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Rounding Up the Associations: How Perceptions of Addiction are Recruited

**Mapping the Gaps Between
Expert and Public Understandings of Addiction in Alberta**

A FrameWorks Research Report

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INTRODUCTION

The plurality and ambiguity of Albertans' answers to fundamental questions about addiction, such as what it is and what causes it, illustrate the challenge of communicating on this issue. The following report suggests that the way these questions are asked and answered are watershed events for strategic communications on this topic. The specific assumptions used to answer and reason about these questions determine, shape and even bound the way that citizens and policy makers alike are able to think about other critical questions around addiction, such as who is responsible and what can and should be done to address the problem.

The research presented here was conducted by the FrameWorks Institute for the Alberta Family Wellness Initiative supported by Norlien Foundation. The goal of this research is to facilitate the design and advancement of more effective ways of communicating about addiction in Alberta, Canada. This particular report lays the groundwork for much of this larger reframing effort by examining both the scientific discourse on addiction, with special attention to the new science of early brain development and its contribution to addiction prevention and treatment, and how Albertans talk and think about the topic. The comparison of these two spheres of understanding is used to locate and examine gaps in understanding that can ultimately be addressed through various communication strategies. Future phases of the larger project on addiction will seek to do just that — fill these gaps by designing and testing tools that can effectively and efficiently be employed to translate the science of addiction for Albertans.

This research demonstrates that Albertans have many available patterns of reasoning about addiction but that they *share* these patterns and apply them in persistently patterned ways. To use an analogy, FrameWorks research shows that the cognitive landscape traveled in understanding addiction is complicated — with many distinct high and low spots, with circuitous connections. However, the research also shows that this is a *common landscape* — the high and low spots, and the routes that connect them, are highly consistent between individuals. This suggests that communications strategies designed to create different paths or increase the comfort and ease of traveling down certain existing routes can help all Albertans to think in new ways about addiction. In short, the presence of a shared landscape suggests the promise of communicating around a set of common addiction messages.

The media certainly play an important role in both redefining and restructuring public understandings of issues like addiction. However, the liminal position of the media on this issue — claiming in many places to be purveyors of "the science of addiction," while simultaneously being restricted by those conceptions of addiction that resonate with the public — makes communicating on this issue even more complex. Using new strategies and tools, communications can become the public's key to unlocking scientific information and making it available and accessible in reasoning about effective solutions. This measured but optimistic view of media, cultural models and policy is key to the results presented in this paper.

This report will discuss the first phase of the larger research project on addiction. More specifically, this exploratory research phase comprises the following three components: 1) an analysis of the scientific discourse on addiction from both expert interviews and a literature

review, 2) interviews with Albertans and, finally, 3) a comparative analysis that "maps the gaps" between expert and lay understandings of addiction.

First, in a series of "expert interviews," we identify foundational themes and concepts by examining patterns in how scientists understand, explain and talk about addiction. Using thematic analysis, these concepts are synthesized to create a "core story" of addiction — a finite set of principles, messages and themes that characterize the essence of a topical area. FrameWorks then employed "cultural model interviews" with Albertans to understand how they think about addiction. The application of theory and methods from cognitive anthropology results in the identification of a set of "cultural models" — or shared, common, taken-for-granted assumptions — that Albertans consistently employ in reasoning, understanding and making sense of the subject of addiction. Finally, we "map the gaps" by comparing the expert discourse on, and Albertans conception of, addiction. This analysis reveals specific places where gaps exist between these understandings. With improved knowledge of these gaps, we are able to move toward the second stage of Strategic Frame Analysis^{TM}, which involves identifying communications strategies that close these gaps and, in so doing, give Albertans access to key concepts from the science of addiction.

SUMMARY OF FINDINGS

Expert Interviews
- Experts focused persistently on the fact that addiction is a brain-based phenomenon and that neurobiological systems are central in understanding how addiction works and why it occurs. They emphasized how addiction can be more functionally defined as an impairment of rational decision-making. This emphasis on definitions, along with the specific definitions emphasized, suggested that experts assume the public largely thinks of addiction as a moral rather than a biological issue and that a fair share of the expert discourse is based on this assumed pattern of public perception.

- The expert discourse also stressed a common etiological explanation — that addiction arises because of a complex confluence of genetic and environmental factors. This interaction was described as complex and giving rise, because of variation in both variables in the equation, to incredible differences between individuals in susceptibility and resilience to addiction.

- The expert discourse also focused heavily on *intervention*. There was a common view that quality matters — in short, that not all interventions are created equal and that the work of addiction specialists is to replace ineffective interventions with those that are evidenced-based. The expert discourse also focused on the timing of interventions — that they should occur early for maximal benefits. Experts also emphasized that intervention needs to be sustained over time and incorporate multiple modalities of treatment.

- Despite these points of consensus, analysis revealed a key tension within this field — a debate about the appropriateness of a more inclusive concept of addiction. On one side of this debate was an argument for a category of addiction that would include both substance and behavioral addictions. Others in the field, however, were weary of lumping

these addictions into one concept. These latter experts believed that there were considerable differences in process and etiology between "types" of addiction and, therefore, advocated a more strictly delineated taxonomy of addiction.

Cultural Models Interviews
- Cultural models interviews revealed that Albertans apply a set of two dominant assumptions in thinking about **what addiction is**:
  - *Addiction is a dependence on a foreign chemical — narrowly drugs or alcohol;* and
  - *Addiction is an internal "need" response — a process of insatiable and irrational need that takes place within the individual.*

- A second set of cultural models was used in thinking about the **causes of addiction**. These models form a complex set of both general and more specific assumptions that are brought to bear in understanding causation. The general assumptions in this set included:
  - *Addiction results from derailed development.* A host of childhood experiences were viewed as potential causes for addiction, including trauma, exposure to addictive behaviors and inadequate parenting.
  - *There are proximate triggers of addiction, such as access or escapism.* The most likely scenario for the development of an addiction was when an individual who has experienced derailed development later experiences the proximate triggers.
  - *There is a perceived continuum of control.* At one end of the continuum, an individual has complete control over their behaviors and actions, while at the other there is a complete absence of control. Addiction was caused when an individual reached a *tipping point* on this continuum.
  - *Some things are just too addictive.* A common and specific set of drugs — crack, heroin and methamphetamines — were perceived as so powerful that, once taken, they quickly result in chemical dependencies that are difficult if not impossible to break.
  - *Damage done is damage done, or addiction is incurable.*
  - *The power of will explains individual differences or who will become addicted and who will not.*

- Research suggested that there were **relationships between the cultural models used to think about what addiction is and its causes**. When Albertans use certain definitional models they also use certain causational models. This is to say that there are patterned associations between models from these domains such that when a model from one set is used, a corresponding model from the other set is also employed. Furthermore research suggests that this co-recruitment occurs in highly patterned ways. In this way we found, for example, that when individuals thought about addiction as an internal process, they assumed it to be caused by derailed development and tended not to employ other available causational models.

- One of the most important findings from this research is that **the cultural models employed to reason about the *causes* of addiction structured perceptions of effective and appropriate *treatments***. In this way, certain treatment modalities, interventions and

policies become easier or harder to think based on the specific model(s) of causation employed.

- When Albertans employed a *derailed development* causational model they reasoned that addiction can be prevented by focusing on childhood and development; that the root causes of addiction must be addressed; that community and society play a role; and that intervention involves the government.
- When employing a *proximate triggers* model of causation, Albertans concluded that addressing the environments surrounding individuals is an essential component of intervention.
- When informants approached the issue of causation through the *continuum of control* model, they reached conclusions that gradual weaning and early treatment were effective and necessary components of intervention.
- The use of the *damage done* assumption structured opinions that treatment may assuage symptoms but that underlying causes are beyond repair and that long-term and on-going treatment are necessary to manage addiction symptoms.
- Finally, when employing a *will power* assumption in understanding issues of causation, Albertans concluded that intervention is fundamentally about an individual cultivating the desire and discipline to change their behaviors.

- Research also suggested that understandings of causation shape two very different perspectives of the **responsibility for addiction**: *Addicts are <u>not</u> to blame* and *Addicts are to blame.* Research suggested that informants' vacillation between these two views of responsibility was linked to the specific model(s) of causation they employed. When they used one set of causation models — *derailed development, proximate triggers, continuum of control and damage done* — they reasoned that individuals are *not* responsible for their addictions. However, when informants used the *some things are just too addictive* causational model they reached conclusions that individuals *are* responsible for their behaviors.

Mapping the Gaps
The research identified the following gaps between the ways that Albertans and experts understand the issue of addiction:

- *Definitional Focus* — Experts view addiction as a brain- and biologically-based concept, while Albertans frequently assume the issue is about the properties of external chemicals.

- *Causational Process* — While experts have an understanding of addiction causation and susceptibility that is based in the science of the gene-environment interaction, Albertans lack an understanding of this dynamic interactional process and have their own, decidedly more discrete, ideas of causation.

- *How Development Happens* — Experts expressed complex and rich understandings of developmental processes and how such processes influence addiction. Albertans, while clearly implicating the process of development as a key factor in explaining addiction causation, lack an understanding of how development actually "works."

- *Where the Processes Occur* — Experts focused on the brain as the location where addiction happens. Albertans, on the other hand, had a vague and imprecise sense of

where addiction occurs — defaulting to general explanations of experiences somehow getting "embedded" into individuals.

- *Responsibility* — Whereas experts clearly place the onus of responsibility on neurological and bio-developmental *processes*, Albertans have mixed opinions about responsibility — in many places blaming the addict and his or her lack of will power.

- *Potential for Change and Intervention Approach* — Experts have clear ideas and place a strong emphasis on the fact that addiction *can* be addressed and that there are evidence-based programs that have been shown effective in this regard. Albertans, on the other hand, frequently conclude that addiction is an affliction about which nothing ultimately can be done. When informants did see intervention as possible, they focused on treatment and on increasing the *quantity* of intervention, with no recognition of the importance of programmatic quality.

Communications Implications
- There are many implicit understandings that limit public thinking and narrow perceptions of certain solutions and programs around addiction. However, there are also assumptions that hold promise in creating broader understandings of the issue and may therefore be helpful in translating the science of addiction. Such promising associations include the connections that Albertans make between early child development and addiction, or the implicit relationships they draw between community, society and government, and solutions to addiction issues.

- The *connections* that Albertans draw between more specific aspects of the issue are of paramount importance in designing more effective communications on addiction. Activating clusters that contain assumptions that run against and obscure the science or that are unproductive in thinking about public policy and programmatic solutions is a very real danger in messaging about addiction. The connections and the complexity of the relationships between assumptions point to the need for communicators to be aware and deliberate in how they navigate this swamp of public perception.

- More specifically, the connections between definitional and causational understandings and, in turn, the power of causational assumptions to shape thinking about solutions and responsibility highlight the pressing need for messages to activate internal process-based definitional understandings and avoid cuing co-existing assumptions that focus on the properties of a narrow range of external substances.

RESEARCH METHODS

I. Establishing the "Core Story" of the Science of Addiction
To assemble a science "core story" of addiction, FrameWorks researchers synthesized data gathered from two methods: *one-on-one expert interviews* conducted with scientists specializing in addiction and a *literature review*.

Expert Interviews

Norlien Foundation staff and advisors and FrameWorks personnel collaborated to identify experts who could articulate the new early brain development approach within the broad, interdisciplinary field of addiction studies. It is important to note that these experts were selected for their expertise and experience in one domain of the field of addiction studies—the relatively new and growing developmental approach to this topic. Leading authors, researchers and program administrators in various addiction-related fields were selected for their knowledge of this new developmental approach as well as their ability to articulate this knowledge. Eleven experts were selected to participate in one-on-one telephone interviews, which were conducted in February 2010. The interviews lasted approximately 60 minutes and, with participant permission, were recorded and transcribed for analysis.

The interviews consisted of a series of probing questions meant to capture the scientific understanding of the issue. In doing so, we guided expert informants through a series of prompts and hypothetical scenarios designed to challenge them to explain their research; break down complicated relationships; and simplify concepts, methods and findings from the field. In this way, the interviews were semi-structured, collaborative discussions with frequent requests for clarification, elaboration and explanation.

Analysis of expert interviews employed a basic grounded theory approach.[i] In this approach, common themes are pulled from each interview and categorized; negative cases are incorporated into the overall findings within each category; and the result is a refined set of themes that synthesizes and represents the substance of the interview data. Consistent with this method, the themes we identified were then modified and appropriately categorized during each phase of the analysis to account for disconfirming or negating data.

Literature Review
To assemble materials for this review, a wide variety of search terms, including but not limited to: "addiction," "substance abuse" and "brain" were entered both as individual and cross-referenced searches into the Academic Search Premier database, which provides access to over 3,500 peer-reviewed academic publications. This general database allowed us to draw from a wide variety of relevant publications, including those from the fields of psychiatry, medicine, neurobiology, genetics and other disciplines. Through our search efforts, we identified approximately 100 articles that were relevant to the topic and represented the breadth of the field.

We employed the same grounded theory approach described above to establish the primary and recurring themes found in the selected articles. Once we identified these themes, we further revised and refined them to reflect the inherent tensions and, in some cases, lack of consensus in the academic literature on this issue. The themes and tensions that we identified are representative of all the articles reviewed and characterize the published materials in this field more generally.

II. Cultural Models Interviews
To complete the other side of the comparison, FrameWorks conducted interviews with members of the Albertan general public. The findings presented below are based on 20 in-depth cultural models interviews with Albertans, drawn from rural, suburban and urban areas in and around

Calgary. The interviews were conducted by two FrameWorks researchers in January and February 2010.

Subjects
Informants were recruited by a professional marketing firm through a screening process developed and employed in past FrameWorks research. Informants were selected to represent variation along the domains of residential location (i.e., urban, suburban, rural), gender, age, educational background and political ideology (as self-reported during the screening process). In addition, individuals working in fields where they would be likely to have expert knowledge of the subject (counseling, social work, substance abuse centers) were screened out of the sample.[ii]

Cultural models interviews require gathering what one researcher has referred to as a "big scoop of language."[iii] Thus, a sufficient quantity of talk, taken from each informant, allows us to capture the broad sets of assumptions that informants use to make sense and meaning of information. These sets of common assumptions and understandings are referred to as "cultural models."[iv] Recruiting a wide range of people ensures that the cultural models we identify represent shared, or "cultural," patterns of thinking about a given topic. And, although at this level of the analysis we are concerned with *common* patterns of reasoning and not with the particular nuances across different groups, we recognize the importance of questions of variation and representativeness and take up these interests in subsequent quantitative experiments.

