypothesis can be rejected for Hypothesis 1

Table III-4: Results of PROCESS MACRO Model 1; regression coefficients; DV= Code (SE)

DV= Code		p-values
Intercept	1.1*** (0.24)	<0.001
P4P	-7.2*** (0.52)	<0.001
nP4P	-6.68*** (0.46)	<0.001
Can Practice	-0.14*** (0.01)	<0.001
P4P*Can Practice	0.16*** (0.02)	<0.001
nP4P*Can Practice	-0.003 (0.03)	0.92
No. Chronic-diabetes	0.24*** (0.0009)	<0.001
R-squared (Care codes)	0.40	
No. of observations	121890	

P4P physicians are hypothesised to have more contextual level familiarity with extrinsic motivation and therefore with increasing years of Canadian practice, should translate the

contextual level motivation into the situational level and bill the incentive code more. The test of interaction between location of medical training and years of Canadian practice was found to be significant (r^2= 0.0002, F= 20.59, p<0.001) Table III-44 shows that the interaction between the P4P physician group and Years of Canadian practice is significant. When compared to CMGs, with increasing years of practice, P4P physicians do bill the code more often (0.16, t= 6.3, p<0.001). For the nP4P physician group who are hypothesized to be most intrinsically motivated, there is no statistically significant relative conditional effect (at the 95% significance level) of years of practice on the relationship between the nP4P physician group and the billing of the diabetic code (-0.003, t=-0.1, p=0.92). nP4P physicians continue to bill the incentive code at a lesser rate than CMGs in spite of increasing years of practice, while P4Ps increase the rate of billing.

Table III-5: Conditional effects of CanPrac on Location of Training (P4P)

Moderator values (yrs) (CanPrac)	Effect	(SE)	t	LLCI	ULCI
6 (16th)	-6.25***	0.40	-15.63	-7.04	-5.47
20 (50th)	-4.00***	0.30	-13.29	-4.59	-3.41
30 (84th)	-2.55***	0.43	-5.96	-3.39	-1.71

Table III-6: Conditional effects of CanPrac on Location of Training (nP4P)

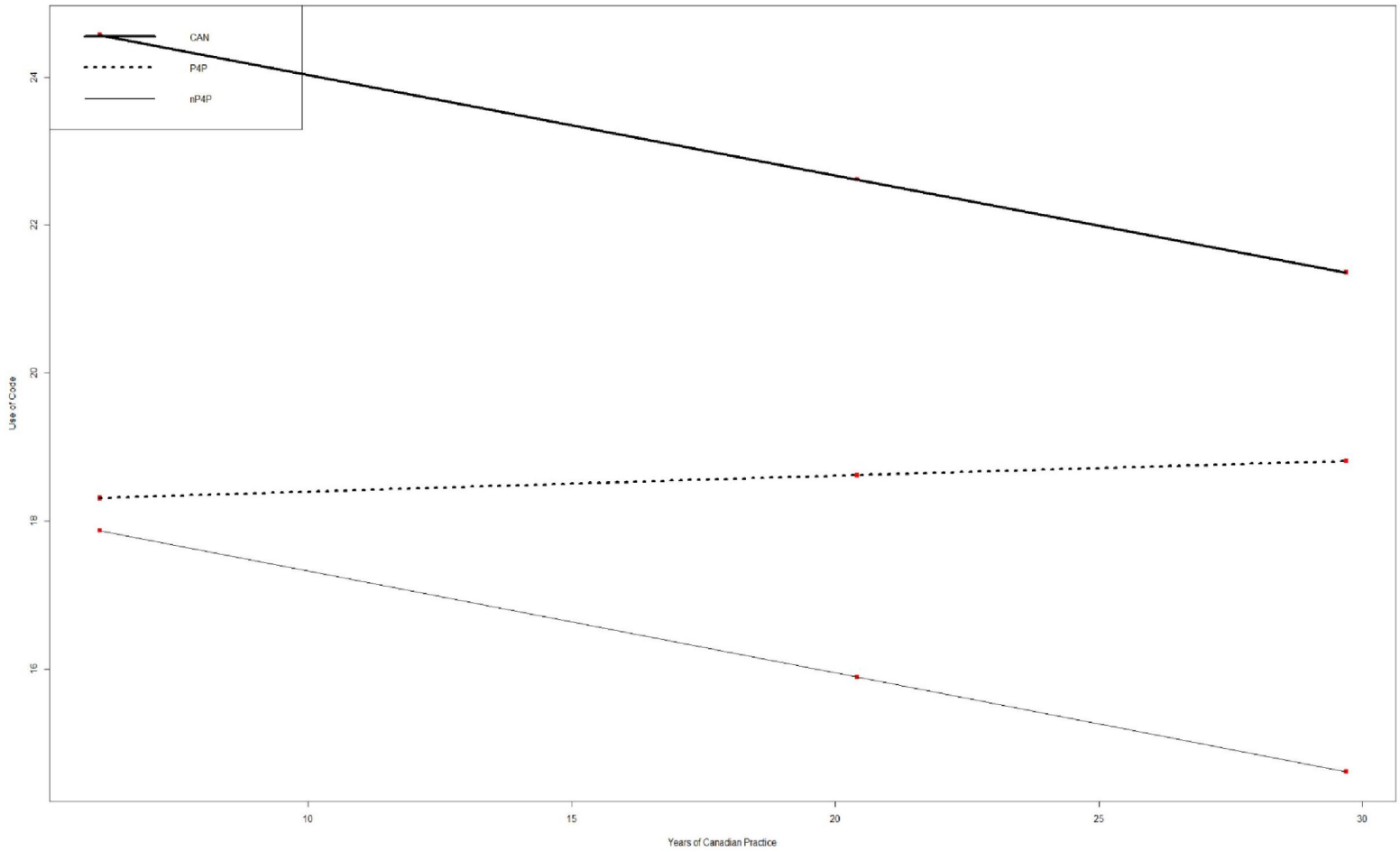
Moderator values (yrs) (CanPrac)	Effect	(SE)	t	LLCI	ULCI
6 (16th)	-6.69***	0.35	-19.10	-7.38	-6.01
20 (50th)	-6.73***	0.29	-22.46	-7.32	-6.14
30 (84th)	-6.76***	0.46	-14.82	-7.65	-5.86

Omnibus tests at the 16th, 50th, and 84th percentile were all statistically significant (F= 242.93, p<0.001; F= 303.05, p<0.001; F= 118.76, p<0.001). Pairwise analysis (Table III-55) shows that

the difference in means between CMGs and P4P ITPs in terms of the conditional effect of years of Canadian practice on the use of the diabetes code, remains statistically significant at all levels of the moderator but with a lesser relative conditional effect over time. In nP4P ITPs the difference in means remains significant but with very little change over time Table III-66.

Figure III-4 shows the results of probing the interaction. nP4P physicians have the lowest overall numbers for use of the code and it declines with increasing years of practice. There was no statistically significant effect of years of Canadian practice on nP4P physicians. CMGs have the highest use of the code overall with declining use over time but at 30 years of practice, still have the highest number of codes billed. As hypothesized, as the years of Canadian practice increase, P4P physicians steadily bill the code more. Years of Canadian practice creates a statistically significant relative conditional effect for P4P physicians at low, mid, and high levels of practice, increasing with years, but not so for nP4P physicians. These results support the theory and suggest that the null hypothesis for H2 can be rejected.