We were careful to recruit a sample of civically engaged persons because cultural models interviews rely on the ability to see patterns of thinking — the expression of models in mind — through talk. It is therefore important to recruit informants whom we have reason to believe actually *do* talk about the issues in question. Moreover, to ensure that participants were likely to have ready opinions about these issues without having to be overly primed by asking them directly about the target issue,[v] the screening procedure was designed to select informants who reported a strong interest in news and current events, and an active involvement in their communities through participation in a wide range of community and civic engagements.

All in all, the sample was split exactly in half with respect to informants' gender. Nine participants self-identified as members of the Liberal Party, nine as Progressive Conservative Party members and the remaining two identified as members of the Green Party. Nine informants were under the age of 40. Seven resided in rural locations, and 13 in suburban and urban locations in and around the city of Calgary. We must note here that although the sample was constructed to include as much variation as possible, it is not nor was it meant to be provincially representative in any statistical way. Issues of demographic variability and representativeness of the findings presented here are taken up in a quantitative experiment phase of FrameWorks' research. Such questions can be more appropriately and effectively addressed in a large sample-size online experiment where more rigorous statistical sampling techniques are possible.

Interviews
Informants participated in one-on-one, semi-structured "cultural models interviews" lasting 1½ to 2½ hours. Consistent with the interview methods employed in psychological anthropology,[vi] cultural models interviews are designed to elicit ways of *thinking* and *talking* about issues. As the goal of these interviews was to examine the cultural models Albertans use to make sense of and

understand issues around addiction, a key to this methodology was giving informants the freedom to follow topics in the directions *they* deemed relevant and not in those the interviewer believed most germane. Therefore, the interviewers approached each interview with a set of general areas and topics but left the order in which these topics were covered largely to the informant. In this way, researchers were able to follow the informant's train of thought, rather than interrupting to follow a set and pre-established course of questions.[vii]

All interviews were recorded and transcribed. Quotes are provided in the report to illustrate major points but identifying information has been excluded to ensure informant anonymity.

Analysis
Elements of social discourse analysis, cultural models analysis and grounded theory were applied to identify larger, shared cultural models.[viii] First, patterns of *discourses*, or common, standardized ways of talking, were identified across the sample using a basic grounded theory approach to thematic analysis. These discourses were then analyzed to reveal tacit organizational assumptions, relationships, propositions and connections that were commonly made but taken for granted throughout an individual's transcript and across the sample. In short, our analysis looked at patterns both in what *was* said (how things were related, explained and understood) as well as what was *not* said (shared, but taken for granted assumptions).

FINDINGS

I. Expert Interviews
The following themes emerged from analysis of expert interviews and comprise the foundational components of the "core story" of the science of addiction. This "core story" simultaneously represents the object that communications research seeks to translate, and the outcome against which the success of such translations is evaluated. In addition, the themes presented below emerged from and are representative of data gathered from both experts in interviews and the literature review.

CORE THEMES
1. **Addiction is:** Experts devoted the majority of their time and effort in open-ended interviews to *defining what addiction is*. Below we discuss the major points of consensus that emerged from this definitional bent.[ix]

    a. **Addiction is a brain-based and neurobiological phenomenon.** The scientists we interviewed all began their explanations of addiction with discussions and explanations of neurobiology. The literature review also revealed a predominant theme of describing and highlighting the neurobiological mechanisms that underlie this phenomenon. A more specific point of consensus was that repeated exposure to drugs and other sources of addiction, such as gambling, engages specific brain circuits and leads to adaptations in these circuits that result in compulsion and loss of control.[x] As Leshner (1997, p. 46) notes, the fact that addiction has been clearly linked to "changes in brain structure and function is what makes it, fundamentally, a brain disease."[xi]
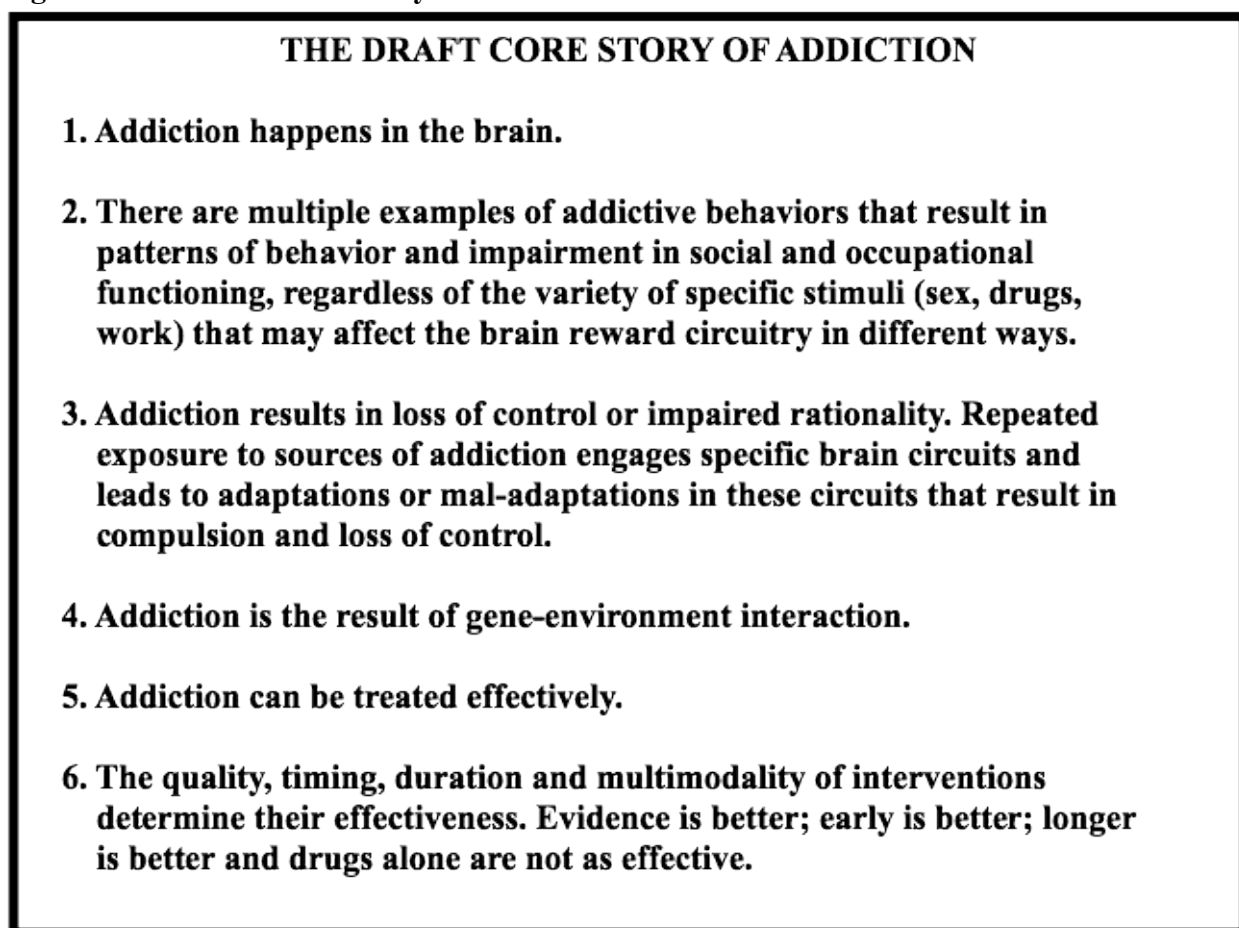
b. **Addiction is impaired rationality.** All of the experts we interviewed placed a very strong emphasis on defining addiction as the loss of an individual's ability to assess, in a rational way, the costs and benefits of behaviors and decisions. This focus was echoed in results of the literature review.[xii]

c. **Addiction is the result of gene-environment interaction.** Experts explained that addiction may result from genes, extra- and intra-familial environments, prenatal and postnatal exposure to drugs and trauma, and early drug use, as well as any combination of the above. Because of these multiple causal factors and the almost-infinite ways in which permutations of these factors might combine, experts emphasized the incredible complexity of answering questions of addiction causation. The literature review revealed a similar explanation of genes, environments and their interaction in addiction causation and susceptibility.[xiii]

2. **Focus on intervention:** Analysis of expert interviews and the literature review suggested a strong (and understandable) focus in the field of addiction science on *intervention.* Below we describe the themes that characterize this focus.

a. **Quality matters.** Expert explanations were unequivocal in the view that there are both effective and ineffective treatments for addiction. They explained that, "not all interventions are the same," and that "we know some programs work, but also that others are dramatically less effective." In short, there was dramatic emphasis and agreement both within our sample of experts and in the literature more generally that some programs and interventions are of greater quality, in that they produce more frequent and favorable results, than others. Discussion of what can be done to address issues of addiction centered around focusing programmatic resources both on investing in the programs that do work — referred to in both expert interviews and literature review as "evidence-based" programs — and in pursuing additional research to continue to improve interventions. In this way, the expert discourse on intervention focused on developing and improving the *quality* of interventions available to the public.[xiv]

b. **Early intervention is paramount.** Expert interviewees stressed the need for *early*, *proactive* and *preventative* efforts to reduce risk of, and treat, addiction. In terms of the former, experts explained that a variety of extra- and intra-familial factors can be mitigated in part by programs that improve the health and well-being of children and their families. In regard to the need for early diagnosis and treatment, experts, as well as the literature more generally, suggested that treatment outcomes are more successful when individuals are in the early stages of addiction and/or are younger in age.[xv] Interviewees also noted the improved cost-effectiveness of early intervention efforts.

c. **A long-term approach to intervention.** Experts emphasized another temporal dimension of effective intervention — that it must be long-term and ongoing.[xvi] The expert discourse stressed that ongoing treatment is necessary because of the extensive environmental influences associated with addiction.

      d. Multimodal. Data from both expert interviews and the literature review emphasized the importance of multimodal treatments for addiction. Despite the fact that addiction involves long-term changes in brain function, the scientific consensus appears to be that these changes can be most successfully ameliorated through treatments that focus on the different pharmacological, cognitive/behavioral and sociocultural aspects of addiction.[xvii]

3. **A tension in the field: "There is an underlying process, but … it's not that simple."** A difficult question for experts was the degree to which addictions to things like sex or work are similar or comparable to substance addictions. Some of the experts we interviewed focused on the fact that all of these addictions go through the same cycles and show the same maladaptive patterns of behavior and impairment in social and occupational functioning. Furthermore, these experts felt that the same circuits, transmitter system and brain chemicals are at work across all addictions. At the same time, even those who championed process addiction's legitimacy noted that the systems are "not 100 percent the same" as those at play in substance addictions. These experts acknowledged that there are subtle and nuanced differences between behavioral (like work or sex) and substance addictions (alcohol, drugs). Others argued that there is actually much more separating these "types" of addictions, including the fundamental mechanisms by which they stimulate the brain reward circuitry. These experts maintained that there is a rather solid line demarcating behavioral and substance addictions. Moreover, most experts recognized that the science of process or behavioral addictions is not yet well established. Despite this uneasiness, most interviewees believed that these two forms of addiction would eventually prove to be similar, and therefore the primary tension on this issue was over what *the current science* allows scientists to say about general similarities between all addictions.

   The literature review echoed this tension. Addiction literature has traditionally conceptualized addiction as a psychiatric disorder that involves chronic, compulsive *substance* use.[xviii] Much of the academic literature focuses on alcohol, nicotine and other drugs. However, some recent findings provide empirical support for the idea that there are non-drug behavioral addictions as well. This research indicates that drug addictions and certain pathological behaviors have similar etiologies (or causes), symptoms (and thus diagnostic criteria) and natural histories.[xix] This history of the field as being focused almost exclusively on substance addictions and the relatively new foray of some studies into more behavioral addictions mirrors the tension observed in expert interviews.

For purposes of this evolving core story, we have included the most common ground, i.e., that there are multiple examples of addictive behaviors that result in patterns of behavior and impairment in social and occupational functioning, regardless of the variety of specific stimuli that may affect the brain reward circuitry in different ways. The core story summarized below is, admittedly, a placeholder in our conceptual framework and awaits scientific consensus and clarity, as well as additional communications research, before it can be more fully detailed.

Figure 1: The Draft Core Story of Addiction

> ## THE DRAFT CORE STORY OF ADDICTION
>
> 1. Addiction happens in the brain.
>
> 2. There are multiple examples of addictive behaviors that result in patterns of behavior and impairment in social and occupational functioning, regardless of the variety of specific stimuli (sex, drugs, work) that may affect the brain reward circuitry in different ways.
>
> 3. Addiction results in loss of control or impaired rationality. Repeated exposure to sources of addiction engages specific brain circuits and leads to adaptations or mal-adaptations in these circuits that result in compulsion and loss of control.
>
> 4. Addiction is the result of gene-environment interaction.
>
> 5. Addiction can be treated effectively.
>
> 6. The quality, timing, duration and multimodality of interventions determine their effectiveness. Evidence is better; early is better; longer is better and drugs alone are not as effective.

II. Cultural Models Interviews

We now turn to the results of the cultural models interviews that were conducted with a wide range of civically-engaged Albertans.

DOMINANT CULTURAL MODELS

Our research suggests that Albertans think about and make sense of addiction-related issues using two sets of assumptions — employing one set to *define* addiction, and another in thinking about what *causes* addiction. The research also shows that, while these sets of assumptions can be described as discrete in terms of their structure or content (what the assumption is), in practice there were relationships between these sets of understandings such that, when a causational assumption became active, a corresponding definitional understanding also tended to be employed. These relationships between assumptions are vitally important in understanding the effects of current and proposed communications practices in the field of addiction.

In addition to finding links between causational and definitional assumptions, the research revealed the power of causational understandings to shape thinking about other aspects of addiction. Data from cultural models interviews suggest that the particular causational

assumption that becomes active shapes both the way that Albertans think about appropriate intervention as well as the way that they assign and reason about responsibility for addiction. The power of causational models to shape thinking in these other domains is crucial to communications and science translation practice. This suggests that, by activating or not activating specific assumptions about causation, communications can reframe understandings of intervention and responsibility — two vital components of both the science of addiction and its public policy implications.

Below we present the dominant cultural models that Albertans used in thinking about addiction. We group these shared but implicit assumptions into categories based on the questions they were used to reason about. In so doing, we show both the content of the models and the way in which they are applied in reasoning about addiction.[xx] We then discuss the patterns that existed between these two groups of assumptions and finally examine the ways in which the causational set of assumptions were instrumental in how informants thought about intervention and responsibility.

CULTURAL MODELS USED TO REASON ABOUT WHAT ADDICTION IS

1. Addiction is a dependence on a foreign chemical
Analysis of interviews revealed a highly dominant assumption that addiction is a dependency on a foreign chemical. In making this assumption, informants focused outside of the affected individual and trained their attention on the *foreign external substance.* The external substance, which became the focus of conversations when informants employed this assumption, was assumed to be a physical chemical — drugs or alcohol. Each informant employed this assumption at some point in his or her interview in defining the concept of addiction.

> So an addiction is dependence. It's a physical dependence — a chemical reaction. The body actually becomes addicted to a chemical substance where it now needs it, or it goes through severe withdrawal. So we've introduced something into our body …

> —

> It's [an addiction] when the chemical overtakes you.

> —

> With addiction, it's a *chemical* addiction … a chemical addiction, which is controlling your personality, your psyche.

> —

> [Addiction] is about the strength of the chemical. It's [addiction] about the addictive properties of the chemical. Caffeine is a stimulant, but it doesn't influence our serotonin to the point that crack cocaine does. So now we're working on a chemistry level.

2. Addiction is an internal "need" response
The second definitional cultural model for addiction hinged on the assumption that *addiction is a process* — it is an internal reaction that results in the need for things — namely experiences and chemicals. While in the first model described above, addiction was defined in terms of external substances, when individuals employed the internal response understanding, addiction was assumed to be *within* the individual — a process taking place inside the body that, in turn, leads to certain impulsive needs for substances or behaviors. This assumption was evident in frequent discussions where informants explained that, "an addiction is an addiction" and considered *any loss of control, compulsion, or uncontrollable need* to be an addiction. When operating under this assumption, informants had trouble seeing any difference between addictions, and described all addictions as being, "basically the same thing."

> Addiction is basically a need.
>
> —
>
> You can be addicted to drugs, alcohol; you can be addicted to food … you can be addicted to TV … You can be addicted to anything, really.
>
> —
>
> Addiction is a need to have whatever it is they need to have.
>
> —
>
> That "need" is the key to understanding what's going on.
>
> —
>
> You can be addicted to drugs, you can be addicted to exercise, you could be addicted to the Internet, you could be addicted to sex … So there are many, many forms of addiction.

In addition to the quotes above demonstrating the expression of this assumption, the selections are interesting in that they frequently come from the same individuals who, at other points in their interviews, employed the external chemical assumption. In short, both of these definitional assumptions, even though appearing to conflict, were used across the sample and throughout individual interviews. It is critical to keep in mind that the emergence of seemingly contradictory models applied to understand an issue is by no means exceptional. These contradictions demonstrate a basic feature of how people make sense of information by applying existing categories and discrete mental structures to process incoming information (see appendix for more detailed discussion of features of cultural models and cognition). In this case, the application of these contradictory assumptions sheds light on the seemingly capricious way that informants vacillated in *what* they considered addiction — at times including only drugs or alcohol as "addictions," while at others throwing everything but the kitchen sink into the category of "addiction."

Implications of cultural models used to think about what addiction is:

1. Defining addiction in terms of foreign chemicals is problematic for several reasons.

    a. **A focus on external substances distracts from internal neurobiological processes.** When people assume that the discussion about addiction is fundamentally about illicit external chemical substances, as informants in our interviews frequently did, underlying and universal neurobiological processes of addiction appear to be of tertiary importance. This makes a wide range of policies — everything *except* increased control of substances and punishment for possession of such substances — appear misguided and ineffective in addressing what, in the words of one informant, "the issue is really about" — drugs.

    b. **A focus on foreign chemicals constrains understanding of types of addiction.** When informants were thinking about addiction from an external chemical perspective, they assumed that discussions were about drugs and alcohol and, in a few cases, tobacco. From this perspective, they were quite resistant to considering other, more behavioral addictions, like sex, gambling or exercise, as "real" addictions. In short, the chemical-based definitional model limits the types of addictions that can be readily and effectively communicated.

    c. **The external locus of addiction suggests chemicals are the cause.** Finally, the assumption of the location of addiction as being *external* makes translating explanations of causation very difficult. When informants applied the chemical-based definition of addiction, questions of what caused addiction were perceived as tautological. In short, the definition of addiction and the cause of addiction were seen as one and the same — addiction both is and is caused by an individual's intake of foreign chemicals. This is a tidy and cognitively satisfying way of making sense of something which is inherently complex. If the same understanding can be used to arrive at explanations both of what addiction is and what causes it, people do not need to do the more difficult work of reasoning through and figuring out other causes.[xxi]

2. The assumption that addiction is an internal process is decidedly more promising, though not without its own set of problems:

    a. **A focus on process creates space to talk about neurobiology.** Although informants did not hold explicitly neurobiological perspectives in their internal process-based assumptions and discussions of addiction, the understanding that addiction involves internal processes shaped by external stimuli is promising in creating the space in which scientists can deliver messages about the neurobiological bases of addiction. Considerable work remains to be done in *how* these messages are delivered in these meaning spaces. However, the fact that such delivery is likely possible in a relatively unfettered cognitive space in which people can appreciate the importance of internal process is highly promising — particularly when viewed relative to the external chemical understanding, which fails to create such a translational opportunity.

    b. **The process orientation is conducive to a "many addictions" approach.** When members of the public approach the issue of addiction through the process-based assumption, communicating about a wide range of addictions, from food to gambling, sex and work, is possible. The fact that addiction, in this assumption, is

seen to be a *reaction* or *process* facilitates the view that almost any substance or behavior can be "an addiction."

c. **There is a danger of boundlessness and overexpansion.** Informants employing this assumption frequently began considering everything around them as an addiction — seeing any behavior or substance that conferred some enjoyment or reward as an addiction ("I'm addicted to sleep" or "I'm addicted to my kids"). This "everything under the sun" tendency can get in the way of the necessary task of establishing a scientific definition of the concept. In other words, if communicators activate this understanding without careful framing, they run the risk of creating an indefinable and therefore cognitively frustrating concept. Without clear delineations, it will be difficult for Albertans to think productively about policies or evaluate programs that may be of differential effectiveness. The careless activation of this assumption, divorced of other strategic framing strategies, may do more harm than good in translating the science and highlighting policy implications.

d. **The process perspective often lacks an understanding of process.** When thinking from this perspective, informants clearly implicated that, in the words of one informant, "something's going on inside." They were, however, without a concrete or comprehensive understanding of what it was that was "going on inside." This lack of process understanding is a common feature of public knowledge on scientific subjects.[xxii] The paucity of these understandings has considerable communications implications. Without an understanding of the biological and neurobiological processes that comprise the internal processes, people are left to fill in how this all happens. In short, without an idea of how exactly addiction processes operate, individuals answer this question using familiar cultural tools and understandings about how things work. In many cases, FrameWorks' research has shown that when asked questions that force them to explain process (i.e., why something is the way that it is, or how something works), people default to what FrameWorks calls mentalist cultural models — or the view that outcomes are the result of individual concerns that reflect motivation and personal discipline. It is easy to see how dangerous the application of such a cultural model would be in the domain of addiction, where addiction could easily become viewed as the product of such internal motivational states. If this were to occur, solutions of increased personal responsibility become easy to see, but policies and programs that focus on addressing aspects of experience — by improving environments, interactions or supports — become seen as not directly addressing what is "really" the issue.

CULTURAL MODELS USED TO REASON ABOUT CAUSES OF ADDICTION

There were six broad, overarching assumptions used in thinking about issues of causation. There were also more-specific assumptions nested within these broader organizational assumptions.[xxiii]

1. Addiction results from derailed development
Informants operated under the shared assumption that a host of childhood experiences can cause addiction. In general, these childhood experiences included: trauma (mental and physical abuse

and disturbing events); acceptance and normalization of addictive behaviors (drug and alcohol misuse and abuse); and inadequate parental and familial guidance, education and support. Individually or in some combination, these experiences represent "derailed development." This derailed development was implicated across the sample as the primary cause of addiction.

> I think family life plays into it [addiction] a lot. Trauma as a child, things like that. I watch A&E Intervention sometimes. Every single time, the parents are saying things like, "We don't know why she is like that, she had such a wonderful childhood," and you're like why is she so messed up? Why is she sniffing dust cleaner all the time? And then it comes out. The mom will be like, "Well, there was that rough point when she was 8. My fourth husband abused her a lot more." And you're like, oh, that's why. And every time, every single time, bad childhood stuff comes up. So I think it plays into it *big time*, *for sure*. *Definitely*. I think childhood trauma plays into it [addiction] *massively*.

> —

> I've seen my parents drinking, and started to associate behavior with drinking, so I'm going to drink. It's almost pushed that potential for addiction ahead a notch, a level. It's gotten started early instead of somebody who hasn't seen it growing up, experienced it for the first time in their adult life.

> —

> I think, for example, your upbringing [is important]. Like say you have some kids, and one has really attentive engaged parents. I think they might be less prone to become addicted to something; whereas the kid who is on his own a lot, and the parents aren't very attentive. I think it can create a need to find validation in something.

Within this broad assumption, informants employed a set of more specific assumptions.

A. Experiences get carried forward.
Informants operated under the assumption that addictions in adulthood are frequently the result of childhood experiences, revealing the implicit understanding that *what happens early in the life of a child has long-term effects*. FrameWorks' research in Alberta on child mental health corroborates the existence of this cultural model.[xxiv]

> What we learn and what happens in our childhood shapes a lot of who and what we are when we become adults.

> —

> It [addiction] is the home life failing. It is the life skills that you've been given, failing. It is the people that you were around failing you. And I think at the end of

the day that's probably one of the hardest things to deal with for people who are addicted … looking back and going, my upbringing failed me.

B. Early experiences get embedded and create the roots of later problems.
A related assumption was that early experiences get carried forward by being embedded deep within a person. These deeply embedded experiences were assumed to establish negative emotional roots that affect later outcomes. This embedding, and the roots that these negative experiences establish, was specifically assumed to lead to a negative sense of self, inadequate life skills and a lack of balance — outcomes that were explained as causes of addiction.

> I think your childhood really reflects you as an adult. It could be something that happened terrible in your childhood that's still in you that's made you the person who you are. I'm more apt to think that you may not necessarily have the addiction when you start — like when you're born — but maybe as you get older it develops over time … and could manifest later on.
>
> —
>
> [There could be] the seed of addiction in anybody. A healthy whole human is probably the most valuable resource in our society and the fact that we're creating a society that puts pressure on that resource is just as silly as polluting your drinking water or peeing in your bathtub. If your inner container isn't solid enough to deal with the external pressures, judgments, expectations, obligations, challenges, then just like we become susceptible to disease we become susceptible to breakdown. And for some people that can mean going home and crying. For someone else, that might mean a breakdown and start drinking.
>
> —
>
> It's part of human nature that one tries to ignore problems. But then it festers …

C. "Life skills" develop early and their lack causes addiction.
Informant discourse revealed an underlying assumption that the lack of "life skills" is a major cause of addiction. Life skills were assumed to be about acquiring the coping, interpersonal communication skills, and social knowledge needed to function as a successful adult. This included the ability to accommodate and handle stress and interpersonal conflicts and make decisions. Furthermore, informants displayed implicit assumptions that these skills develop early in childhood.

> I think it just helps you to get along and like to have friends and social connections, you know, it helps. I mean there are certain skills required to get along and people skills are one of them … So if you've got kids who've never developed those skills, you're going to have problems.
>
> —

Interviewer: What do you think causes addiction?

Informant: Personal insecurities in dealing with today's problems. You're not forced to deal with things, like, and so these social insecurities develop. And if people don't have the proper coping skills for dealing with situations, they don't know how to deal with things. So they go to an artificial escape …

D. Family and community are the cause of derailed development.
Informants assumed that it is mostly through parental and familial guidance and support that children are afforded the experiences, exposure and education they need to become well-rounded individuals and avoid addiction. Informants also acknowledged that friends, educators and other community mentors and experiences play a role in shaping a child's development and the resulting vulnerability to addiction.[xxv]

Interviewer: Why do you think people have addictions?

Informant: I would think it could be family-related problems like in terms of maybe they were abused as a child verbally or physically.

—

Interviewer: So why do you think people have addictions?

Informant: You could have parents that are addicts, or alcoholics, or gamblers.

—

Well, for example, those three examples — sex, drugs and gambling — they can all have the same root that has caused that behavior … and they can have the same consequences. They can have the same devastation. So, again, I go back to development of well balanced behavior that has proper norms, that has proper goals, and that all comes from schooling … parenting … and it all comes from the people in your social network.

—

Interviewer: So, tell me a little bit more about how that would actually affect addiction.

Informant: It would give the person a reason to step back. When you don't have something else to do, it's like if you run out of options, and I've got my [addiction], that's my safety net, I can always go back to that because it's always there. If I don't have anything in my real life to give me an option to take me away from this, well then I'm not going to leave it. But if my community, my family, my friends, my school, my city, if any of these offer me a strong alternative … We need that outlet, that option, that alternative.

—

> I think a lot of it [what causes addiction] is perspective. Community helps you understand what life is all about and who you are and how things work whereas if you're only by yourself all the time that can be really misconstrued and very warped. Perspective. That's what community gives kids, perspective.

2. There are proximate triggers of addiction
Informants also described a set of proximate factors that could cause addiction. These factors were distinct from the derailed development assumptions described above in that they were temporally adjacent to the outcome of addiction. In other words, whereas derailed development was assumed to be distinct in time from the addiction outcome, the assumptions about proximate triggers did not have the same separation in time between cause and effect.

Despite their different time perspectives, these proximate factors were not seen as independent from the derailed development-type causes of addiction. Instead, the immediate factors were seen to mediate derailed development. Informants explained that the proximate factors described below could cause addiction in and of themselves, as could derailed development, but that the most likely scenario for the development of an addiction was when an individual who has experienced derailed development later experiences the proximate triggers.

One assumed relationship between the proximate and distal factors and the development of an addiction is depicted below. A second, more spatial relationship between these factors is discussed in the following section.

Figure 2: Derailed Development, Proximate Factors and Addiction
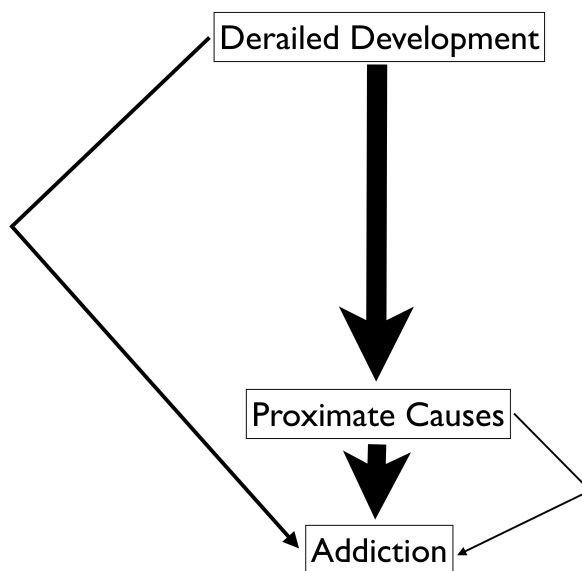
The following were more specific assumptions regarding proximate causes of addiction.