Figure III-4: Interaction plot between location of medical training and years of Canadian Practice on use of Code



Model 3 in PROCESS was used to test hypothesis 3, using the moderated moderation shown in Figure III-3. The model was able to explain 87% of the variation in testing of HbA1c. As shown in Table III-7, both groups of ITPs test the HbA1c for their diabetic patients more than CMGs (2.68, $p<0.001$ for P4P and 1.11, $p=0.46$ for nP4Ps). The 3-way test of interaction between location of medical training, use of code and HbA1C testing was found to be significant ($r^2=$ <0.001, $F= 3.73$, $p= 0.024$). The conditional effect of the interaction between location of medical training and the use of the code at values of the moderator, i.e, before and after cessation were both also positive ($F=11.32$, $p<0.001$; $F=13.19$, $p<0.001$).

Table III-7: Results of PROCESS MACRO Model 3; regression coefficients; DV= HbA1c (SE)

DV= HbA1c		p-values
Intercept	4.58*** (0.25)	<0.001
P4P	2.68***(0.62)	<0.001
nP4P	1.11**(0.56)	0.046
Code	0.44***(0.006)	<0.001
P4P*Code	-0.06***(0.012)	<0.001
nP4P*Code	-0.01(0.012)	0.27
Year	-6.62***(0.33)	<0.001
P4P*year	-7.08***(0.86)	<0.001
nP4P*year	-5.66***(0.77)	<0.001
Code*year	-0.22***(0.01)	<0.001
P4P*Code*year	0.005(0.02)	0.79
nP4P*Code*year	-0.05**(0.02)	0.011
No. Chronic-diabetes	0.366***(0.001)	<0.001
R-squared (Care codes)	0.87	
No. of observations	121890	

Omnibus tests for the conditional effect of the interaction between location of medical training and the use of the billing code on diabetic testing before and after the cessation of the incentive were all statistically significant except for those who had a "high" use of the code in the year 2019 (F= 2.03, p = 0.13).

Table III-8: Conditional effects of interaction between Use of the code and and Location of Training at levels of the 2nd moderator (P4P)

Moderator values (Use of code)	Effect (Moderator: cessation of incentive)	
	2019 (0)	2021 (1)
High (31)	0.96 (SE: 0.57, t= 1.69, CI: -0.15 – 2.08	-5.98 (SE: 0.59, t= -10, CI: -7.15 - -4.81)
Low (0)	2.68 (SE: 0.62, t=4.29, CI: 1.45 – 3.90)	-4.41 (SE: 0.60, t= -7.33, CI: -5.58 - -3.23)

Table III-9: Conditional effects of interaction between Use of the code and and Location of Training at levels of the 2nd moderator (nP4P)

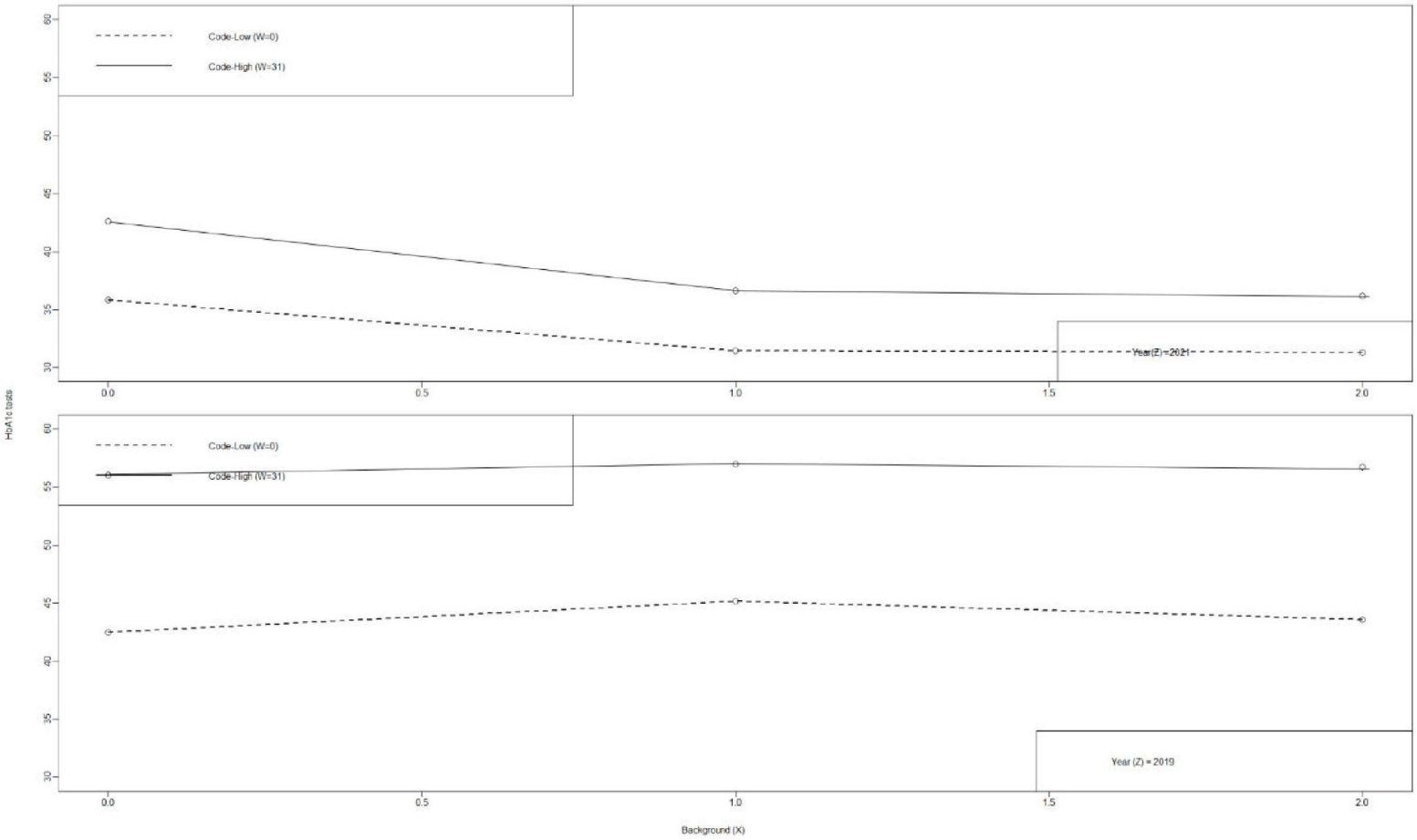
Moderator values (Use of code)	Effect (Moderator: cessation of incentive)	
	2019 (0)	2021 (1)
High (31)	0.71 (SE: 0.51, t= 1.39, CI: -0.29 – 1.70)	-6.39 (SE: 0.56, t= -11.49, CI: -7.49 - -5.31)
Low (0)	1.11 (SE: 0.56, t=1.99, CI: 0.02 – 2.21)	-4.55 (SE: 0.54, t= -8.50, CI: -5.60 - -3.50)

For nP4P physicians, compared to CMGs, billing the incentive code had no significant conditional effect on testing HbA1c (-0.01, t=-1.1, p=0.27). Post-cessation of the incentive (year 2020), there is a global decrease in HbA1c testing (-6.62, t=-20, $p<0.001$), this decrease is more significant for ITP groups than CMGs (-7.1, $p<0.001$ and -5.7, $p<0.001$ for P4P and nP4P respectively). For the three-way interaction, which evaluates if the cessation of the incentive had a conditional effect on the use of the code and the relationship between location of medical training and HbA1c testing, the interaction is significant for the nP4P group (-0.05, t=-2.5, p=0.011) but not for the P4P group (0.005, t= 0.26, p=0.79. That is, as hypothesized, there may be a crowding out effect of intrinsic motivation that affects the theoretically most intrinsically

motivated physician group leading to a decrease in testing of HbA1c after the natural cessation that occurred in 2020.