A. Addiction is a method of escape or avoidance.
Informants explained that, whether as the result of derailed development or, as one participant said, "just life," all individuals are forced to deal with problems in their lives. Informants assumed that the need to escape or avoid problems could in and of itself lead to addiction, but that the chance of these drivers causing addiction was greatly increased in individuals suffering from derailed development.

> It's [addiction] an escape. I believe it's a result of people not having the tools to properly deal … So they just escape. Now that could be put in a lot of different ways. They may be escaping their spouse … It could be an escape from reality. Perhaps there's something that's happening with their spouse that they really feel the need to get away from … They may be feeling that their children are having problems in school, or in society, that they don't know how to deal with. They may be escaping dealing with work.

> —

> It's [addiction] an avoidance of whatever is not comfortable in their life, painful. Whether it's relationships, or lack of relationships. Whatever they find dissatisfaction about in life, they can dive into that [the addiction], and escape.

B. Addiction fills a void.
Informants also employed the shared assumption that addiction may result from trying to fill or mask unmet needs. Informants explained that derailed development frequently results in deficits of interpersonal knowledge and skills and lack of fulfilling relationships. Informants understood addiction as an effort to seek and fill the void created by the lack of these relationships and interpersonal skills more generally.

> **Interviewer:** So what do you think are the causes of addiction?

> **Informant:** A need to fill emptiness. When you're addicted, you have something missing. Something's missing in your life, so you're trying to fill that void.

> —

> **Interviewer:** What causes addiction or what leads to addiction?

> **Informant:** Acceptance. Looking for acceptance, looking to belong. So really it is about acceptance …

> —

> I think the core thing here is a sense of belonging. So I think if you're in a sort of addictive or obsessive cycle with these things that you're likely and, again, trying to fill the empty shell from something outside of you but that can only be filled from something inside of you.

C. "Access" precipitates addiction.

Informants also believed that an individual's unique environmental circumstances — what informants generally referred to as "access" — also precipitate addiction. Informants assumed that factors like opportunity, availability and accessibility are individually unique environmental circumstances that can weaken one's resolve and increase one's susceptibility to addiction. In turn, the absence of these factors translates into decreased likelihood of addiction.

> I didn't live in that crack neighborhood. I didn't come from that environment. [Where] I grew up I didn't see drugs till I was 26 or 27. I didn't even know what it was. So maybe when I was forming my personality I never had a friend or uncle or a dad who was addicted to anything so I never knew what that was. So that wasn't natural for me to go down that road … When you're a kid and you see your dad shooting up coke everyday you think "Well, that's pretty normal and that's okay." When I was a kid on the farm you didn't have access to any of that stuff so you just didn't do it.

> —

> **Interviewer:** Why does one person have an addiction and another person doesn't?

> **Informant:** It could be a lack of alternatives. Like that's the option that I have the most access to, so it develops. Like going to the bar every day. You know, I just moved to a new city, I don't have any friends, so I go to the bar every day, and now it just slowly is getting out of control.

> —

> **Interviewer:** If you looked at one person who's addicted to crack and another person who's not addicted to crack, how would you explain that difference?

> **Informant:** I would say it's a product of their environment. The person who is a crack addict obviously was in an environment at some point where there was exposure …

> —

> I think that the problem [addiction] was probably always there but there was no opportunity for it to be expressed … You are susceptible but there's no opportunity … And then all of a sudden there is an opportunity and that nature gets expressed. You know, it may never have gotten expressed before.

> —

> **Interviewer:** So what do you think are some of the factors that cause addiction?

Informant: Environment. Friends. Exterior influence. I would say where you live, where you physically live. Do you live in the city? I think the city's got more a tendency to have more accessibility to addictive substances.

Interviewer: Tell me how environment influences addiction.

Informant: If you don't have access to addictive things, then you don't have access.

3. There is a tipping point on the continuum of control that, once breached, constitutes addiction

Informant explanations revealed an understanding in which addiction precipitates from a "lack of control." Furthermore, analysis revealed that informants employed a spatial model in organizing their thinking about control. They explained that there is a *continuum of control*. At one end of the continuum, an individual has complete control over their behaviors and actions, while at the other there is a complete absence of control. In this way, addiction was caused when an individual reaches a *tipping point* on this continuum of control where their behaviors and actions are characterized more by a lack of control than by its presence.

The derailed development model discussed above was conceived of as establishing the length or sensitivity of the continuum (how long it took to move between points on the continuum or how much force was necessary to push an individual along this continuum toward an addictive state), while the immediate triggers were seen as the factors that actually pushed the individual along the continuum. In this way, the continuum of control idea was a spatial metaphor that informants used to organize their thinking about the factors that caused addiction and, more importantly, about how these factors were related in precipitating addiction.

> It all has to do with a kind of a continuum of when is it is a harmless diversion or a hobby and when it becomes a problem. There was a case in Ontario about a year ago where a 13-year-old boy went missing. He had become obsessed with some kind of game on the Internet and his grades started getting poorer and poorer and he was more and more withdrawn and his parents were all worried about this so they cut him off. "You can't do this anymore." He ran away from home and died. There was probably somewhere along that continuum where he would have been just fine.
>
> —

Interviewer: Do you think she is addicted?

Informant: I do. I think it's getting to be, and if it's not already it's very close to that point. You know, she can't walk away from it. She can't actually just leave the files in the office and she can't just disconnect.

—

For what I'm talking about right now it's substances. Cigarettes or alcohol or whatever, drugs. You're introduced to something and, it becomes kind of a habit, because you like it or it's cool or whatever it is, and it becomes such a part of your daily life — you start doing it more and more throughout a progression, until it gets to a point where you are feeling really uncomfortable or you are always thinking about it. But you are really having trouble stopping that habit. It can just be that or it can snowball to the point where you can die from it.

—

On the continuum, you could be at either end, 'cause I think there could be heroin addicts out there that aren't destructive yet, but they're on the continuum and moving toward destruction.

4. Some things are just too addictive
Informants frequently contended that the addictive potential alone of some substances was enough, irrespective of other perceived potential causes discussed here, to immediately cause an addiction. When informants talked about the power of some substances to immediately precipitate an addiction, they consistently referenced a common and specific set of drugs — namely crack, heroin and methamphetamines. Informant discussions revealed an underlying assumption that once taken, these substances quickly result in powerful chemical dependencies that are difficult if not impossible to break. Informants collectively assumed that there "are just some drugs" that in and of themselves have sufficiently powerful addictive properties to cause, even after single exposures, life-long addictions.

Interviewer: So, what are the factors that cause addiction?

Informant: The factors would be whatever substance has addictive properties. Since various drugs are described as addictive, probably for the sole reason of the chemical reaction it has in the brain. I think that's what it all comes down to — addictive properties.

—

I could stop drinking coffee … I haven't had a coffee in I don't remember. I could go on a kick where I could drink one a day every day and then just quit. But I'm pretty sure if I did crack or meth I couldn't quit.

—

I think anybody, regardless how much they think coffee is great, has the choice and are never fully addicted. Someone with a crack addiction — I don't think has as many choices. I see them more as spun out of control and really no choice at all — no control over their life.

—

> He was probably a regular dude and all of a sudden a bunch of his friends started
> to hang around crack addicts and he just tried it. So he didn't seek it out but the
> temptation was there and he tried it and that was it.

5. Damage done is damage done

Throughout discussions of causes ran a taken-for-granted understanding that the damage, or derailed development, that caused addiction was irreparable — quite simply that, *damage done is damage done*. Much of this discussion of addiction causation drew on understandings associated with the domain of child development. It is therefore not surprising that Albertans drew on cultural models from the domain of child development — including the damage done model — in making sense of this causal aspect of addiction.[xxvi]

> I think any addiction is *controllable*, but not *curable*. An addiction to smoking, for
> example, you can take medication to help you with the addiction. But you can't get
> over the addiction, but it [medication] can help you deal with the addiction. The
> part of the addiction that makes it an addiction is that it never leaves you. For the
> rest of your life, you will always have that. Whether it's a thought of it, the smell of
> it when you're driving down the road, and all of a sudden you just get a, a scent of a
> cigarette, or, or a craving for a cigarette, or perhaps you see somebody smoking,
> and it triggers a thought in the back of your mind that that's something that you
> used to do. You can *treat* it. But you'll never *cure* it. It is something incurable. It is
> something that is part of you.

6. Will power explains individual differences

Informant discourse also revealed a powerful assumption that personal attributes such as determination and will power are important in understanding why one person suffers from an addiction while another does not. These factors were assumed to influence whether an addictive behavior is *chosen* to deal with problems, *what* addictive behavior is selected, and the extent to which the addictive behavior can be *controlled*.

Informants explained that some individuals have the ability to address their inter- and intra-personal problems on their own without the need to use an addictive behavior as a coping mechanism. Informants explained that these individuals just have more desire and drive to overcome problems and more ability to control their behaviors than others.

> Addiction is — how do I say this? It's giving up too easy on the things that are
> important. It's just doing what feels good. That's what causes addiction. So these
> things that don't feel so good, you need to push through them like pushing
> through the wall when you're running.

> —

> This person [the addict] is choosing to do that. And you can be a friend to them,
> but really, they choose that.

—

We can't have our society going "Oh look, we've got some addicted people! Okay, send in the counseling team!" Because as a society we can't make somebody change. Just like in a relationship we can't make each other change, we can only change ourselves. So it comes down to personal responsibility. As a friend of that person you could say "You know, don't you think this thing is impacting your work a little bit?" Or "You know, have you gotten out and talked to your friends lately? I don't see you anymore." But really it's got to play out. As a society it's not our job to go in and say to those people that they have certain lifestyles that seem like addiction. It's not our job. Once you're an adult you've got to want to have a new life.

Implications of the cultural models used for reasoning about causes of addiction:

1. **There is a strategic benefit to the perceived connection between child development and addiction.** The way that Albertans can see and appreciate the role of developmental factors in addiction causation is a scientifically-consonant lever on which communicators can pull to avoid other explanations — for example, that addiction is an issue of individual will power and discipline.

2. **The realization that early experiences affect later outcomes is a communications advantage.** The *experiences get carried forward* assumption is highly promising from a communications perspective. Its application opens the door for scientists and advocates to communicate about the importance of early experiences and their impacts in influencing addiction processes. Furthermore, the fact that people see early experiences as significant allows communications to bring the importance of the experiences and environments that shape experiences into discussions of policies that address addiction issues by creating more positive developmental experiences. This allows scientists and advocates to connect the issues of addiction and early child development and, in so doing, create a powerful and integrated community of advocates with common interests in addressing and improving child development as a means of improving a wide range of outcomes including, but not limited to, issues of addiction.

3. **There remains a missing piece of the puzzle in people's process understanding.** Despite the fact that Albertans link addiction to development, a fundamental expositional problem remains. The research described here, as well as other research FrameWorks has conducted in Alberta, shows clearly that while Albertans can see the *importance* of developmental outcomes, the *process* part of the equation (i.e., how these outcomes come to be) remains unclear. Put another way, the fact that Albertans appear to be missing an understanding of how development happens makes it difficult, without careful attention to clarifying and concretizing this process, to communicate how policies and programs affect development and, by extension, addiction.

4. **There's no brain in here.** When pressed to explain how the factors that act as deep-seated causes of addiction develop, informants focused narrowly on the process of

emotional embedding. What was missing from these explanations was, quite simply, the brain. The lack of connection between early experiences and the brain represents a stumbling block in translating the science of addiction and points to the need for communications to provide this link.

5. **Community is a key variable in the addiction equation and its communication.** The perspective in which families and the developmental outcomes they shape are embedded in and influenced by communities represents a communications opportunity. Many of the addiction policies and programs about which scientists and advocates want to communicate function at the community and society levels — focusing on things like access to community treatment resources, community supports for families dealing with addiction and means of identifying early addiction risk factors at the community and population levels. Albertans appear to be well situated to process descriptions of these programs and their importance. However, while the clear majority of informants implicitly situated families *in* communities and connected community factors to individual and family outcomes, communications must be aware of the potential for this picture to constrict. Communications that focus exclusively on the individual or family level in messaging about addiction still risk creating a more myopic picture from which social-cultural and community context easily fades. For this reason, communications should always make the connections between families and communities *explicit*, and in so doing help Albertans to access existing productive features of the cognitive landscape.

6. **There is promise in explaining proximate triggers as a mediator for other causes.** The understanding of interaction among causes that informants used in relating ultimate and proximate senses of causation is also promising. These assumed connections may create receptivity to messages that susceptibility to addiction is not caused by any one factor alone, but instead is shaped by a complex interaction of environmental, genetic and developmental factors.

7. **An assumption of proximate causes can come dangerously close to assigning responsibility primarily to individuals.** Despite the promise of the proximate causes assumptions, there is also an inherent danger in this interpretation. When addictive behaviors are seen more narrowly as responses to immediate situations like life difficulties or difficult social situations, it becomes easier to find fault in and place responsibility on the individual affected. When this happens, individuals are seen as "weak." As one participants said, "oh, they just aren't willing to face reality." When proximate causes become the *sole focus* of explanations of causation, the immediately visible solution is for the affected individual to "face the music" — making more contextual and developmental solutions "hard to think."[xxvii]

8. **The continuum of control is a mixed bag in terms of its effects on understanding.** In moving along the continuum, an individual gradually loses control, according to this way of thinking. This conveys the idea that addiction is essential about *personal control*. This conception may serve as a powerful cue for the will power model, which creates the perception that addiction is really an issue of discipline. This again threatens to trivialize contextual and developmental (and genetic) factors that shape addiction. This perception

also establishes a clear sense that the responsibility for moving or not moving along the continuum lies firmly in the hands of the individual. On the other hand, this assumption makes messages about the importance of early intervention and prevention relatively easy to communicate. The continuum model structures an understanding in which catching a person before they have moved to or past the tipping point (i.e., early) is an effective intervention strategy.

9. **The perceptions that some substances are just too addictive and that the damage done is irrevocable inhibit thinking about intervention in at-risk populations and solutions more generally.** When employing the *some substances are just too addictive* and *damage done is damage done* assumptions, Albertans are ill-equipped to understand and appreciate messages about the importance of intervention *following* early child adversity. These assumptions preference a powerful "it's too late" orientation that dissuades people from believing that anything can really be done, thereby decreasing support for programs and policies aimed at remediating the effects of early experiences as a means of addressing addiction issues.