Figure III-5 shows that there is an overall decrease in HbA1c testing after year 2020 for all physician groups (0=CMGs, 1=P4P, 2=nP4P).

Figure III-5: 3 way interaction- Location of medical training, code and year DV= HbA1c testing



However, this decline in HbA1c testing is greater in those physicians who bill the code (Code-High W=31). This is expected since on a global level, all physicians are intrinsically motivated and therefore susceptible to crowding out. The physician group that experienced the greatest decline in HbA1c testing is the nP4P physician group that use the incentive billing code. These results support hypothesis 3. Compared to CMGs in the same category of high code use, after the cessation period of the incentive, nP4P ITPs tested HbA1c 6.39 times less than CMGs (SE: 0.56, t= -11.49, LLCI: -7.49- ULCI: -5.31) as seen in Table III-9.

These findings spotlight that deeper consideration should be put into accounting pay-for-performance schemes, as people are compelled to action differently depending on the associated intrinsic or extrinsic motivational development cultivated at each level of the motivational hierarchy.

Discussion

Altruism is a seemingly fading quality in today's world, particularly in developed countries as trust gets lost and capitalistic and economic ideologies grow. Concurrently, globalisation and immigration continue, mixing cultures and ideologies within the same setting. These issues are only exacerbated by current conditions in Canada. The Canadian health context is one in which physician shortage is a reality. Canada has a less than average physician per 10,000 population ratio compared to other OECD countries (OECD, 2022). This results in inequitable access to primary care (Shah et al., 2019) and long specialty wait times (Liddy et al., 2020). Canada is also a country that receives over 350,000 immigrants every year (Immigration Refugees and Citizenship Canada, 2021) including Internationally Trained Physicians. Given the need, the supply and the nature of the immigrant population, the conversation surrounding how internationally trained professionals could be integrated into the system to improve access to care and diversify the physician workforce has been reignited (Desai, 2021).

Pay for Performance schemes designed to create economic efficiencies in traditionally altruistic professions may work (albeit subpar or with unintended consequences) on those who have been surrounded by them in different contexts. However, for those who haven't these metrics may have no effect or a negative one. With the increasing movement of Internationally Educated Health Professionals (IEHPs) across the globe, usually from developing countries, which tend to be less metric based, to developed countries, which tend to be more metric based, thorough evaluation of how these professionals can best be integrated and supported to thrive is important.

This study shows that pay for performance schemes that may have the desired effect of quality control through monetary incentives for those that have grown in metric-based systems such as CMGs, the same cannot be said for ITPs. In general, ITPs used the incentive code less than CMGs. Digging deeper, those ITPs who came from areas in which some pay for performance schemes exist, were more likely to start using the code more and more often over time. Some familiarity with the context previously enabled these ITPs to adapt to the situation in Canada. Those who did not have the priming context continued to use the code least of all, despite increasing years in Canadian practice. Using monetary incentives tied to directly clinical management is not motivating to ITPs. Further thought and research therefore needs to explore

how best to integrate and motivate ITPs while ensuring quality control. Factors that influence motivation in those intrinsically motivated should be researched to develop novel incentives.

Furthermore, after a natural cessation then resumption of the extrinsic motivator, the results of this study show that the most intrinsically motivated group, that is, ITPs that did not come from countries the use pay for performances schemes, became the most demotivated. In fact, those that started to use the code more frequently, suffered the most demotivation after cessation. They tested their diabetic patients less than they would have before, compared to other physician groups. Since evidence of crowding out exists, policymakers and should be keenly aware of the potential for this and move hastily to implement less potentially dangerous incentive measures.

This paper contributes to the body of pay per performance literature by using a psychology-based theoretical approach to tease out nuances in the effects of monetary incentives. This is highly relevant in a globalising world particularly in human centred fields like healthcare.

This paper enhances our understanding of performativity by showing us that although incentives can lead to performativity, where incentives lead to excessive care, this effect is different depending on motivational background. This implies that some people are less prone to some types of performativity, and how this may translate into other categories can be a topic for further research.

Conclusion

This dissertation demonstrates the many ways in which accounting plays an active role in the spaces that it occupies. The presence of an economic-driven office policy led to an accounting frame taking root in a clinical setting; leading to longer visit times due to cognitive strain in decision making for the doctor. A fee for service payment system within the community setting led to a financial framing of the physician-patient dyad leading to an external cost driver that drove up hospital emergency room costs. A pay-for- performance system meant to incentivise "quality care" had varying effects on the doctors it was meant to incentivise due to differences in background and contextual level motivation. This led to a significant change in care in the internationally trained doctor population after a natural, unexpected cessation of the incentive because of the COVID-19 pandemic. These findings urge us to be more thoughtful and creative with how accounting tools are used, if we are to be accountable for our actions. They urge us to continue exploring the depth of the reach of accounting but also look toward how changes can improve unwanted outcomes; thus, even more research is required.

This approach also brings together several sects of accounting researchers, easily finding its way into each area of work. The macrosocietal effect of accounting identified by qualitative accounting researchers can be reviewed with an additional lens. A psychological lens that tries to identify what underlying psychology of the individual may have contributed to the eventual development of the macrophenomenon. Accounting researchers interested in cost drivers may be interested in a new way that they can be identified. Cost isn't driven only by factors that increase information asymmetry, but additional psychosocial factors that may produce the opposite or an unexpected effect than what would be expected with agency theories. Those interested in pay for performance models may now be able to use more nuance when crafting the incentive systems, given that global, contextual, or situational factors may affect how one is motivated by an external incentive. This thesis therefore is able to expand numerous areas of accounting research and provide the much-desired bridge between various ontologies within accounting research.

Vosselman (2022) describes four types of performativity in accounting. This dissertation contains 2 types and uses psychological theories and various methodologies to interrogate them. They are accounting as a general frame or discourse and accounting as an act of calculation. Further research can do the same with examples of accounting as a dynamic relational actor and

accounting as a material-discursive practice. Additionally examining accounting's effect using the microlevel psychological approach but in other industries would also be intriguing. I expect that similar effects would be found.

Each of these studies shines a light on how difficult the interpretation and prediction of performing a task "well" can be, and the many factors that can influence it. We see that payment models, motivational background, situational factors, accounting policy, incentives and more can affect task performance and this changes according to the enactment of performativity or not. We see that performativity is not a given, characteristics of the individual determine whether it is enacted or not. We also see the effect of performativity in accounting on the micro level with a clear translation to systemic effects. Most importantly, this dissertation also shows that by identifying the micro level factors that lead to performativity, it is easier to see how solutions may be crafted.