10. **A focus on will power creates contextual blindness.** The will power assumption is likely to create a cognitive blindness to the importance of *contexts* in influencing outcomes and *systemic* solutions to problems like addiction. In short, if addiction is all about will and discipline, the ability to see the importance of context in causation (or intervention) is limited.

CONNECTIONS <u>BETWEEN</u> DEFINITIONAL AND CAUSATIONAL MODELS

While the sections above have laid out the implications of the cultural models used to think about addiction, another important finding for communicators is that *there are connections between these sets of models.* Analysis suggests that the specific models used to understand what addiction is are correlated with specific causational assumptions. In short, the data suggests that the definitional or causational model that becomes active predisposes the application of cultural models from the other set. The grouping of various sets or packages of cultural models is consistent with the theory of cultural models, in which connections between discrete assumptions develop as specific understandings are consistently applied together in the same way over time in making sense of a given issue.[xxviii]

The connection and co-recruitment of assumptions creates a situation where the activation of any one of the constituent assumptions activates other parts of the constellation. Put in a more tongue-in-cheek way, when you invite one of the assumptions to the party, you are (perhaps unintentionally) extending an invitation to all of the other assumptions in the cluster. For example, when Albertans think about the question of what addiction *is* using a definitional assumption that *addiction is a chemical dependency*, certain understandings of causation are simultaneously recruited — in this case, the understanding that some substances are just too addictive to be overcome.[xxix] This will have important implications for ordering communications.

Analysis revealed that *derailed development, damage done* and *proximate triggers* causational understandings tended to group together and were correlated with the *internal process* definitional assumption (Cluster 1). In addition, the *some things are just too addictive* cultural

model tended to co-occur with the definitional assumption that *addiction is a dependency on foreign chemicals* (Cluster 2). Finally, the data suggested that the *continuum of control* model of causation tended to crop up with the *internal process* definitional understanding in informant discourse (Cluster 3).

Figure 3 summarizes the three clusters described above.

Figure 3: Causational and Definitional Clusters

Cluster 1	Cluster 2	Cluster 3
Causational Derailed Development Damage Done Proximate Triggers	**Causational** Some Things Are Just Too Addictive	**Causational** Continuum of Control
+	**+**	**+**
Definitional Internal Process	**Definitional** External Foreign Chemical Dependence	**Definitional** Internal Process
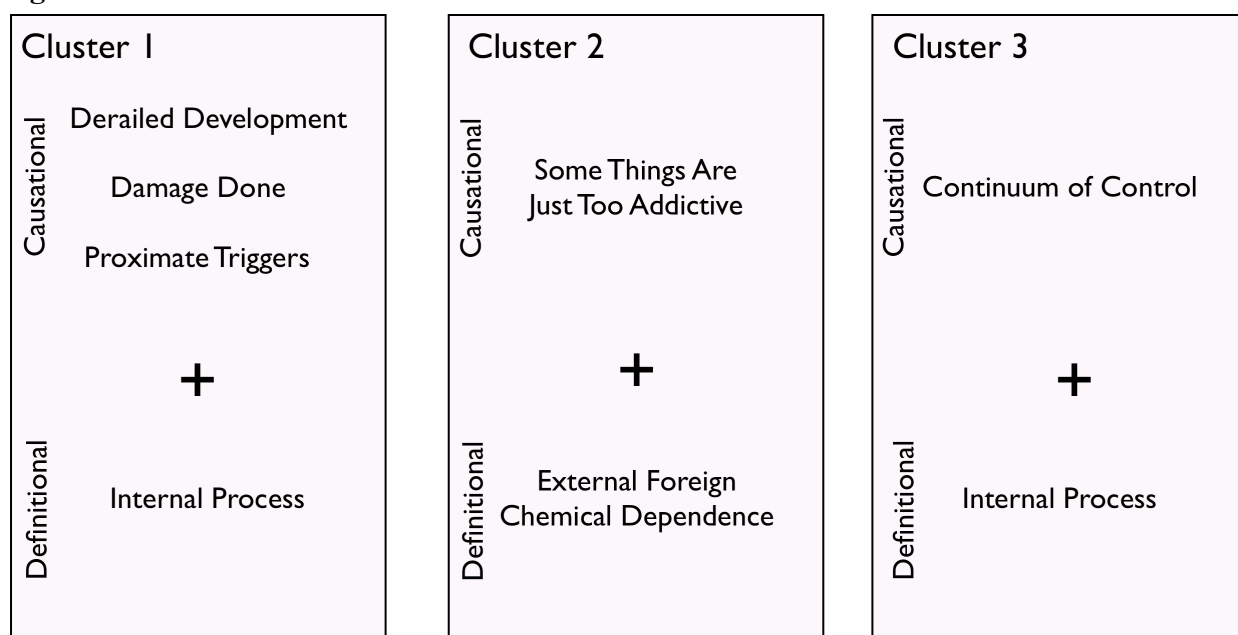
CAUSATION AND INTERVENTION

Research revealed that the specific cultural models informants used to reason about the causes of addiction were also used in thinking about intervention and treatment issues. When one or another of the causation models discussed above became active, it shaped and predisposed informants to think in specific ways about what treatment of addiction entailed.
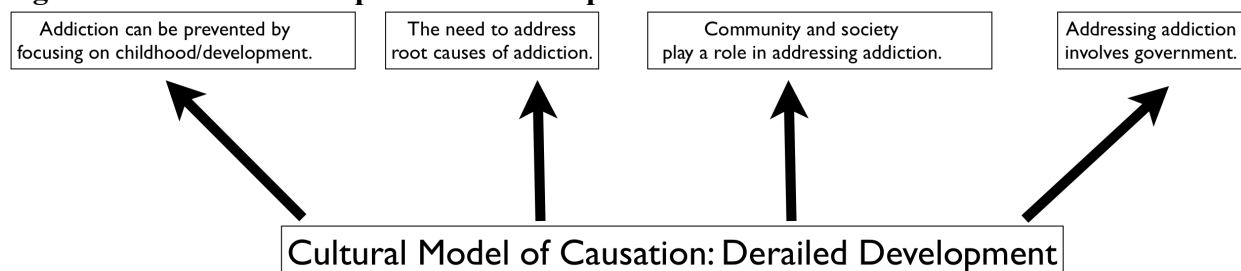
Links between cultural models of causation and perceptions of treatment appropriateness and effectiveness have been studied extensively in anthropology.[xxx] The associations between these two domains in the research described here is consistent with the findings of this literature more generally — demonstrating that the ways people think about the causes of events and conditions shape and bound how they perceive solutions.

The demonstration of this relationship on the issue of addiction suggests the need to be careful in the presentation of addictive behaviors. The discussion below shows that this presentation not only has direct effects in the domain of causation (i.e., how people understand what causes addiction), but also a powerful, if more indirect, role in shaping the treatments people view as effective and appropriate.

1. Derailed development assumptions facilitate recognition that intervention must target development and must involve community, society and the government
The application of the derailed development model structured frequent, highly patterned and standardized discussions of intervention. Figure X illustrates the specific views of addiction intervention that the derailed development model supported.

Figure 4: Derailed Development and Perceptions of Intervention

| Addiction can be prevented by focusing on childhood/development. | The need to address root causes of addiction. | Community and society play a role in addressing addiction. | Addressing addiction involves government. |

Cultural Model of Causation: Derailed Development

A. The application of the derailed development model structured highly patterned and standardized discussions of intervention that focused on the idea that **addiction can be *prevented* by focusing on childhood and development**. Informants assumed that it is what children learn early in life that influences how well they will function as adults and that assuring proper development, and the functioning it facilitates, is a way to prevent addiction.

B. In addition, when informants employed the derailed development model and its more specific nested assumptions, there was a strong focus on the **need for intervention to address the root causes of addiction**. Informants were unanimous that treatment could not be successful unless underlying psychological issues and deficient personal attributes resulting from derailed development were tackled.

> Treatment comes back to figuring out what's caused this and why did it start in the first place. You know, getting down to the root cause of what's at the bottom of this because you can Band-aid all of the symptoms, you can take away the person's bottle of wine but if you don't get down to figure out what the actual problem is or where this all started it's just going to keep resurfacing.
>
> —
>
> The first step is figuring out what the root cause is and where did it all begin and what triggered it.

C. When informants used the assumption that causal factors are shaped by family and wider community and social contexts, they implicated and appreciated a strong role for extra-familial factors in addressing addiction issues. In short, they explained that **families, friends, communities and society should all play a role in addressing addiction issues**.

> You have to do something as a society to make it happen. To make the treatment happen. You have to be proactive. If you become an introvert, and your family has chosen to bail, and your friends have decided to bail, we need to have people

… social workers who are front-line people who can go out and, I hate to say check on people, but for a lack of a better expression, check on people. We need someone who's out there taking temperatures, but not with a thermometer, with social skills. If we could have a psychologist on every corner …

D. In addition, thinking from within this assumption of extra-familial factor importance, informants saw **a prominent role for government in addressing addiction**. They explained that the government is responsible for taking a leading role in shaping community factors and supports that in turn affect addiction outcomes.

I know that one of the functions of government, in my mind at least, is to help people with problems, and so I would say that there needs to be some of that. But I know that the typical response is that, "okay, we'll create a program, and we'll implement that," and inevitably that program might meet the needs of a few, but there's always gonna be great gaps, and I think government has to be one part of the answer.

—

I guess better social programs, where if someone's life is starting to fall apart because of this [addiction], they have an actual institution to turn to instead of them hitting rock bottom, and then trying to find help. We need to catch them further from the bottom.

—

Addiction is about having opportunities. Policymakers have to look at opportunities for people to get out of their addictions. They could be contributing people to the community or society. We shouldn't neglect them. They need to look at the balance of it and make sure that there's opportunities for people that have addictions to have programs and services that can help meet their needs.

2. A consideration of proximate triggers directs perceptions of treatment to include environments
Drawing on the understanding that proximate experiences located in environments can trigger addiction behaviors, informants reasoned that **intervention needs to consider and address environments and the triggers contained in these contexts as a part of addressing addiction**.
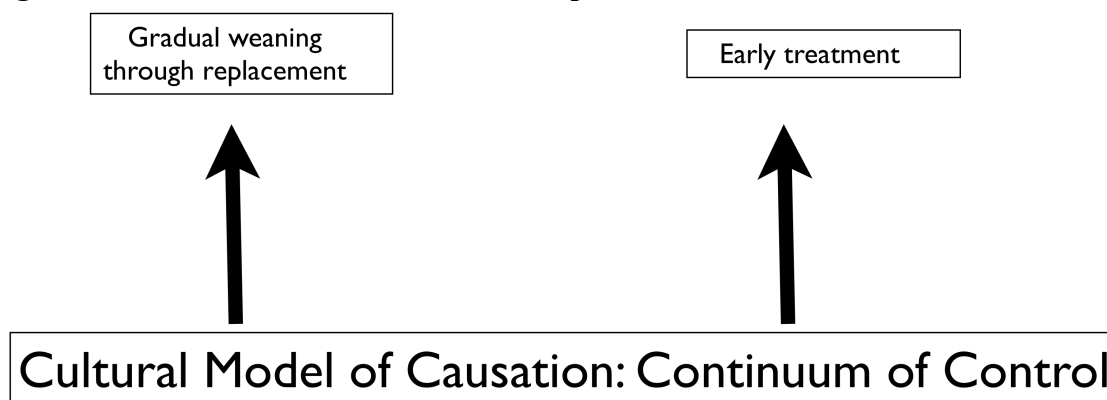
It's [intervention] not being in the environment that I was in when smoking. That was the hardest because the friends that smoke, I want to hang out with them, but if they're going for a smoke, I would go for a smoke, typically. So now it meant not spending as much time with those friends, and not going to the places where people would be smoking to really try and remove it. The best piece of advice I got from one friend was, if you're in a vulnerable stage where you're going to a bar, and they're smoking, don't go. I think relapse occurs for a lot of people when they come straight back into that environment …

3. A focus on the continuum of control directs perceptions of treatment to a graduated model of weaning but also enhances appreciation for early intervention

Figure 5 represents the ways in which the continuum of control cultural model structured thinking about intervention. This is followed by a more detailed discussion of each of these perceptions of treatment.

Figure 5: Continuum of Control and Perceptions of Intervention

```
┌──────────────────┐          ┌──────────────────┐
│  Gradual weaning │          │  Early treatment │
│ through replacement│         └──────────────────┘
└──────────────────┘
         ▲                              ▲
         │                              │
         │                              │
┌──────────────────────────────────────────────────┐
│ Cultural Model of Causation: Continuum of Control │
└──────────────────────────────────────────────────┘
```

A. Using the continuum of control model, informants described treatment techniques that operated on the principle of **gradual weaning through replacement**. From the perspective of the continuum model, replacing unproductive behaviors with productive ones was seen as an important component of this gradual movement "back down the continuum."

> It's not different than, say, a smoker. The success rate of someone stopping cold turkey is 15–20 percent. With anything [any addiction] it takes a gradual drop-off. You can't just stop things immediately.

> —

> I think they're too far into it to just turn back and flip a switch. It's just like a speeding locomotive. You slow a locomotive down, you don't stop it in its tracks, or you've got an accident … If you bring these people to a total stop they will physically crash.

> —

> It's like you need enough to make that shift in thinking to associate with new things, replace it. Replacement is key. If you take any kind of addiction, when you give it up, you're now left with a whole bunch of free time, and if you don't have something to fill that void, what you know is going to come back to replace it, and that is the addiction. So that's one of the key things, being able to offer that alternative, that replacement.

B. In addition, thinking through the continuum model predisposed informants to the notion that
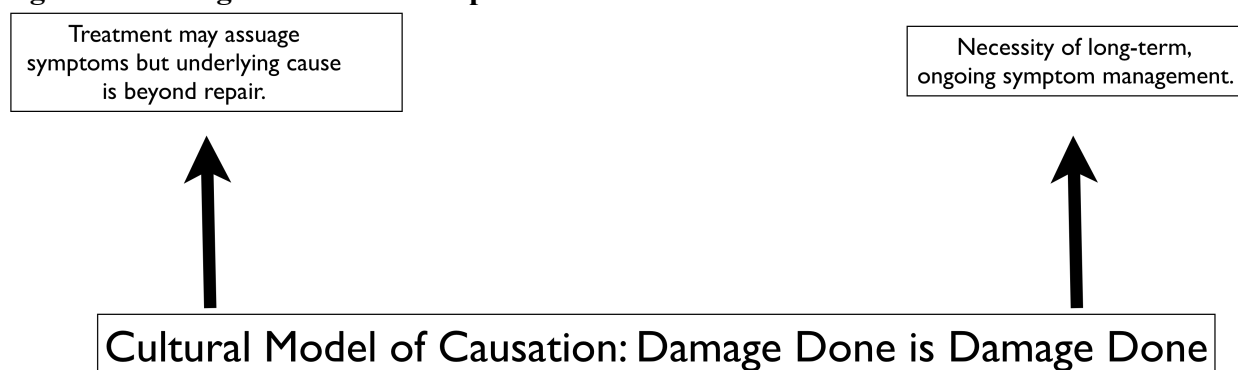
early is better in terms of treatment. In short, thinking through this model of causation, informants endorsed beginning treatment early in the trajectory of an addiction to prevent individuals from moving further toward the total loss of control end of the continuum.