This dissertation contributes to literature on performativity in accounting, cost drivers in management accounting, intrinsic and extrinsic motivation theories, and emphasises a focus on examining the micro level and underlying psychology to advance accounting research with regards to its impact outside of the accounting environment.

Increasing the depth of our understanding of the effect of accounting can lead to researchers making a greater practical contribution to the accounting industry and eventually to the other industries that accounting impacts.

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Appendix A: Experimental Survey Instrument

l: screen

t: radio

q: Are you a doctor?

- Yes

- No

j: if $screen == 2 then end

l: screeninfo

t: radio

q: What type of doctor are you?

- Family Doctor/General Practitioner

- Specialist

l: Age

t: radio

q: Please select your age range.

- 18-30

- 31-45

- 46-55

- 56-65

- over 65

l: Gender

t: radio

q: Please select your gender.

- Male

- Female

l: exp

t: radio

q: How many years of clinical experience (including staff and training positions after completion of medical degree) do you have?

- 0-1

- 2-5

- 6-10

- more than 10

l: exp2

t: radio

q: How many years of clinical experience (including staff and training positions after completion of medical degree) do you have in Canada?

- 0-1

- 2-5

- 6-10

- more than 10

l: openingscreen

t: info

q: Thank you for participating in this study.

You will be asked to read patient scenarios and make decisions.

Following this you will be asked to complete survey questions.

This will not take more than 1/2 hour (30 minutes).

As you go forward please read each slide carefully as you will not be able to return to previous slides.

Please complete the the slides in one sitting, without interruption, if possible.

l: choose_a_number

t: set

- random 1 2

l: ctrlvstreat

t: jump

- if $choose_a_number == 1 then goto Setting1

- if $choose_a_number == 2 then goto Setting2

l: Setting1

t: info

b: Click to see your first patient

q: You are a doctor in an outpatient setting.

The nurses inform that they are expecting about 10 patients.

The following sign is viewable to patients in the waiting room

“Please limit your complaints to 1 major issue per visit”

Your first patient begins on the next screen

l: Patient1

t: info

b: Manage Presenting Complaint

q: Patient 1

Demographics: 65 year old woman

Presenting complaint: cough for 1 week

Other issues mentioned: back pain and “feeling down”

l: Patient1pc1

t: info

q: You have assessed the patient, diagnosed an Upper Respiratory Tract Infection and instituted standard management.

l: Decision1p1

t: radio

q: You have seen 1 major issue for this patient as clinic policy supports.

Remaining issues: back pain and “feeling down”

What would you like to do next?

- Address another of this patient’s issues

- See another patient

l: jump1a

t: jump

- if $Decision1p1 == 1 then goto Patient1pc2

- if $Decision1p1 == 2 then goto Patient2

l: Patient1pc2

t: info

q: You have assessed the patient’s back pain, and deem it to be affecting her quality of life.

You decide to order additional investigations.

l: Decision2p1

t: radio

q: You have seen 1 major issue for this patient as clinic policy supports.

Remaining issues: “feeling down”

- Address another of this patient’s issues

- See another patient

l: jump1b

t: jump

- if $Decision2p1 == 1 then goto Patient1pc3

- if $Decision2p1 == 2 then goto Patient2

l: Patient1pc3

t: info

q: You have assessed the patient's complaint of "feeling down", and deem it to be affecting her quality of life.

You decide to refer for psychological assessment.

l: Patient1end

t: info

b: See another patient

q: You have seen 1 major issue for this patient as clinic policy supports.

You have addressed all of this patient's complaints.

l: Patient2

t: info

b: Manage Presenting Complaint

q: Patient 2

Demographics: 20 year old man, athlete

Presenting complaint: pain in left leg

Other issues mentioned: rash on upper chest and dry cough.

l: Patient2pc1

t: info

q: You have assessed the patient and diagnosed Osgoode Schlatter syndrome.

You institute standard management.

l: Decision1p2

t: radio

q: You have seen 1 major issue for this patient as clinic policy supports.

Remaining issues: rash on upper chest and dry cough

What would you like to do next?

- Address another of this patient's issues

- See another patient

l: jump2a

t: jump

- if $Decision1p2 == 1 then goto Patient2pc2

- if $Decision1p2 == 2 then goto Patient3

l: Patient2pc2

t: info

q: You have assessed the patient's rash on the upper chest and diagnosed tinea versicolor.

You institute standard management.

l: Decision2p2

t: radio

q: You have seen 1 major issue for this patient as clinic policy supports.

Remaining issues: dry cough

What would you like to do next?

- Address another of this patient's issues

- See another patient

l: jump2b

t: jump

- if $Decision2p2 == 1 then goto Patient2pc3

- if $Decision2p2 == 2 then goto Patient3

l: Patient2pc3

t: info

q: You have assessed the patient's complaint of a dry cough and determine it to be a residual cough after COVID-19 infection one month ago.

l: Patient2end

t: info

b: See another patient

q: You have seen 1 major issue for this patient as clinic policy supports.

You have addressed all of this patient's complaints.

l: Patient3

t: info

b: Manage Presenting Complaint

q: Patient 3

Demographics: Demographics: 18 year old girl

Presenting complaint: lower abdominal pain

Other issues mentioned: intermittent chest pain

l: Patient3pc1

t: info

q: You have assessed the patient, diagnosed a sexually transmitted infection.

You institute standard management.

l: Decision1p3

t: radio

q: You have seen 1 major issue for this patient as clinic policy supports.

Remaining issues: intermittent chest pain

What would you like to do next?

- Address another of this patient's issues

- See another patient

l: jump3a

t: jump

- if $Decision1p3 == 1 then goto Patient3pc2

- if $Decision1p3 == 2 then goto Patient4

l: Patient3pc2

t: info

q: You have assessed the patient's complaint of intermittent chest pain and find that the patient is likely to have an anxiety disorder.

You refer her for psychiatry follow up.

l: Patient3end

t: info

b: See another patient

q: You have seen 1 major issue for this patient as clinic policy supports.

You have addressed all of this patient's complaints.

l: Patient4

t: info

b: Manage Presenting Complaint

q: Patient 4

Demographics: 80 year old man

Presenting complaint: lower back pain

Other issues mentioned: fatigue

l: Patient4pc1

t: info

q: You have assessed the patient, and determined likely arthritis of the vertebrae.

You request additional radiographic investigations.

l: Decision1p4

t: radio

q: You have seen 1 major issue for this patient as clinic policy supports.

Remaining issues: fatigue

What would you like to do next?

- Address another of this patient's issues

- See another patient

l: jump4a

t: jump

- if $Decision1p4 == 1 then goto Patient4pc2

- if $Decision1p4 == 2 then goto Patient5

l: Patient4pc2

t: info

q: You have assessed the patient's complaint of fatigue and are concerned about a lower respiratory tract infection.

You refer to the emergency department.

l: Patient4end

t: info

b: See another patient

q: You have seen 1 major issue for this patient as clinic policy supports.

You have addressed all of this patient's complaints.

l: Patient5

t: info

b: Manage Presenting Complaint

q: Patient 5

Demographics: 6 year old child

Presenting complaint: fever

Other issues mentioned: complaints from teachers about unruly behaviour at school

l: Patient5pc1

t: info

q: You have assessed the patient, diagnosed a viral infection and instituted standard management.

l: Decision1p5

t: radio

q: You have seen 1 major issue for this patient as clinic policy supports.

Remaining issues: complaints from teachers about unruly behaviour at school

What would you like to do next?

- Address another of this patient's issues

- See another patient

l: jump5a

t: jump

- if $Decision1p5 == 1 then goto Patient5pc2

- if $Decision1p5 == 2 then goto Patient6

l: Patient5pc2

t: info

q: You have assessed the patient's complaint of unruly behaviour at school and decided to refer to a child psychiatrist.

l: Patient5end

t: info

b: See another patient

q: You have seen 1 major issue for this patient as clinic policy supports.

You have addressed all of this patient's complaints.

l: Patient6

t: info

b: Manage Presenting Complaint

q: Patient 6

Demographics: 70 year old woman

Presenting complaint: sore throat for 1 week

Other issues mentioned: pain in right great toe, headaches, skin rashes

l: Patient6pc1

t: info

q: You have assessed the patient, diagnosed a resolving pharyngitis and instituted standard management.

l: Decision1p6

t: radio

q: You have seen 1 major issue for this patient as clinic policy supports.

Remaining issues: pain in right great toe, headaches, skin rashes

What would you like to do next?

- Address another of this patient's issues

- See another patient

l: jump6a

t: jump

- if $Decision1p6 == 1 then goto Patient6pc2

- if $Decision1p6 == 2 then goto Patient7

l: Patient6pc2

t: info

q: You have assessed the patient's toe pain, and deem it to be gout.

You decide to order additional investigations and institute standard management.

l: Decision2p6

t: radio

q: You have seen 1 major issue for this patient as clinic policy supports.

Remaining issues: headaches, skin rashes

What would you like to do next?

- Address another of this patient's issues

- See another patient

l: jump6b

t: jump

- if $Decision2p6 == 1 then goto Patient6pc3

- if $Decision2p6 == 2 then goto Patient7

l: Patient6pc3

t: info

q: You have assessed the patient's complaint of headaches and find them to be occasional and not well defined, you are unable to get sufficient information.

You decide to follow up in future visits.

l: Decision3p6

t: radio

q: You have seen 1 major issue for this patient as clinic policy supports.

Remaining issues: skin rashes

What would you like to do next?

- Address another of this patient's issues

- See another patient

l: jump6c

t: jump

- if $Decision3p6 == 1 then goto Patient6pc4

- if $Decision3p6 == 2 then goto Patient7

l: Patient6pc4

t: info

q: You have assessed the patient's complaint of skin rashes, and find them to be stage 1 decubitus ulcers.

You institute standard management.

l: Patient6end

t: info

b: See another patient

q: You have seen 1 major issue for this patient as clinic policy supports.

You have addressed all of this patient's complaints.

l: Patient7

t: info

b: Manage Presenting Complaint

q: Patient 7

Demographics: 45 year old man

Presenting complaint: waking up at night to pee frequently

Other issues mentioned: pain and numbness in right leg, pain in left ear

l: Patient7pc1

t: info

q: You have assessed the patient, diagnosed diabetes as the most likely diagnosis, requested diagnostic testing and instituted standard management.

l: Decision1p7

t: radio

q: You have seen 1 major issue for this patient as clinic policy supports.

Remaining issues: pain and numbness in right leg, pain in left ear

What would you like to do next?

- Address another of this patient's issues

- See another patient

l: jump7a

t: jump

- if $Decision1p7 == 1 then goto Patient7pc2

- if $Decision1p7 == 2 then goto Patient8

l: Patient7pc2

t: info

q: You have assessed the patient's complaint of numbness and tingling in the leg and diagnosed it as likely diabetic neuropathy.

You await the results of diagnostic diabetes testing and institute standard management.

l: Decision2p7

t: radio

q: You have seen 1 major issue for this patient as clinic policy supports.

Remaining issues: pain in left ear

What would you like to do next?

- Address another of this patient's issues

- See another patient

l: jump7b

t: jump

- if $Decision2p7 == 1 then goto Patient7pc3

- if $Decision2p7 == 2 then goto Patient8

l: Patient7pc3

t: info

q: You have assessed the patient's complaint of pain in left ear and diagnosed Otitis media.

You institute standard management.

l: Patient7end

t: info

b: See another patient

q: You have seen 1 major issue for this patient as clinic policy supports.

You have addressed all of this patient's complaints.

l: Patient8

t: info

b: Manage Presenting Complaint

q: Patient 8

Demographics: 20 year old male

Presenting complaint: prolonged headaches

Other issues mentioned: wants to quit smoking

l: Patient8pc1

t: info

q: You have assessed the patient, diagnosed migraine headaches and referred to a neurologist for consultation.

You instituted interim standard management.

l: Decision1p8

t: radio

q: You have seen 1 major issue for this patient as clinic policy supports.

Remaining issues: wants to quit smoking

What would you like to do next?

- Address another of this patient's issues

- See another patient

l: jump8a

t: jump

- if $Decision1p8 == 1 then goto Patient8pc2

- if $Decision1p8 == 2 then goto Patient9

l: Patient8pc2

t: info

q: You have assessed the patient's complaint of wanting to cease smoking and offer nicotine substitutes and refer for psychology consultation.

l: Patient8end

t: info

b: See another patient

q: You have seen 1 major issue for this patient as clinic policy supports.

You have addressed all of this patient's complaints.

l: Patient9

t: info

b: Manage Presenting Complaint

q: Patient 9

Demographics: 12 month old boy

Presenting complaint: diaper rash

Other issues mentioned: not yet walking, has a cold, throws toys on the ground

l: Patient9pc1

t: info

q: You have assessed the patient, diagnosed a contact dermatitis with concomitant candida infection, and you institute standard management.

l: Decision1p9

t: radio

q: You have seen 1 major issue for this patient as clinic policy supports.

Remaining issues: not yet walking, has a cold, throws toys on the ground

What would you like to do next?

- Address another of this patient's issues

- See another patient

l: jump9a

t: jump

- if $Decision1p9 == 1 then goto Patient9pc2

- if $Decision1p9 == 2 then goto Patient10

l: Patient9pc2

t: info

q: You have assessed the patient's complaint that the child is not yet walking.

You determine that the child is within normal paediatric milestones and decide to follow up at the next well baby visit.

l: Decision2p9

t: radio

q: You have seen 1 major issue for this patient as clinic policy supports.

Remaining issues: has a cold, throws toys on the ground

What would you like to do next?

- Address another of this patient's issues

- See another patient

l: jump9b

t: jump

- if $Decision2p9 == 1 then goto Patient9pc3

- if $Decision2p9 == 2 then goto Patient10

l: Patient9pc3

t: info

q: You have assessed the patient's complaint of a cold and diagnose an upper respiratory tract infection.

You institute standard management.

l: Decision3p9

t: radio

q: You have seen 1 major issue for this patient as clinic policy supports.

Remaining issues: throws toys on the ground

What would you like to do next?

- Address another of this patient's issues

- See another patient

l: jump9c

t: jump

- if $Decision3p9 == 1 then goto Patient9pc4

- if $Decision3p9 == 2 then goto Patient10

l: Patient9pc4

t: info

q: You have assessed the patient's complaint of the child throwing toys to the ground and find it to be in keeping with normal paediatric milestones.

You decide to follow up at the next well baby visit.

l: Patient9end

t: info

b: See another patient

q: You have seen 1 major issue for this patient as clinic policy supports.