> It depends where you catch people in this [addiction] continuum, how you can influence them, and how you can bring them back. And of course, if you catch them later and later, it becomes more and more difficult because it becomes habit-forming, and habit-forming moves to a need, and that need becomes overwhelming.

4. The assumption that damage done is irrevocable leads to a related perception that treatment is palliative but not a cure
Figure 6 represents the ways in which the damage done cultural model structured thinking about intervention.

Figure 6: Damage Done and Perceptions of Intervention

| Treatment may assuage symptoms but underlying cause is beyond repair. | | Necessity of long-term, ongoing symptom management. |

Cultural Model of Causation: Damage Done is Damage Done

A. When informants thought about the causes of addiction using the deterministic assumption that damage done is damage done, they expressed a highly consistent view that **treatment may assuage symptoms but that the underlying cause is beyond repair** — in short, in the words of one informant, that addiction "never leaves you" and "becomes part of you."

> I think it's something that they'll have all their life. It's something that they carry with them. Someone who has an addiction I don't think that you can turn it off. It's something that [they're] probably going to carry [with] them and they're always going to have that part of their life … unfortunately.

> —

> The part of the addiction that makes it an addiction is that it never leaves you. For the rest of your life, you will always have that. You can treat it. But you'll never cure it. It is something incurable. It is something that is part of you.

B. In positioning a cure as impossible, the damage done model led informants to see the necessity of **long-term and ongoing treatment**. The damage done model created a perception that "curing" addiction was a lost cause, but also structured the perception that "controlling" an

addiction was, in the words of one informant, "all you can really do." Thinking through this model, informants discussed the need for treatment to persist over time because of the ongoing task of controlling the addiction.

> I wouldn't say they ever go back to exactly who they were before the addiction started. I'm sure they'll always be addicted because it's always there. But they can achieve getting control back.

5. A focus on will power leads to perceptions of treatment as predicated on the desire to change

When informants employed the will power assumption, they saw very narrow and specific solutions to addiction issues. They explained that individuals need to take personal responsibility for behaviors, exert **increased discipline and cultivate a desire to change**. Most informants made the case that someone with an addiction cannot be forced to change or get help. During these discussions, informants heavily emphasized the need for addicts to "want more out of their lives" and have the "drive and commitment to address their problem."

> You have to *want* to stop first of all. The first thing is you have to *want* to change that particular pattern of activities you're doing whether it's smoking or maybe you're addicted to something else. So you have to *want* to do it.

> —

> We can't do much at all unless the person in that situation wants more out of life. That's just the life they're going to live and we can't do anything about it. They're an adult, so, you or I might recognize that maybe there's an addictive pattern there or maybe they're running away from something but if they don't recognize it and they don't want help, there's nothing we can do.

CAUSATION AND RESPONSIBILITY

Analysis revealed that, in addition to shaping perceptions of treatments, the models of causation shaped the way that informants thought about *responsibility* for addiction.

1. Addicts are <u>not</u> to blame

Throughout the interviews, informants frequently voiced the opinion that **addicts are not to blame for their addictions**. Informants employed several of the causational models described above to reason about such statements. They explained that addicts are not to blame because addictions are the product of derailed development or that some substances are just too addictive. They also reasoned that addicts are not responsible because the damage done may be irreversible and therefore the individual can no longer be blamed for their behaviors. *Because* of the way that addiction is caused by a movement along the continuum of control — towards the "lack of control" side of the continuum — addicts, by definition, are without control, informants assert, and therefore not responsible for their behaviors.

> I get really upset when people think that they're [someone with an addiction] to

blame. I just know it's not the case. One of my best friends — he's what people would call an addict and it's totally debilitating when he's in the cycle. It's not just that he needs to suck it up. He really is ill just like somebody with pneumonia.

—

This [when someone has an addiction] is where you need people around you, socially, to help you. To bring you to a point where you can deal with it, because I don't think deep down inside that anybody truly wants that. I refuse to believe that people come to life to live on heroin. I don't think any baby in a high chair is like, hey, I'm going to do heroin. I think that, deep down inside, none of them wanted that. I think that at that point, unfortunately, if they've been allowed to get to that point their families have already failed them. I think that at that point, you're relying on a society ... what's the word for it? Intervention, I guess? Because perhaps you don't have the tools because they were never given to you.

—

Blah, blah, blah, "They've made their decision" blah blah [informant indicating what they thought most people would say about responsibility for addiction]. But, I think society needs to help. For Alberta, it's a cycle in terms of gambling. Gambling is a provincial activity and so it's [the responsibility of] the province.

2. Will power, choice and individual responsibility are all closely linked

While relying on some of the cultural models of causation described above led to understandings that addicts are *not* to blame for their addiction, other causation models structured understandings in which addicts *were* seen as fundamentally responsible for their addictions. When informants voiced this opinion they relied on the causational model in which addiction is caused by exposure to immediate triggers and movement along the continuum of control — both things over which informants judged individuals to have control and thus responsibility.

I think it's their own fault. You know, what happens to them isn't our fault. It's self-inflicted. I mean you look at that actor that died. I mean case in point, a guy who just couldn't control himself and he's dead now because of drugs.

—

I can't get that either, addicted to sex. I can't, you know. Like with Tiger Woods. That whole Tiger Woods thing I don't get that. Like I think that's an excuse. It's an excuse. And the food, addicted to food, well I don't get that, either. I think that's an excuse. It's a nice label, "hey, it's not my fault. I'm addicted." But I just don't buy it.

—

I think the way out of disease is the same as the way out of addiction. It's that we do have a certain amount of personal authority, accountability and choice about how we manage our disease, how we manage our dysfunctions, how we manage our addictions. Self-mastery is something we can all have and it's about rebuilding those building blocks of a whole healthy human, our self-esteem and our personal value system and our sense of morality and whatever. When we start rebuilding all those things, that's our pathway to healing addiction. My hesitancy to qualify addiction as a disease is that in our society we no longer hold people accountable. People aren't accountable for their health in diseases, they aren't accountable for addictions, they aren't accountable for being alcoholics, they aren't accountable for drinking and driving and they're not accountable for anything. We take away the personal accountability and I disagree with that inherently.

Figure 7: Connections Between Causal Assumptions and Perceptions of Intervention

	Derailed Development		Proximate Triggers	Damage Done	Continuum of Control	Will Power
Intervention	Addiction can be prevented by focusing on childhood/development.	Community and society play a role in addressing addiction.	Environments must be considered.	Gradual weaning through replacement.	Treatment may assuage symptoms but underlying cause is beyond repair.	Cultivate a desire to change.
	The need to address root causes of addiction.	Addressing addiction involves government.		Early treatment.	Necessity of long-term, ongoing symptom management.	

RECESSIVE MODELS

Two other shared and patterned assumptions emerge from the cultural models interviews. While these models were not as frequently employed and were not used with the same degree of automaticity as the dominant models described above, they are nonetheless important. We call these "recessive" models, as they can be thought of as ways that are *available* to the public to think about addiction, but patterns of reasoning that individuals don't *readily* or *automatically*

employ in understanding this issue. Put another way, these latent models require specific cuing to become active in the mind.

1. Changing patterns of behavior is effective treatment

A number of informants displayed patterns of talk that revealed an interesting recessive cultural model in which informants assumed that one way of treating addiction is through the addictive behavior itself. They described a process in which treatment could employ the addiction source as a platform through which more productive behaviors could be introduced, accepted and adopted. For example, if one is addicted to work, the work environment may be used as a setting to engage the addict in adaptive rather than maladaptive behaviors.

> [Discussion about how to help someone addicted to exercise.] I think that if it was a friend or relationship situation, you could try talking to them. This would work particularly well in a relationship where the other partner could suggest some activities to draw them away from that obsession. Where they would still be physically active. Living in the Calgary area with our wonderful trails, and things in our provincial parks and our national parks — you could say, "Why don't we go for a hike this weekend? or "Let's go to the Fairmont for the weekend." Or "Why don't we golf?" You've got to make it appealing — something that would appeal to them. And I think you'd need to really steer that person away from their obsessive exercising. It would have to be something "physical" but less so, because they wouldn't be content to just lay around for a whole weekend.

> —

> You teach them a different way of dealing with it. Include the exercise with the Wii into the activity so you're getting the physical activity in there [speaking about a person addicted to gaming]. With the work [addiction], you're bringing the social aspect to the workplace. With the food [addiction], you're teaching the person how to eat properly where they're eating way too much.

> —

> [You have to] move it towards a different direction, but incorporate what's going on, so they can look at what has changed. So lack of physical activity, okay let's develop something that's gonna make people start moving again, and doing that. So [it's] working within it and also encouraging other activities …

2. Genes can cause addiction

Analysis also revealed a recessive assumption that genetics can be a cause of addiction. Informants talked about inheriting genes that make one vulnerable to certain behaviors or substances.

> I'm more at risk of having an addictive behavior because my parents are alcoholics, for example.

—

Interviewer: Why do you think people have addictions?

Informant: You hear it's like a hereditary thing. So once you start you can't stop because it's just in your body.

—

You could very well be born with the inclination to have an addiction but maybe you don't and then maybe you get to a certain point where [there's a] crisis in your life [and] it just kicks in. I mean you hear of stories where parents are alcoholics and their kids are alcoholics.

The presence of this recessive model is an opportunity for scientists and advocates to discuss the role of genetics in addiction susceptibility. Furthermore, the hint at gene-environment interaction evident in several of the quotes provided above suggests there is an opportunity, in activating this recessive model, to communicate about the gene-environment interaction that occupied the central causal element of the science story of addiction. However, the lack of an understanding about how it is exactly that genes function as a cause of addiction and the very tenuous association between genes and environments warrant considerable caution. Without building and concretizing a better working understanding of genetics, scientific explanation of how genes are implicated in addiction processes are likely to be ineffective.[xxxi]

OVERLAPS AND GAPS IN UNDERSTANDING

The goals of this analysis have been to: 1) document the way experts talk about and explain the issue of addiction; 2) establish the way that the Albertan public understands this and related issues; and 3) compare and "map" these explanations and understandings to reveal the overlaps and gaps between these two groups. We now turn to this third task.

The primary focus of the mapping-the-gaps exercise is to identify expert/public gaps in understanding — as these features become primary targets in prescriptive reframing work. However, in addition to gaps, comparative analysis suggests that there are significant areas of overlap between expert and public understandings of addiction. Generally, FrameWorks views these overlaps as features of the cognitive landscape that communications can strategically activate and build on to shift thinking away from more dominant and unproductive patterns and to build scientifically consonant public understandings. Below we identify the major conceptual overlaps that emerged from our comparative analysis.

1. **A Developmental Focus.** Both groups employed a developmental focus in understanding the causes of addiction, with experts focusing on the development of neurobiological systems and Albertans focusing on development from a fuzzier understanding of the embedding and rooting of early experiences. What is most important in this overlap, despite process-related differences (discussed in the gaps section below), is that both

groups share an appreciation for the fact that the processes of development are implicated in addiction behaviors and vulnerabilities.

2. **The Importance of Control.** Both experts and Albertans positioned the concept of "control" as a foundational feature of addiction. For experts, lack of control was ascribed a definitional role, whereas for Albertans, loss of control was employed in reasoning about causation. As common ground, science translations may be able to use the way that Albertans assume importance of the concept of control, to frame and translate the behavioral aspect of addiction.

3. **Early Matters.** Analysis revealed the shared understanding that *early matters* in addiction intervention.

4. **Definitional Ambiguity.** While the overlaps described above are largely promising from a strategic communications perspective, there was one area of common ground that suggests less promise. The tension in the field of addiction science regarding the degree to which common processes exist across "types" of addiction is mirrored in the public's definitional models. Because of these coexisting discords, the scientific tension is highly problematic in translational efforts. Such within-discipline confusion is likely to result in frustration for Albertans, and an ensuing cognitive process in which Albertans re-establish meaning by filling inconclusions with the cognitively satisfy dominant cultural models described above.

The mapping-the-gaps comparative analysis also revealed a key set of gaps between the ways that experts and Albertans think about and understand addiction. Below, we take each one of the conceptual gaps in understanding and discuss its communications implications with greater specificity.

1. **Definitional Focus: Neurobiology versus external substances.** As discussed above, one of the definitional models available to Albertans — that addiction is an internal process — is at least not dissonant with the scientific emphasis on brains and biology. However, Albertans' other available definitional model — that addiction is about external foreign substances — presents a starkly different attentional focus and definitional parameter. The latter focus can be seen as a direct barrier to the science of addiction that seeks to ground addiction in brain- and biologically-based processes. Navigating around this external definitional focus is a "must do" for communications on this issue. Furthermore, a simplifying model that explains the basics of the neurobiological reward systems appears promising. Such a tool could both redirect Albertans' focus toward the internal definitional model and build out an understanding of neurobiology and the development of reward systems.

2. **Causational Process: Gene-environment interaction versus ?????** Research revealed a dramatic gap in how scientists and Albertans understand addiction causation. Experts focused causational discussions on gene-environment interactions that shape neurobiological systems. This understanding was found to be largely absent from the data gathered from Albertans, who had their own well-formed ideas and assumptions regarding causal mechanisms of addiction.

3. **How Development Happens: Development as building brains versus fuzzy understanding of embedding experiences.** When Albertans explained causational aspects of addiction they reasoned that addiction is a product of derailed development. However, when pushed to explain how this implicated process *works*, discourse showed a lack of process-understanding. In short, Albertans appear to be missing an understanding of how development happens. Experts, on the other hand, had an understandably clear sense of this process. Communications on addiction must build better understandings of developmental processes, drawing from the larger core story of early child development.[xxxii]

4. **Where the Processes Occur: The brain versus ?????** Much of the science of addiction focuses on the brain and the way that early experiences affect the biology of this organ. The lack of connection between experiences and brains, and the general absence of biology from the public's thinking on this issue, means that careful communications research is required to figure out how to model the ways in which experiences and brains are connected and how this organ is implicated in the etiology of addiction.