You have addressed all of this patient's complaints.

l: Patient10

t: info

b: Manage Presenting Complaint

q: Patient 10

Demographics: 45 year old man, factory worker

Presenting complaint: discomfort when breathing

Other issues mentioned: nurse indicates BP of 190/105, right knee pain.

l: Patient10pc1

t: info

q: You have assessed the patient, and find nonspecific respiratory symptoms.

Given the patient's history of exposure to particulate matter in the factory you refer for further investigation of occupational lung diseases.

l: Decision1p10

t: radio

q: You have seen 1 major issue for this patient as clinic policy supports.

Remaining issues: nurse indicates BP of 190/105, right knee pain.

What would you like to do next?

- Address another of this patient's issues

- See another patient

l: jump10a

t: jump

- if $Decision1p10 == 1 then goto Patient10pc2

- if $Decision1p10 == 2 then goto surveystart

l: Patient10pc2

t: info

q: You have assessed the patient's blood pressure values and request repeat values as well as a daily log and follow up in one week.

l: Decision2p10

t: radio

q: You have seen 1 major issue for this patient as clinic policy supports.

Remaining issues: right knee pain

What would you like to do next?

- Address another of this patient's issues

- See another patient

l: jump10b

t: jump

- if $Decision2p10 == 1 then goto Patient10pc3

- if $Decision2p10 == 2 then goto surveystart

l: Patient10pc3

t: info

q: You have assessed the patient's complaint of right knee pain and diagnose possible osteoarthritis.

You request radiographic investigations and institute standard management.

####survey treatment#####

l: surveystart

t: info

b: Click to continue

q: You have seen all of your patients.

You were told, "You have seen 1 major issue for this patient as clinic policy supports." and asked to choose between seeing another concern of the same patient or seeing another patient.

How did you feel about making this decision?

scale: agree

- Strongly Disagree

- Disagree

- Somewhat Disagree

- Neither agree nor disagree

- Somewhat Agree

- Agree

- Strongly Agree

l: Manipulation

q: You were told, "You have seen 1 major issue for this patient as clinic policy supports."and asked to choose between seeing another concern of the same patient or seeing another patient.

How much do you agree with each of the following:

t: scale agree

- The decision today involved a moral component

- The decision today had a clearly right/wrong choice

l: MoralDisunity

q: You were told, "You have seen 1 major issue for this patient as clinic policy supports." and asked to choose between seeing another concern of the same patient or seeing another patient.

How much do you agree with each of the following:

t: scale agree

- The decisions I made today were in keeping with my morality

- The decisions I made today fit with all of my moral values

- I felt comfortable with the morality of my decisions today

- The decisions I made today were in keeping with my understanding of morality based on past experiences

l: CognitiveEffort

q: You were told, "You have seen 1 major issue for this patient as clinic policy supports." and asked to choose between seeing another concern of the same patient or seeing another patient.

How much do you agree with each of the following:

t: scale agree

- I didn't take a lot of time to decide what to do next?

- I was careful about which option to select

- I thought very hard about which option to select

- I didn't pay much attention while making this choice?

- I concentrated a lot while making this choice.

- It was difficult for me to make this choice.

scale: effort

- Very little effort

- Little effort

- Somewhat little effort

- Neither little nor a lot of effort

- Some effort

- A lot of effort

- A great deal of effort

l: CognitiveEffort2

q: You were told, "You have seen 1 major issue for this patient as clinic policy supports." and asked to choose between seeing another concern of the same patient or seeing another patient.

How much do you agree with each of the following:

t: scale effort

- How much effort did you put into making this decision

l: MoralConviction

q: You were told, "You have seen 1 major issue for this patient as clinic policy supports." and asked to choose between seeing another concern of the same patient or seeing another patient.

How much do you agree with each of the following:

t: scale agree

- Making the decision to see another patient before seeing all of the current patient's issues bothered me a lot

- Making the decision to see another patient before seeing all of the current patient's issues threatens values that are important to me

- My attitude toward making the decision to see another patient before seeing all of the current patient's issues is a matter of principle

l: jumpend

t: jump

- goto End

#######Control########

l: Setting2

t: info

b: Click to see your first patient

q: You are a doctor in an outpatient setting.

The nurses inform that they are expecting about 10 patients.

Your first patient begins on the next screen

l: Patient1c

t: info

b: Manage Presenting Complaint

q: Patient 1

Demographics: 65 year old woman

Presenting complaint: cough for 1 week

Other issues mentioned: back pain and “feeling down”

l: Patient1pc1c

t: info

q: You have assessed the patient, diagnosed an Upper Respiratory Tract Infection and instituted standard management.

l: Decision1p1c

t: radio

q: Remaining issues: back pain and “feeling down”

What would you like to do next?

- Address another of this patient’s issues

- See another patient

l: jump1ac

t: jump

- if $Decision1p1c == 1 then goto Patient1pc2c

- if $Decision1p1c == 2 then goto Patient2c

l: Patient1pc2c

t: info

q: You have assessed the patient's back pain, and deem it to be affecting her quality of life.

You decide to order additional investigations.

l: Decision2p1c

t: radio

q: Remaining issues: "feeling down"

- Address another of this patient's issues

- See another patient

l: jump1bc

t: jump

- if $Decision2p1c == 1 then goto Patient1pc3c

- if $Decision2p1c == 2 then goto Patient2c

l: Patient1pc3c

t: info

q: You have assessed the patient's complaint of "feeling down", and deem it to be affecting her quality of life.

You decide to refer for psychological assessment.

l: Patient1endc

t: info

b: See another patient

q: You have addressed all of this patient's complaints.

l: Patient2c

t: info

b: Manage Presenting Complaint

q: Patient 2

Demographics: 20 year old man, athlete

Presenting complaint: pain in left leg

Other issues mentioned: rash on upper chest and dry cough.

l: Patient2pc1c

t: info

q: You have assessed the patient and diagnosed Osgoode Schlatter syndrome.

You institute standard management.

l: Decision1p2c

t: radio

q: Remaining issues: rash on upper chest and dry cough

What would you like to do next?

- Address another of this patient's issues

- See another patient

l: jump2ac

t: jump

- if $Decision1p2c == 1 then goto Patient2pc2c

- if $Decision1p2c == 2 then goto Patient3c

l: Patient2pc2c

t: info

q: You have assessed the patient's rash on the upper chest and diagnosed tinea versicolor.

You institute standard management.

l: Decision2p2c

t: radio

q: Remaining issues: dry cough

What would you like to do next?

- Address another of this patient's issues

- See another patient

l: jump2bc

t: jump

- if $Decision2p2c == 1 then goto Patient2pc3c

- if $Decision2p2c == 2 then goto Patient3c

l: Patient2pc3c

t: info

q: You have assessed the patient's complaint of a dry cough and determine it to be a residual cough after COVID-19 infection one month ago.

l: Patient2endc

t: info

b: See another patient

q: You have addressed all of this patient's complaints.

l: Patient3c

t: info

b: Manage Presenting Complaint

q: Patient 3

Demographics: Demographics: 18 year old girl

Presenting complaint: lower abdominal pain

Other issues mentioned: intermittent chest pain

l: Patient3pc1c

t: info

q: You have assessed the patient, diagnosed a sexually transmitted infection.