5. **Responsibility: Neurobiological systems and environments versus the addict.** While not the only way of reasoning about issues of responsibility, the "addict is to blame" and the will power understandings stand in stark contrast to the sense of responsibility that characterized the expert discourse. For experts, responsibility was vested in the factors that shape developing neurobiological systems — including environments, experiences and exposures.

6. **Potential for Change: Issues can be addressed versus damage done is damage done.** While not emerging as an explicit theme, there was an implicit thread that ran through all expert data — the position that *addiction is an issue about which much can be done*. In short, that there are powerful evidence-based ways of addressing addiction. When employing the cultural model of damage done is damage done, an expansive gap is evident between Albertans and the science of addiction on this point.

7. **Intervention Approach: Quality versus thin understanding of programs.** Analysis of expert materials revealed a strong emphasis on the fact that some programs work and others are less than effective. Interviews with Albertans revealed a fundamental lack of emphasis on and understanding of programs that address addiction. Beyond the recessive cultural model of changing behavior being important and other generalities about "programs that help people," data gathered from Albertans was entirely devoid of discussions about how, why and what programs effectively address addiction. This gap is ripe for a simplifying model that both concretizes the neurobiology of addiction and clarifies how programs may address these systems and the addictions they cause.

Figure 7 below summarizes both the overlaps and gaps between expert explanations and lay cultural models.

Figure 7: Schematic of the Conceptual Overlaps and Gaps Between Experts and the Public

1.Definitional Focus
2.Causational Process
3.How Development Happens
4.Where the Processes Occur

Experts

What addiction is
•Neurobiologically-based
•Impaired rational decision-making

What causes addiction
•Gene-environment interaction

Intervention
•Quality matters
•Early in development
•Long-term

Responsibility
•Neurobiological systems

1.Developmental Focus
2.Importance of Control
3.Early Matters
4.Definitional Ambiguity

Public

What addiction is
•Foreign chemical
•Internal "need" response

What causes addiction
•Derailed development
•Proximate triggers
•Continuum of control
•Substances too addictive
•Damage done
•Will power

Intervention
•Focus on development
•Address root causes
•Community/society/govt.
•Address environment
•Root cause beyond repair
•Long-term
•Gradual weaning
•Early
•Discipline required

Responsibility
•Not addict
•Addict

5.Responsibility
6.Potential for Change
7.Intervention Approach

CONCLUSIONS

It is our firm position that, without careful reframing that pays attention to both the promising and perilous existing features of the public's thinking, the science of addiction will be exceedingly difficult to translate and that the policy implications suggested by this science will remain unrealized at best or, at worst, misunderstood. Should many of the assumptions that inhibit public access to this science persist, experts and advocates stand little chance of forwarding the message that addiction is an issue rooted in biology, that biology is shaped by experiences and environments, and that Alberta and its citizens have the responsibility to improve these environments and the supports and resources that are publically available. Communicators will need to provide Albertans with alternative ways of thinking about what addiction is and what factors cause these states. Assumptions of causation may provide a

particularly powerful strategic opportunity on which to build better understanding of addiction. This is the focus of the next phase of communications research.

While this research represents the first phase of a much larger investigation, several preliminary recommendations and future directions have become apparent. We present these here as *preliminary communications recommendations*:

1. **Activate and expand the internal need response model.** The definitional understanding that addiction is an internal need response is highly promising from a communications perspective. Communications and translational efforts should activate this highly available way of understanding addiction. However, this is only a first step. Translational efforts must cue this understanding and then build on it by supplying carefully framed information on *what these internal responses are and how they work to shape behavior.* As FrameWorks moves forward with its research on addiction, we will be working with scientists to design and test specific ways of using the internal process understanding and simplifying neurobiology to build scientifically consonant understandings of addiction.

2. **Appeal to early matters, but recalibrate to include pre-symptomatic periods.** The fact that Albertans are predisposed to appreciate the importance of interventions and treatment that begin "early" is a truly promising finding. However promising this assumption may be, it requires reframing strategies to be optimally effective. As naturally expressed, the "early" in "early matters" was assumed to be "early in the process of addiction" and thus preferences largely reactive measures. The parameters of "early" must be recalibrated to correspond to "early in life" rather than early in the continuum of addiction. In other words, communications must shift the way early is defined such that it creates space for preventative and promotional, rather than reactionary, programs.

3. **Build on derailed development understanding by employing the early child development core story.** The association between the domains of early child development and addiction is consonant with the science of addiction. Furthermore, this connection allows communicators to make use of a set of reframing tools that have been vetted through a decade of ongoing communications research. The way that Albertans connect issues of development with addiction causation suggests that using communications tools and recommendations to optimally frame the issue of *development* will likely build more solid understandings of *addiction*.

4. **Deliberately activate the role of community/government/society.** Research revealed that Albertans are well situated to appreciate the role and responsibility of communities, governments and society more generally in addressing addiction issues. Communications should capitalize on this cognitive predisposition by explicitly discussing social ramifications and responsibilities on this issue.

5. **Avoid discussions of specific substances early in communications.** We recommend translation efforts avoid, at least early in communications, discussions that specifically reference substances, especially illicit drugs. These discussions threaten to cue the definitional assumption in which addictions are seen to be all about external chemicals that our research has suggested is highly unproductive in thinking about addiction.

6. **Proceed with caution on causation.** Our research suggests that communicators should proceed with considerable caution when messaging about addiction causation. Communicators must be careful about which models of causation are activated because of the effect of these models in shaping thinking about issues *beyond causation*. Our research suggests that specific ways of understanding causation powerfully preference certain treatment modalities and senses of responsibility. This highlights the importance of a cognitively informed approach to communication on this issue.

7. **Avoid invigorating will power.** Despite many other ways of thinking about causation, the will power understanding is perhaps the most dangerous. The activation of this type of thinking threatens to send addiction issues spinning into the realm of individual responsibility and solutions. These understandings block thinking about the roles that government and society play in addressing this issue.

APPENDIX: THEORETICAL FOUNDATIONS

The following are well-accepted characteristics of cognition and features of cultural models that figure prominently into the results presented in this report and in FrameWorks' research more generally.

1. Top-down nature of cognition
Individuals rely on a relatively small set of broad, *general* cultural models to organize and make sense of information about an incredibly wide range of *specific* issues and information. Put another way, members of a cultural group share a set of common general models that form the lens through which they think and make sense of information pertaining to many different issues. This feature of cognition explains why FrameWorks' research has revealed many of the same cultural models being used to think about seemingly unconnected and unrelated issues — from education to health to child development. For example, FrameWorks' research has found that people use the *mentalist* model to think about child development and food and fitness — seemingly unrelated issue areas. For this reason, we say that cognition is a "top-down" phenomenon. *Specific* information gets fitted into *general* categories that people share and carry around with them in their heads.

2. Cultural models come in many flavors but the basic ingredients are the same
At FrameWorks, we often get asked about the extent to which the cultural models that we identify in our research and that we use as the basis of our general approach to social messaging apply to ALL cultures. That is, people want to know how inclusive our cultural models are and to what extent we see/look for/find differences across race, class or other cultural categories. Because our aim is to create messaging for mass media communications, we seek out messages that resonate with the public more generally and, as such, seek to identify cultural models that are most broadly shared across society. We ensure the models are sufficiently broad by recruiting diverse groups of informants in our research who help us to confirm that the models we identify operate broadly across a wide range of groups. Recruiting diverse samples in our cultural models interviews often confuses people who then think we are interested in uncovering the nuanced ways in which the models take shape and get communicated across those groups, or that we are interested in identifying different models that different groups use. To the contrary, our aim is to locate the models at the broadest possible levels (i.e., those most commonly shared across *all* cultural groups within a large social group) and to develop reframes and simplifying models that advance those models that catalyze systems-level thinking. The latter does not negate the fact that members of different cultural groups within a larger cultural group may respond more or less enthusiastically to the reframes, and this is one of the reasons why we subject the reframes that we recommend to our clients to rigorous experimental testing using randomized controls that more fully evaluate their mass appeal.

3. Dominant and recessive models
Some of the models that individuals use to understand the world around us are what we call "dominant" while others are more "recessive," or latent, in shaping how we process information. Dominant models are those that are very "easy to think." They are activated and used with a high degree of immediacy and are persistent or "sticky" in their power to shape thinking and understanding — once a dominant model has been activated, it is difficult to shift to or employ another model to think about the issue. Because these models are used so readily to understand

information, and because of their cognitive stickiness, they actually become easier to "think" each time they are activated — similar to how we choose well-worn and familiar paths when walking through fields, and in so doing these paths become even more well-worn and familiar. There is therefore the tendency for dominant models to become increasingly dominant unless information is reframed to cue other cognitively available models (or, to continue the analogy here, other walking paths). Recessive models, on the other hand, are not characterized by the same immediacy or persistence. They lie further below the surface, and while they *can* be employed in making sense of a concept or processing information about an issue — they *are* present — their application requires specific cues or primes.

Mapping recessive models is an important part of the FrameWorks approach to communication science and a key step in reframing an issue. It is often these recessive patterns of thinking that hold the most promise in shifting thinking away from the existing dominant models that often inhibit a broader understanding of the role of policy and the *social* aspect of issues and problems. Because of the promise of these recessive models in shifting perception and patterns of thinking, we discuss them in this report and will bring these findings into the subsequent phases of FrameWorks' iterative methodology. During focus group research in particular, we explore in greater detail *how* these recessive models can most effectively be cued or "primed," as well as how these recessive models *interact* with and are *negotiated* vis-à-vis emergent dominant models.

4. The "nestedness" of cultural models
Within the broad foundational models that people use in "thinking" about a wide variety of issues lay models that, while still general, broad and shared, are *relatively* more issue-specific. We refer to these more issue-specific models as "nested." For example, in our past research on executive function, when informants thought about basic skills, they employed a model for understanding where these skills come from, but research revealed that this more specific model was nested into the more general *mentalist* cultural model that informants implicitly applied in thinking this issue. Nested models often compete in guiding or shaping the way we think about issues. Information may have very different effects if it is "thought" through one or another nested model. Therefore, knowing about which models are nested into which broader models helps us in reframing an issue.

About FrameWorks Institute:
The FrameWorks Institute is an independent nonprofit organization founded in 1999 to advance science-based communications research and practice. The Institute conducts original, multi-method research to identify the communications strategies that will advance public understanding of social problems and improve public support for remedial policies. The Institute's work also includes teaching the nonprofit sector how to apply these science-based communications strategies in their work for social change. The Institute publishes its research and recommendations, as well as toolkits and other products for the nonprofit sector, at www.frameworksinstitute.org.

Please follow standard APA rules for citation, with FrameWorks Institute as publisher. Kendall-Taylor, N. (2010). *Rounding up the associations: How perceptions of addiction are recruited*. Washington, DC: FrameWorks Institute.

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[i] See Glaser, B.G., & Strauss, A.L. (1967). *The discovery of grounded theory: Strategies for qualitative research.* Chicago, IL: Aldine Publishing and Strauss, A.L., & Corbin, J. (1990). *Basics of qualitative research: Grounded theory procedures and techniques*. Newbury Park, CA: Sage Publications.

[ii] The inclusion of professionals from such fields would have likely brought expert knowledge into our sample and impeded our ability to gather data and discern broad cultural models employed in reasoning and processing information about the target concepts.

[iii] Quinn, N. (2005). *Finding culture in talk: A collection of methods*. New York, NY: Palgrave Macmillan.

[iv] Quinn N., & Holland, D. (1987). Culture and cognition. In Holland, D., & Quinn, N. (Eds.), *Cultural models in language and thought (*pp. 3-40*)*. Cambridge, MA: Cambridge University Press.

[v] Priming informants with the content can be problematic in these interviews as the ability to identify and describe cultural models relies on getting "top of mind" answers and explanations from informants, rather than carefully thought out and pre-constructed responses to the issue in question. If primed with the focus of the interview informants tend to "prepare" by doing "research" on the subject, yielding results that are actually not representative of their own understandings and explanations of issues.

[vi] Quinn, N. (2005). *Finding culture in talk: A collection of methods*. New York, NY: Palgrave Macmillan.

[vii] This is a commonly used technique in the person-centered interview approach and is a cornerstone of anthropological methods more generally. For more on person-centered interviewing, see: Levy, R., & Hollan, D. (1998). Person-centered interviewing and observation in anthropology. In Bernard, H.R. (Ed.), *Handbook of methods in cultural anthropology*. Walnut Creek, CA: Alta Mira Press.

In addition, interviews were designed to begin broadly, and in as open-ended a way as possible, to uncover the organizational assumptions that *informants* used to understand the topic of addiction. One approach, widely used in cultural models research, which we employed was to avoid direct questions about the topic of research. Instead, researchers employed an indirect questioning approach that requires the interviewee to unconsciously draw on their knowledge of the study topic to respond to the questions. In this case, we constructed scenarios that were laden with addiction-related themes and asked the informants to respond to these examples. The implicit nature of cultural models means that these tacit constructs are easier to *employ* than *describe*. This is particularly the case when dealing with abstract

topics, ones that are unfamiliar, and those that may be well known but seldom verbally communicated — such as addiction. Therefore, an effective method of eliciting cultural models is, instead of asking informants to describe them, to get informants to *apply them in thinking through or explaining scenarios.* Thus our interview sought to observe cultural models in action rather than through conscious reflectionary exercises. In this indirect approach, we read three stories about individuals who appeared to exhibit signs of addiction in their behaviors, and asked interviewees a range of questions about what they thought was going on in each case and how the situation might be addressed. This gave informants ample opportunity to draw on and indirectly display their implicit understandings of addiction in their responses.

In the second half of the interview, FrameWorks' researchers employed a slightly more direct approach, asking informants to respond to general, open-ended questions about addiction that, again, were designed to get them to employ their assumptions about the issue, that we could capture and analyze. Examples of these types of questions included, but were not limited to: 1) Tell me what you think about when you hear the word addiction?; 2) How would you explain what addiction is?; 3) Why do you think people have addictions?; 4) What do you think causes addiction?; and 5) What do you think can be done about addiction? Informants were first asked to respond to general questions like these and were then probed for further explanations of various aspects of their responses. This pattern of probing leads to long conversations that stray (as is intended) from the original question. Both the open-ended nature of, and the order of topics covered in, the interview guide allowed informants to identify and introduce the information and entailments that *they* implicitly connected to the issue and thought most relevant. This unstructured approach to questioning in which the informant determines the course of the interview is also an effective method to avoid biases resulting from set question ordering. In such setups, thinking of one topic based on previous discussions can lead to patterned distortions in the data gathered.