You institute standard management.

l: Decision1p3c

t: radio

q: Remaining issues: intermittent chest pain

What would you like to do next?

- Address another of this patient's issues

- See another patient

l: jump3ac

t: jump

- if $Decision1p3c == 1 then goto Patient3pc2c

- if $Decision1p3c == 2 then goto Patient4c

l: Patient3pc2c

t: info

q: You have assessed the patient's complaint of intermittent chest pain and find that the patient is likely to have an anxiety disorder.

You refer her for psychiatry follow up.

l: Patient3endc

t: info

b: See another patient

q: You have addressed all of this patient's complaints.

l: Patient4c

t: info

b: Manage Presenting Complaint

q: Patient 4

Demographics: 80 year old man

Presenting complaint: lower back pain

Other issues mentioned: fatigue

l: Patient4pc1c

t: info

q: You have assessed the patient, and determined likely arthritis of the vertebrae.

You request additional radiographic investigations.

l: Decision1p4c

t: radio

q: Remaining issues: fatigue

What would you like to do next?

- Address another of this patient's issues

- See another patient

l: jump4ac

t: jump

- if $Decision1p4c == 1 then goto Patient4pc2c

- if $Decision1p4c == 2 then goto Patient5c

l: Patient4pc2c

t: info

q: You have assessed the patient's complaint of fatigue and are concerned about a lower respiratory tract infection.

You refer to the emergency department.

l: Patient4endc

t: info

b: See another patient

q: You have addressed all of this patient's complaints.

l: Patient5c

t: info

b: Manage Presenting Complaint

q: Patient 5

Demographics: 6 year old child

Presenting complaint: fever

Other issues mentioned: complaints from teachers about unruly behaviour at school

l: Patient5pc1c

t: info

q: You have assessed the patient, diagnosed a viral infection and instituted standard management.

l: Decision1p5c

t: radio

q: Remaining issues: complaints from teachers about unruly behaviour at school

What would you like to do next?

- Address another of this patient's issues

- See another patient

l: jump5ac

t: jump

- if $Decision1p5c == 1 then goto Patient5pc2c

- if $Decision1p5c == 2 then goto Patient6c

l: Patient5pc2c

t: info

q: You have assessed the patient's complaint of unruly behaviour at school and decided to refer to a child psychiatrist.

l: Patient5endc

t: info

b: See another patient

q: You have addressed all of this patient's complaints.

l: Patient6c

t: info

b: Manage Presenting Complaint

q: Patient 6

Demographics: 70 year old woman

Presenting complaint: sore throat for 1 week

Other issues mentioned: pain in right great toe, headaches, skin rashes

l: Patient6pc1c

t: info

q: You have assessed the patient, diagnosed a resolving pharyngitis and instituted standard management.

l: Decision1p6c

t: radio

q: Remaining issues: pain in right great toe, headaches, skin rashes

What would you like to do next?

- Address another of this patient's issues

- See another patient

l: jump6ac

t: jump

- if $Decision1p6c == 1 then goto Patient6pc2c

- if $Decision1p6c == 2 then goto Patient7c

l: Patient6pc2c

t: info

q: You have assessed the patient's toe pain, and deem it to be gout.

You decide to order additional investigations and institute standard management.

l: Decision2p6c

t: radio

q: Remaining issues: headaches, skin rashes

What would you like to do next?

- Address another of this patient's issues

- See another patient

l: jump6bc

t: jump

- if $Decision2p6c == 1 then goto Patient6pc3c

- if $Decision2p6c == 2 then goto Patient7c

l: Patient6pc3c

t: info

q: You have assessed the patient's complaint of headaches and find them to be occasional and not well defined, you are unable to get sufficient information.

You decide to follow up in future visits.

l: Decision3p6c

t: radio

q: Remaining issues: skin rashes

What would you like to do next?

- Address another of this patient's issues

- See another patient

l: jump6cc

t: jump

- if $Decision3p6c == 1 then goto Patient6pc4c

- if $Decision3p6c == 2 then goto Patient7c

l: Patient6pc4c

t: info

q: You have assessed the patient's complaint of skin rashes, and find them to be stage 1 decubitus ulcers.

You institute standard management.

l: Patient6endc

t: info

b: See another patient

q: You have addressed all of this patient's complaints.

l: Patient7c

t: info

b: Manage Presenting Complaint

q: Patient 7

Demographics: 45 year old man

Presenting complaint: waking up at night to pee frequently

Other issues mentioned: pain and numbness in right leg, pain in left ear

l: Patient7pc1c

t: info

q: You have assessed the patient, diagnosed diabetes as the most likely diagnosis, requested diagnostic testing and instituted standard management.

l: Decision1p7c

t: radio

q: Remaining issues: pain and numbness in right leg, pain in left ear

What would you like to do next?

- Address another of this patient's issues

- See another patient

l: jump7ac

t: jump

- if $Decision1p7c == 1 then goto Patient7pc2c

- if $Decision1p7c == 2 then goto Patient8c

l: Patient7pc2c

t: info

q: You have assessed the patient's complaint of numbness and tingling in the leg and diagnosed it as likely diabetic neuropathy.

You await the results of diagnostic diabetes testing and institute standard management.

l: Decision2p7c

t: radio

q: Remaining issues: pain in left ear

What would you like to do next?

- Address another of this patient's issues

- See another patient

l: jump7bc

t: jump

- if $Decision2p7c == 1 then goto Patient7pc3c

- if $Decision2p7c == 2 then goto Patient8c

l: Patient7pc3c

t: info

q: You have assessed the patient's complaint of pain in left ear and diagnosed Otitis media.

You institute standard management.

l: Patient7endc

t: info

b: See another patient

q: You have addressed all of this patient's complaints.

l: Patient8c

t: info

b: Manage Presenting Complaint

q: Patient 8

Demographics: 20 year old male

Presenting complaint: prolonged headaches

Other issues mentioned: wants to quit smoking

l: Patient8pc1c

t: info

q: You have assessed the patient, diagnosed migraine headaches and referred to a neurologist for consultation.

You instituted interim standard management.

l: Decision1p8c

t: radio

q: Remaining issues: wants to quit smoking

What would you like to do next?

- Address another of this patient's issues

- See another patient

l: jump8ac

t: jump

- if $Decision1p8c == 1 then goto Patient8pc2c

- if $Decision1p8c == 2 then goto Patient9c

l: Patient8pc2c

t: info

q: You have assessed the patient's complaint of wanting to cease smoking and offer nicotine substitutes and refer for psychology consultation.

l: Patient8endc

t: info

b: See another patient

q: You have addressed all of this patient's complaints.

l: Patient9c

t: info

b: Manage Presenting Complaint

q: Patient 9

Demographics: 12 month old boy

Presenting complaint: diaper rash

Other issues mentioned: not yet walking, has a cold, throws toys on the ground

l: Patient9pc1c

t: info

q: You have assessed the patient, diagnosed a contact dermatitis with concomitant candida infection, and you institute standard management.

l: Decision1p9c

t: radio

q: Remaining issues: not yet walking, has a cold, throws toys on the ground

What would you like to do next?

- Address another of this patient's issues

- See another patient

l: jump9ac

t: jump

- if $Decision1p9c == 1 then goto Patient9pc2c

- if $Decision1p9c == 2 then goto Patient10c

l: Patient9pc2c

t: info

q: You have assessed the patient's complaint that the child is not yet walking.