We should also note that the strength of the cultural models interview method and the data it produces rests in its power to reveal *general patterns* of thinking (cultural models) that individuals commonly, repeatedly and implicitly employ in talking and thinking. In short, these interviews are deliberately designed to produce data that allows, through analytical methods described below, researchers to "see," in talk, the general patterns "in mind" that implicitly structure the way Albertans think about addiction.

[viii] For description of grounded theory analysis, see: Glaser, B.G., & Strauss, A.L. (1967). *The discovery of grounded theory: Strategies for qualitative research.* Chicago, IL: Aldine Publishing. And Strauss, A.L., & Corbin, J. (1990). *Basics of qualitative research: Grounded theory procedures and techniques.* Newbury Park, CA: Sage Publications. For description of social discourse analysis, see Strauss, C. (2005). Analyzing discourse for cultural complexity. In Quinn, N. (Ed.), *Finding culture in talk.* New York NY: Palgrave Macmillan. And Strauss, C. *Who belongs here and what do we all deserve? Americans' discourses about immigration and social welfare.* Unpublished manuscript. For description of cultural models analysis, see Quinn, N. (1987). Convergent evidence of a cultural model of American marriage. In Holland, D. & Naomi, Q. (Eds.), *Cultural models in language and thought* (pp. 173-194). Cambridge, MA: Cambridge University Press.

[ix] In addition to the points discussed below, which represent definitional emphases across the sample of experts interviewed and thematic analysis of the literature, there was another point that emerged in the course of expert interviews. This point appears important but, in analysis, did not achieve the consensus to constitute an element of the core story. In two interviews the idea of "evolutionary lag" was discussed. This was the idea that the systems that underlie addiction behaviors and responses were at one time advantageous and conferred benefits, leading to an increased likelihood of individual survival and procreation. Put another way, addiction may have once been naturally selected for as an adaptation to a specific environmental context that no longer exists today — what was once an advantageous adaptation is now, in a changed context, a liability. This same evolutionary line has been widely used as an explanation for obesity — a biological craving for fat was advantageous and selected for in a context in which fats were at a shortage, but in the presence of readily available sources of fat, this craving has become maladaptive. This argument was used in two interviews as an explanation for addiction — that need and myopic focus may have been adaptive and selected for in a previous environment, but now, due

to different environmental conditions (i.e., the presence of chemicals that harm the body) these same previously advantageous systems and responses have become detrimental.

[x] See: Chambers, R.A. (2008). Impulsivity, dual diagnosis, and the structure of motivated behavior in addiction. *Behavioral and Brain Sciences, 31,* 443-444.

Chandler, R.K., Fletcher, B.W., & Volkow, N.D. (2009). Treating drug abuse and addiction in the criminal justice system: Improving public health and safety. *Journal of the American Medical Association, 301,* 183-190.

Hyman, S.E. (2005). Addiction: A disease of learning and memory. *American Journal of Psychiatry, 162,* 1414-1422.

Hyman, S.E. (2007). The neurobiology of addiction: Implications for voluntary control of behavior. *The American Journal of Bioethics, 7*, 8-11.

Le Moal, M. (2008). Negative affects are part of the addiction syndrome. *Behavioral and Brain Sciences, 31,* 451.

[xi] Leshner, A.I. (1997). Addiction is a brain disease, and it matters. *Science, 278,* 45-47.

[xii] Bickel, W.K., Miller, M.L., Yi, R., Kowal, B., Lindquist, D.M., & Pitcock, J.A. (2007). Behavioral and neuroeconomics of drug addiction: Competing neural systems and temporal discounting processes. *Drug and Alcohol Dependence, 90S,* S85-S91.

Diekhof, E.K., Falkai, P., & Gruber, O. (2008). Functional neuroimaging of reward processing and decision-making: A review of aberrant motivational and affective processing in addiction and mood disorders. *Brain Research Reviews, 59,* 164-184.

Koob, G.F., & Le Moal, M. (2008). Addiction and the brain antireward system. *Annual Review of Psychology, 59,* 29-53.

Le Moal, M. (2008). Negative affects are part of the addiction syndrome. *Behavioral and Brain Sciences, 31,* 451.

Verdejo-Garcia, A., & Bechara, A. (2009). A somatic marker theory of addiction. *Neuropharmacology, 56,* 48-62.

[xiii] See: Tsuang, M.T., Lyons, M.J., Eisen, S.A., Goldberg, J., True, W., Lin, N., … Eaves, L.J. (1996). Genetic influences on DSM-III-R drug abuse and dependence: A study of 3,297 twin pairs. *American Journal of Medical Genetics, 67,* 473-477.

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Uhl, G.R., Drgon, T., Li, C-Y., Johnson, C., & Liu, Q-R. (2009). Smoking and smoking cessation in disadvantaged women: Assessing genetic contributions. *Drug and Alcohol Dependence, 104S,* S58-S63.

Shaffer, H.J., LaPlante, D.A., LaBrie, R.A., Kidman, R.C., Donato, A.N., & Stanton, M.V. (2004). Toward a syndrome model of addiction: Multiple expressions, common etiology. *Harvard Review of Psychiatry, 12,* 367-374.

Verdejo-Garcia, A., Lawrence, A.J., & Clark, L. (2008). Impulsivity as a vulnerability marker for substance-use disorders: Review of findings from high-risk research, problem gamblers, and genetic association studies. *Neuroscience and Biobehavioral Reviews, 32,* 777-810.

Pauly, J.R., & Slotkin, T.A. (2008). Maternal tobacco smoking, nicotine replacement and neurobehavioral development. *Acta Paediatrica, 97,* 1331-1337.

Wickstrom, R. (2007). Effects of nicotine during pregnancy: Human and experimental evidence. *Current Neuropharmacology, 5,* 213-222.

Caprioli, D., Celentano, M., Paolone, G., & Badiani, A. (2007). Modeling the role of environment in addiction. *Progress in Neuro-Psychopharmacology & Biological Psychiatry, 31,* 1639-1653.

[xiv] See: Carroll, K.M., & Onken, L.S. (2005). Behavioral therapies for drug abuse. *American Journal of Psychiatry, 162,* 1452-1460.

Chandler, R.K., Fletcher, B.W., & Volkow, N.D. (2009). Treating drug abuse and addiction in the criminal justice system: Improving public health and safety. *Journal of the American Medical Association, 301,* 183-190.

Volkow, N.D., & Li, T-K. (2004). Drug addiction: The neurobiology of behavior gone awry. *Nature Reviews Neuroscience, 5,* 963-970.

[xv] See: Andersen, S.L., & Teicher, M.H. (2009). Desperately driven and no brakes: Developmental stress exposure and subsequent risk for substance abuse. *Neuroscience and Biobehavioral Reviews, 33,* 516-524.

Shea, C.W. (2008). From the neurobiologic basis of alcohol dependency to pharmacologic treatment strategies: Bridging the knowledge gap. *Southern Medical Journal, 101,* 179-185.

Thatcher, D.L., & Clark, D.B. (2008). Adolescents at risk for substance use disorders. *Alcohol Research & Health, 31,* 168-176.

Volkow, N.D., & Li, T-K. (2004). Drug addiction: The neurobiology of behavior gone awry. *Nature Reviews Neuroscience, 5,* 963-970.

[xvi] See: Chandler, R.K., Fletcher, B.W., & Volkow, N.D. (2009). Treating drug abuse and addiction in the criminal justice system: Improving public health and safety. *Journal of the American Medical Association, 301,* 183-190.

O'Brien, C.P., Volkow, N., & Li, T-K. (2006). What's in a word: Addiction versus dependence in DSM-V. *American Journal of Psychiatry, 163,* 764-765.

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[xviii] See: Diekhof, E.K., Falkai, P., & Gruber, O. (2008). Functional neuroimaging of reward processing and decision-making: A review of aberrant motivational and affective processing in addiction and mood disorders. *Brain Research Reviews, 59,* 164-184.

Garavan, H., Kaufman, J., & Hester, R. (2008). Acute effects of cocaine on the neurobiology of cognitive control. *Philosophical Transactions of the Royal Society B, 363*, 3267-3276.

Goldstein, R.Z., Craig, A.D., Bechara, A., Garavan, H., Childress, A.R., Paulus, M.P., & Volkow, N.D. (2009). The neurocircuitry of impaired insight in drug addiction. *Trends in Cognitive Sciences, 13*, 372-380.

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Redish, A.D., Jensen, S., & Johnson, A. (2008). A unified framework for addiction: Vulnerabilities in the decision process. *Behavioral and Brain Sciences, 31,* 415-487.
[xix] See: Diekhof, E.K., Falkai, P., & Gruber, O. (2008). Functional neuroimaging of reward processing and decision-making: A review of aberrant motivational and affective processing in addiction and mood disorders. *Brain Research Reviews, 59,* 164-184.
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Petry, N.M. (2006). Should the scope of addictive behaviors be broadened to include pathological gambling. *Addiction, 101(S1),* 152-160.
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Shaffer, H.J., LaPlante, D.A., LaBrie, R.A., Kidman, R.C., Donato, A.N., & Stanton, M.V. (2004). Toward a syndrome model of addiction: Multiple expressions, common etiology. *Harvard Review of Psychiatry, 12,* 367-374.
Verdejo-Garcia, A., Lawrence, A.J., & Clark, L. (2008). Impulsivity as a vulnerability marker for substance-use disorders: Review of findings from high-risk research, problem gamblers, and genetic association studies. *Neuroscience and Biobehavioral Reviews, 32,* 777-810.
[xx] This content and application distinction parallels one made by Quinn between the "Structure" and "Agency" of cultural models. For a discussion of this distinction, see Quinn, N. & Holland, D. (1987). Culture and cognition. In Holland, D. & Quinn, N. (Eds.), *Cultural models in language and thought* (pp. 3-40). Cambridge, MA: Cambridge University Press.
[xxi] This is all not to suggest that people are lazy and look for the easy way out in thinking about issues, but that on a more cognitive and implicit level, when an understanding fits easily and naturally with a question and generates information that fits neatly into slots, we tend to leave it at that, fill in the information and our brains stop short of actively seeking out other explanations for something that has already, in cognitive terms, been satisfactorily explained.
[xxii] Kendall-Taylor, N. (2010). *Experiences get carried forward: How Albertans think about early child development*. Washington, DC: FrameWorks Institute.
[xxiii] See the appendix for a discussion of the "nestedness" of cultural models and other fundamental aspects in the theory of cultural models.
[xxiv] Kendall-Taylor, N. (2010). *Experiences get carried forward: How Albertans think about early child development*. Washington, DC: FrameWorks Institute.
[xxv] FrameWorks has found, primarily in work conducted in the U.S., a more powerful and exclusionary demonstration of this assumption about the role of family in shaping outcomes. In the U.S. we refer to this as the *family bubble* cultural model. The basis of the assumption is that families are the *only* context that matters and that child development and other processes take place within the "bubble" of the family and narrowly within the confines of the home. We have found that this assumption is powerful in shaping much of the way Americans talk, think and reason about issues ranging from child mental health to education and even health.
FrameWorks' research in Alberta, including the addiction research described here, has revealed a more nuanced assumption about the role of the family in shaping outcomes. As described above, Albertans implicitly recognize the importance of the family in shaping outcomes. However, they also share the understanding that these families are embedded in and influenced by communities and a wider range of actors and factors that are at play in shaping these contexts — from resources, to community spaces and the government policies that shape them. The result — that families as well as a wider swath of community factors influence the deep-seated causes of addiction — is consonant with this more nuanced

assumption about the relationship between families and communities and the factors that they shape. Put another way, Albertans think addiction results from experiences that occur early in life and see families as integral, though not independent from communities, in shaping these experiences.

[xxvi] This illustrates an important property of cultural models — that members of a culture share and access a limited number of "general purpose" models to understand an infinitely wide range of subjects — in this case that because informants placed part of the discussion of addiction in the domain of development, they used and applied models across domains — models used to think about development were also used to think about addiction. For more on FrameWorks' work in Alberta on early child development, see Kendall-Taylor, N. (2010). *Experiences get carried forward: How Albertans think about early child development*. Washington, DC: FrameWorks Institute.

[xxvii] See: Lévi-Strauss, C. (1963). *Totemism*. Translated by Rodney Needham. Boston, MA: Beacon Press and Lévi-Strauss, C. (1966). *The savage mind*. Chicago, IL: University of Chicago Press.

[xxviii] Quinn, N. (1987). Convergent evidence of a cultural model of American marriage. In Holland, D. & Naomi, Q. (Eds.), *Cultural models in language and thought* (pp. 173-194). Cambridge, MA: Cambridge University Press.

[xxix] While this may appear to be a sort of rational decision-tree, in which individuals consciously pick and choose from various domains and volitionally apply understandings to make sense of information, the actual cognitive process is far from logical or volitional. In actuality, the recruitment of the models from domains of "what is addiction" and "what causes addiction" is not a deliberate decision and does not "feel" particularly complex in situ. Instead, this process occurs rather instantaneously and without conscious consideration. It feels natural to people in that these patterns are activated by familiar tropes in media and culture that have reinforced these assemblies of assumptions and their connections over time. In short, the way that people draw from different areas of understanding is highly patterned, immediate and natural because people living in and exposed to a common culture have had tremendous practice in thinking these ways. Provided with information, individuals employ patterned connections between information and structures of meaning — sometimes there are single assumptions and sometimes there are amalgams of various different assumptions that facilitate meaning making.

[xxx] For more on the connection between cultural models of causation and perceptions of treatment see the following: Kleinman, A. (1980). Patients and healers in the context of culture: An exploration of the borderland between anthropology, medicine, and psychiatry. Berkeley, CA: University of California Press.

Mathews, H. & Hill, C.E. (1990). Applying cognitive decision theory to the study of regional patterns of illness treatment Choice. *American Anthropologist 92(1)*, 155-169.

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Wilce, J.M. (2003). *Social and cultural lives of immune systems*. New York, NY: Routledge.

Kendall-Taylor, N. (2009). Treatment seeking for a chronic disorder: How families in Coastal Kenya make epilepsy treatment decisions. *Human Organization 68*.

[xxxi] FrameWorks has been working on communicating the science of gene-environment interaction. For more information on this research see the following two reports:

Kendall-Taylor, N. & McCollum, C. (2009). *Determinism leavened by will power: The challenge of closing the gaps between the public and expert explanations of gene-environment interaction.* Washington, DC: FrameWorks Institute.

Erard, M., Kendall-Taylor, N., Adam Simon, A., & Davey, L. (2010). *More to genes than that: Designing metaphors to explain epigenetics*. Washington, DC: FrameWorks Institute.

[xxxii] FrameWorks Institute (2009). Framing Early Child Development Message Brief. Washington, DC: FrameWorks Institute.