You determine that the child is within normal paediatric milestones and decide to follow up at the next well baby visit.

l: Decision2p9c

t: radio

q: Remaining issues: has a cold, throws toys on the ground

What would you like to do next?

- Address another of this patient's issues

- See another patient

l: jump9bc

t: jump

- if $Decision2p9c == 1 then goto Patient9pc3c

- if $Decision2p9c == 2 then goto Patient10c

l: Patient9pc3c

t: info

q: You have assessed the patient's complaint of a cold and diagnose an upper respiratory tract infection.

You institute standard management.

l: Decision3p9c

t: radio

q: Remaining issues: throws toys on the ground

What would you like to do next?

- Address another of this patient's issues

- See another patient

l: jump9cc

t: jump

- if $Decision3p9c == 1 then goto Patient9pc4c

- if $Decision3p9c == 2 then goto Patient10c

l: Patient9pc4c

t: info

q: You have assessed the patient's complaint of the child throwing toys to the ground and find it to be in keeping with normal paediatric milestones.

You decide to follow up at the next well baby visit.

l: Patient9endc

t: info

b: See another patient

q: You have addressed all of this patient's complaints.

l: Patient10c

t: info

b: Manage Presenting Complaint

q: Patient 10

Demographics: 45 year old man, factory worker

Presenting complaint: discomfort when breathing

Other issues mentioned: nurse indicates BP of 190/105, right knee pain.

l: Patient10pc1c

t: info

q: You have assessed the patient, and find nonspecific respiratory symptoms.

Given the patient's history of exposure to particulate matter in the factory you refer for further investigation of occupational lung diseases.

l: Decision1p10c

t: radio

q: Remaining issues: nurse indicates BP of 190/105, right knee pain.

What would you like to do next?

- Address another of this patient's issues

- See another patient

l: jump10ac

t: jump

- if $Decision1p10c == 1 then goto Patient10pc2c

- if $Decision1p10c == 2 then goto surveystartc

l: Patient10pc2c

t: info

q: You have assessed the patient's blood pressure values and request repeat values as well as a daily log and follow up in one week.

l: Decision2p10c

t: radio

q: Remaining issues: right knee pain

What would you like to do next?

- Address another of this patient's issues

- See another patient

l: jump10bc

t: jump

- if $Decision2p10c == 1 then goto Patient10pc3c

- if $Decision2p10c == 2 then goto surveystartc

l: Patient10pc3c

t: info

q: You have assessed the patient's complaint of right knee pain and diagnose possible osteoarthritis.

You request radiographic investigations and institute standard management.

####survey control####

l: surveystartc

t: info

b: Click to continue

q: You have seen all of your patients. You were asked to choose between seeing another concern of the same patient or seeing another patient. How did you feel about making this decision?

scale: agreec

- Strongly Disagree

- Disagree

- Somewhat Disagree

- Neither agree nor disagree

- Somewhat Agree

- Agree

- Strongly Agree

l: Manipulationc

q: You were asked to choose between seeing another concern of the same patient or seeing another patient. How much do you agree with each of the following

t: scale agreec

- This decision today involved a moral component

- The decision today had a clearly right/wrong choice

l: MoralDisunityc

q: You were asked to choose between seeing another concern of the same patient or seeing another patient. How much do you agree with each of the following

t: scale agree

- The decisions I made today were in keeping with my morality

- The decisions I made today fit with all of my moral values

- I felt comfortable with the morality of my decisions today

- The decisions I made today were in keeping with my understanding of morality based on past experiences

l: CognitiveEffortc

q: You were asked to choose between seeing another concern of the same patient or seeing another patient. How much do you agree with each of the following

t: scale agree

- I didn't take a lot of time to decide what to do next?

- I was careful about which option to select

- I thought very hard about which option to select

- I didn't pay much attention while making this choice?

- I concentrated a lot while making this choice.

- It was difficult for me to make this choice.

scale: effortc

- Very little effort

- Little effort

- Somewhat little effort

- Neither little nor a lot of effort

- Some effort

- A lot of effort

- A great deal of effort

l: CognitiveEffort2c

q: You were asked to choose between seeing another concern of the same patient or seeing another patient. How much do you agree with each of the following

t: scale effort

- How much effort did you put into making this decision

l: MoralConvictionc

q: You were asked to choose between seeing another concern of the same patient or seeing another patient. How much do you agree with each of the following

t: scale agree

- Making the decision to see another patient before seeing all of the current patient's issues bothered me a lot

- Making the decision to see another patient before seeing all of the current patient's issues threatens values that are important to me

- My attitude toward making the decision to see another patient before seeing all of the current patient's issues is a matter of principle

l: End

t: info

b: End Survey

q: Thank you for your contribution! It is greatly appreciated!

Appendix B: List of ITP Countries

P4P ITP Countries	nP4P ITP Countries
AFGHANISTAN	ALBANIA
ARGENTINA	ALGERIA
AUSTRALIA	ANTIGUA AND BARBUDA
BANGLADESH	ARMENIA
BELIZE	ARUBA
BRAZIL	AUSTRIA
CAMEROON	BELARUS
CHINA	BELGIUM
DEMOCRATIC	BONAIRE
DENMARK	BOSNIA-HERZEGOVINA
EL SALVADOR	BULGARIA
FRANCE	BURMA
GERMANY	CHILE
HAITI	COLOMBIA
INDIA	COSTA RICA
IRAN	CUBA
ISRAEL	CURACAO
ITALY	CZECH REPUBLIC
JAPAN	CZECHOSLOVAKIA
KENYA	DOMINICA
NETHERLANDS	DOMINICAN REPUBLIC
NEW ZEALAND	ECUADOR
NICARAGUA	EGYPT
NIGERIA	ESTONIA
PAKISTAN	ETHIOPIA
PHILIPPINES	FINLAND
REP OF CONGO	GHANA
SOUTH KOREA	GRAND CAYMAN

TAIWAN	GREECE
TANZANIA	GRENADA
TURKEY	GUATEMALA
UGANDA	GUYANA
UNITED KINGDOM	HONG KONG
USA	HUNGARY
ZIMBABWE	INDONESIA
	IRAQ
	IRELAND
	JAMAICA
	JORDAN
	KAZAKHSTAN
	KUWAIT
	KYRGYSTAN
	LATVIA
	LEBANON
	LIBYA
	LITHUANIA
	MACEDONIA
	MALAYSIA
	MALTA
	MEXICO
	MOROCCO
	MYANMAR
	NEPAL
	NETHERLANDS ANTILLES
	PALESTINE
	PERU
	POLAND
	PORTUGAL

	REPUBLIC OF MOLDOVA
	ROMANIA
	RUSSIAN FEDERATION
	SAUDI ARABIA
	SENEGAL
	SERBIA AND MONTENAGRO
	SINGAPORE
	SLOVAKIA
	SOUTH AFRICA
	SOVIET UNION
	SPAIN
	SRI LANKA
	ST KITTS AND NEVIS
	ST LUCIA
	SUDAN
	SWITZERLAND
	SYRIA
	TOGO
	TRINIDAD AND TOBAGO
	TUNISIA
	UKRAINE
	UNITED ARAB EMIRATES
	URUGUAY
	UZBEKISTAN
	VENEZUELA
	VIETNAM
	YUGOSLAVIA
	ZAIRE